

Ferrarini, Benno (Ed.); Giugale, Marcelo M. (Ed.); Pradelli, Juan J. (Ed.)

Book

The sustainability of Asia's debt: Problems, policies, and practices

New Directions in Post-Keynesian Economics Series

Provided in Cooperation with:

Edward Elgar Publishing

Suggested Citation: Ferrarini, Benno (Ed.); Giugale, Marcelo M. (Ed.); Pradelli, Juan J. (Ed.) (2022) : The sustainability of Asia's debt: Problems, policies, and practices, New Directions in Post-Keynesian Economics Series, ISBN 978-1-80088-372-7, Edward Elgar Publishing, Cheltenham, <https://doi.org/10.4337/9781800883727>

This Version is available at:

<https://hdl.handle.net/10419/336673>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

The Sustainability of Asia's Debt

The Sustainability of Asia's Debt

Problems, Policies, and Practices

Edited by

Benno Ferrarini

*Principal Economist, Economic Research and Regional Cooperation
Department, Asian Development Bank*

Marcelo M. Giugale

Adjunct Professor, Georgetown University and former Director, World Bank

Juan J. Pradelli

*Researcher, Center for the Study of State and Society and former
Senior Economist, World Bank and Inter-American Development Bank*

CO-PUBLICATION OF THE ASIAN DEVELOPMENT BANK AND
EDWARD ELGAR PUBLISHING



Cheltenham, UK • Northampton, MA, USA

© Asian Development Bank 2022

Some rights reserved.

Published by
Edward Elgar Publishing Limited
The Lypiatts
15 Lansdown Road
Cheltenham
Glos GL50 2JA
UK

Edward Elgar Publishing, Inc.
William Pratt House
9 Dewey Court
Northampton
Massachusetts 01060
USA

The views expressed in this book are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB), its Board of Governors or the governments they represent. ADB does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequences of their use. The mention of specific companies or products of manufacturers does not imply that they are endorsed or recommended by ADB in preference to others of a similar nature that are not mentioned.

By making any designation of or reference to a particular territory or geographic area, or by using the term 'country' in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.



This work is available under the Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO) <http://creativecommons.org/licenses/by/3.0/igo/>. By using the content of this publication, you agree to be bound by the terms of said license. For attribution, translations, adaptations and permissions, please read the provisions and terms of use at <https://www.adb.org/terms-use#openaccess>.

This CC license does not apply to non-ADB copyright materials in this publication. If the material is attributed to another source, please contact the copyright owner or publisher of that source for permission to reproduce it. ADB cannot be held liable for any claims arising as a result of your use of the material.

Notes: In this publication, “\$” refers to United States dollars. ADB recognizes “Ceylon” as Sri Lanka; “China” as the People’s Republic of China; “Hong Kong” as Hong Kong, China; and “Korea” and “South Korea” as the Republic of Korea; “Russia” as the Russian Federation. This book has been edited to conform to this usage.

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
Tel +63 2 8632 4444
Fax +63 2 8636 2444
www.adb.org

A catalogue record for this book
is available from the British Library

Library of Congress Control Number: 2022931030

This book is available electronically in the  Elgaronline
Economics subject collection
<http://dx.doi.org/10.4337/9781800883727>

ISBN 978 1 80088 371 0 (cased)
ISBN 978 1 80088 372 7 (eBook)

Contents

<i>List of contributors</i>	vii
<i>Foreword by Yasuyuki Sawada</i>	ix
<i>Acknowledgments</i>	xi
<i>List of abbreviations</i>	xii

Overview and synthesis	1
<i>Benno Ferrarini, Marcelo M. Giugale, and Juan J. Pradelli</i>	

PART I A DIAGNOSIS OF ASIA'S DEBT

1	Debt in Asia: anatomy, evolution, and prospects <i>Juan Pablo Paladino and Juan J. Pradelli</i>	31
2	Japan's public debt sustainability before and after COVID-19 <i>Jérémie Cohen-Setton and Keita Oikawa</i>	66
3	People's Republic of China: features and recent evolution of corporate debt <i>Ninghua Zhong and Mi Xie</i>	87
4	Asia's lower-income countries: concessional public debt, concessional rescues <i>Nicolas Depetris-Chauvin</i>	108
5	Pacific Islands' debt: financing post-COVID-19 recovery amid precarious sustainability <i>Roland Rajah and Alexandre Dayant</i>	136
6	Subnational debt: developing a sustainable market <i>Lili Liu</i>	167
7	Asia's corporate debt: assessing its role in financial vulnerability <i>Hernán D. Seoane</i>	188
8	Household debt: supply-driven sugar rushes <i>Maria Teresa Punzi</i>	214

PART II THE RISKS BEHIND ASIA'S DEBT

9	Fiscal uncertainty: the thankless task of forecasting Asia's fiscal accounts <i>Ugo Panizza</i>	239
---	--	-----

10	Fiscal space: Asia's fiscal safety net has shrunk <i>Andrea F. Presbitero</i>	269
11	Contingent liabilities: monitoring exposures that are difficult to measure <i>Timothy C. Irwin</i>	299
12	Debt generators: the case of energy subsidies <i>Klaus Enders</i>	317
13	Population aging and debt <i>Sang-Hyop Lee, Andrew Mason, and Donghyun Park</i>	342
PART III WHAT NEXT? POLICIES TO KEEP ASIA'S DEBT SUSTAINABLE		
14	Debt management capacity: a tale of three Asias <i>Phillip Anderson</i>	367
15	Fiscal insurance: a new tool of fiscal stability <i>Luis de la Plaza</i>	389
16	Thematic bonds to diversify fiscal sources <i>Farah Imrana Hussain</i>	409
	<i>Index</i>	426

Contributors

Phillip Anderson is an Independent Consultant and former senior manager at the World Bank Treasury.

Jérémie Cohen-Setton is a Senior Economist at the IMF Independent Evaluation Office in Washington, DC, United States (US).

Alexandre Dayant is a Research Fellow at the Lowy Institute in Sydney, Australia.

Nicolas Depetris-Chauvin is an Associate Professor at the Geneva School of Business Administration, University of Applied Sciences Western Switzerland.

Klaus Enders is a former consultant at the IMF in Washington, DC, US and GIZ in Bonn, Germany and a former IMF member of staff.

Benno Ferrarini is Principal Economist at the Office of the Chief Economist and Director General at the Economic Research and Regional Cooperation Department of the Asian Development Bank (ADB) in Manila, Philippines.

Marcelo M. Giugale is an Adjunct Professor at Georgetown University in Washington, DC, US and a former director at the Financial Advisory and Banking Services Department of the World Bank.

Farah Imrana Hussain is a Senior Financial Officer and Sustainable Finance Specialist at the Capital Markets and Investment Department of the World Bank Treasury.

Sang-Hyop Lee is a Professor at the Department of Economics of the University of Hawaii at Manoa and a nonresident senior fellow at the East–West Center.

Timothy C. Irwin is an Independent Consultant.

Lili Liu is former global lead on intergovernmental finance at the Governance Global Practice of the World Bank, Washington, DC, US.

Andrew Mason is a Senior Fellow at the East–West Center and a former professor at the Department of Economics of the University of Hawaii at Manoa.

Keita Oikawa is an Economist at the Economic Research Institute for ASEAN and East Asia in Jakarta, Indonesia and former Deputy Director at the Economic and Industrial Policy Bureau of the Ministry of Economy, Trade and Industry in Japan.

Juan Pablo Paladino is a Researcher at Ecolatina in Buenos Aires, Argentina.

Ugo Panizza is a Professor at the Graduate Institute of Geneva in Switzerland.

Donghyun Park is Principal Economist at the Macroeconomics Research Division of the Economic Research and Regional Cooperation Department of ADB.

Luis de la Plaza is a consultant and lecturer to several international organizations and a former Lead Financial Officer at the Treasury Department of the World Bank.

Juan J. Pradelli is a Consultant at the IMF and a former senior economist at the World Bank and the Inter-American Development Bank. He has worked as an advisor to various financial ministries in Africa and the Middle East.

Andrea F. Presbitero is an Economist at the IMF and Associate Professor of Economics at the Johns Hopkins University School of Advanced International Studies in Bologna, Italy.

Maria Teresa Punzi is an Assistant Professor of Economics at Webster University in Vienna, Austria.

Roland Rajah is Lead Economist at the Lowy Institute in Sydney, Australia.

Hernán D. Seoane is an Associate Professor of Economics at the Universidad Carlos III in Madrid, Spain.

Mi Xie is a Research Assistant and PhD candidate at the School of Economics and Management of Tongji University in Shanghai, People's Republic of China (PRC).

Ninghua Zhong is a Professor at the School of Economics and Management of Tongji University in Shanghai, PRC.

Foreword

Yasuyuki Sawada

Fiscal sustainability has not been a major policy concern in developing Asia. Reflecting conservative policies and speedy responses to fiscal slippages, budget deficits in the region have generally been small, and public debt has not climbed to the very high levels seen in many other parts of the world, in relation to gross domestic product. For the most part, Asian governments have displayed the same frugality that has characterized many of the region's households and enterprises, and public saving has been an important contributor to the region's exceptionally high savings rates.

Sure enough, Asia has had its crises too. In 1997, a financial crisis spread through East Asia and Southeast Asia, hitting the hardest economies where corporate borrowing had been excessive and mismatched in terms of both its time structure and currency denomination. After cleaning up affected financial and nonfinancial corporate sectors, governments tightened corporate laws and surveillance as well as monetary and fiscal policies. The region as a whole emerged from the crisis stronger and more disciplined, and with its banks, corporations, and foreign currency reserves less leveraged. The years to follow would also mark significant accomplishments in establishing or deepening domestic bond markets in Southeast Asia and elsewhere in the region.

Large current account surpluses and strong fiscal positions built since the late 1990s helped Asia weather the global crisis triggered by the 2008 United States subprime crisis, which spread from across the North Atlantic financial centers to Asia through the region's heavy involvement with the global trade and supply chain networks. Huge and largely unprecedented fiscal stimulus programs, together with monetary and other policies to stem the crisis' social and economic impacts, contributed to a rapid recovery from the economic slowdown, and the region quickly resumed a path of rapid growth that had set it apart from the rest of the world for the better part of the past four decades.

However, the global crisis did accelerate some major structural shifts in the region. Most notably, rebalancing in the People's Republic of China toward domestic consumption and a gradual move away from export and investment-led growth had become overdue. This cast waves across the regional supply chains, with effects magnified by a growing backlash against globalization. The region also witnessed a gradual shift toward higher South–South investment and capital flows, especially toward the lower-income countries and reshaping the traditional creditor composition. Meanwhile, advanced economies' ultra-easy monetary policy lowered global interest rates and flattened yield curves on reserve currencies to levels unseen before, triggering a massive flow of hot capital toward emerging markets – in Asia and elsewhere – in a desperate run for higher yields.

These and other risk factors sent some warning lights flashing well before the coronavirus disease (COVID-19) pandemic caught the world by surprise in early 2020. Among Asia's lower-income countries, risk ratings from debt sustainability analyses had long been signaling rising concerns about possible distress. Major structural hurdles, extreme exposure to natural hazards, and typically weak debt management and governance were perpetuating and sharpening these countries' dependence on concessional loans and grants at a time when complex debt profiles were complicating the prospects for debt workouts and creditor coordination. Among the region's emerging markets, worrying signs had emerged in relation to ballooning corporate leverage in some, rising household debt and financial sector vulnerabilities in others, and to the risk of sudden stops and capital reversals in economies with a large exposure to unhedged foreign-owned positions or jittery domestic investors.

When the pandemic hit, Asia's economies ground to a halt, just like the rest of the world. Governments' fiscal response has been robust so far, especially in the larger emerging economies with sufficient fiscal space available. Financial support by the Asian Development Bank and the creditor community more broadly helped bridge the financing gap from heightened spending on health, social, and economic measures, especially in lower-income countries unable to stem by themselves the revenue compression from collapsing growth, lack of tourism receipts, dwindling remittances, and faltering commodity export prices. Thanks to strong international support, and to still favorable global liquidity conditions, the pandemic has not morphed into a full-blown emerging and lower-income market debt crisis. The outlook for debt sustainability in the region remains generally favorable, assuming that global vaccination programs will effectively break the pandemic's deadlock on the global economy and robust economic growth will return to Asia in 2022.

But there is no room for complacency, and policy makers had better prepare for the risks ahead. Amid much uncertainty, continued access to international capital markets and the avoidance of flow reversals and rollover constraints remain critical to sustainability of external debt, including private leverage where it looms large. Rising interest rates or less than accommodating conditions in support of countries already pressed hard for liquidity could spell trouble in several parts of the region. As if this was not enough, policy makers and their development partners are also facing new challenges from a sharp trend reversal in inequality and poverty brought about by the pandemic, on top of inexorable massive fiscal pressures arising from aging populations and the fulfillment of long-standing development prerogatives such as to close the large infrastructure gaps still present in the region.

Against this tall and urgent task, and without the aim of comprehensiveness, this book and the 17 chapters it collects put forward deep, rigorous, and policy-relevant analyses to help Asia prepare for what is to come.

Yasuyuki Sawada
Chief Economist and Director General (March 2017–August 2021)
Economic Research and Regional Cooperation Department
Asian Development Bank

Acknowledgments

The editors would like to express their gratitude to colleagues at the Asian Development Bank (ADB) – too numerous to cite here individually – at the Economic Research and Regional Cooperation Department and other ADB departments and resident missions. Their most generous support and insightful comments, especially during the discussions of earlier drafts at the workshop on 17–23 November 2020, greatly benefited the chapters in this volume. Special mention goes to Reza Vaez-Zadeh, for expert support with planning, reviewing, editing, and producing this volume; to Tuesday Soriano for diligent editing and proofreading; to Suzette Dagli for generous coordination, management, and research support; and to Oth Marulou Gagni for efficient administrative support. We also wish to thank Matthew Pitman of Edward Elgar Publishing for his excellent collaboration.

Initial drafts of the chapters were discussed at the workshop on 17–23 November 2020, and revised drafts were submitted by 14 December 2020. The data and information in this book were valid as of 14 December 2020, but they may have changed thereafter because of major recent events such as those affecting Afghanistan and Myanmar, and the worldwide impact of the COVID-19 pandemic.

Abbreviations

ADB	Asian Development Bank
ADO	Asian Development Outlook
ASEAN	Association of Southeast Asian Nations
ASIF	Annual Survey of Industrial Firms
BCP	business continuity plan
BLGF	Bureau of Local Government Finance
bps	basis points
BRI	Belt and Road Initiative
BSP	Bangko Sentral ng Pilipinas (Central Bank of the Philippines)
CAO	Cabinet Office, Government of Japan
CAT bond	catastrophe bond
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CEB	Ceylon Electricity Board
CPC	Ceylon Petroleum Corporation
CPEC	China–Pakistan Economic Corridor
CPPA	Central Power Purchasing Agency
DeMPA	Debt Management Performance Assessment
DISCO	distribution company
DMO	debt management office
DRM	domestic resource mobilization
DRS	Debt Reporting System
DSSI	Debt Service Suspension Initiative
DSTI	debt-to-service income
EFM	extended financial margin
ESG	environmental, social, and governance
EU	European Union
FC	Finance Commission
FCS	fragile and conflict-affected state
FDI	foreign direct investment
FONDEN	Fondo Nacional de Desastres Naturales (Natural Disaster Fund)

FY	fiscal year
GDP	gross domestic product
GENCO	government energy company
GFC	global financial crisis
GFI	government financial institution
GFN	gross financing need
HIPC	Heavily Indebted Poor Countries (Initiative)
ICR	interest coverage ratio
IEA	International Energy Agency
IIF	Institute of International Finance
IIFDD	Institute of International Finance debt database
ILS	insurance-linked securities
IMF	International Monetary Fund
IPP	independent power producer
ISDA	International Swaps and Derivatives Association
JGB	Japanese government bond
KESC	Karachi Electric Supply Company
KIBOR	Karachi interbank offered rate
LGU	local government unit
LGUGC	Local Government Unit Guarantee Corporation
LIC	low-income country
LMIC	lower-middle-income country
LTC	loan to collateral
LTV	loan to value
MAC DSA	Market-Access Country Debt Sustainability Analysis for Market-Access Countries
MDB	multilateral development bank
MDRI	Multilateral Debt Relief Initiative
NBS	National Bureau of Statistics of China
NEPRA	National Electric Power Regulatory Authority
NTA	National Transfer Accounts
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
OJK	Otoritas Jasa Keuangan (Financial Services Authority of Indonesia)
PDM	public debt management
PHPL	Power Holding Private Limited

PNG	Papua New Guinea
PPP	public–private partnership
PRC	People's Republic of China
PUCSL	Public Utility Commission of Sri Lanka
PV	present value
RHPI	real house price index
ROK	Republic of Korea
SALM	sovereign asset–liability management
SDGs	Sustainable Development Goals
SEBI	Securities and Exchange Board of India
SMEs	small and medium-sized enterprises
SNG	subnational government
SOE	state-owned enterprise
SPV	special purpose vehicle
T&D	transmission and distribution
UK	United Kingdom
ULB	urban local body
UN	United Nations
US	United States
VAR	vector autoregression
VIX	volatility index
WAPDA	Water and Power Development Authority
WEO	World Economic Outlook
WHO	World Health Organization
yoy	year on year

Overview and synthesis

Benno Ferrarini, Marcelo M. Giugale, and Juan J. Pradelli¹

1. INTRODUCTION AND CONTEXT

For the past five decades, the world has marveled at the fast, sustained, and poverty-reducing growth of the Asian economies. Since the early days of Japan's export-led strategy and the success of the Southeast Asian "tigers" to the rise of the People's Republic of China (PRC) and India, the region has shown what is possible in economic development. Along the way, it became a core engine of the world's economy, a key pillar of financial stability, and a major component of geopolitical balance. Today, keeping Asia growing is a matter of global importance.

The sustainability of Asia's growth depends, of course, on many factors. Some, like environmental protection and social inclusion, have been the focus of much attention and analysis. Others, like good management and cultural norms, are seen as specific to each country. But there is one crucial factor that is less understood and runs through the entire Asian economic narrative: debt. Governments, firms, and households have borrowed, and continue to borrow, their way to prosperity. The outbreak and aftermath of the coronavirus disease (COVID-19) will only accelerate that process. Is this sustainable? And what needs to be done to keep it sustainable? These are the central questions addressed in this book.

In a collection of 16 commissioned essays by renowned experts and practitioners, this book studies the anatomy and dynamics of debt accumulation in Asia (before and after the pandemic), the incentives of all those involved (financiers, families, private corporations, public enterprises, ministers, municipalities, regulators, and many more), and the options that policy makers have to keep debt in check.

The approach is factual, analytical, and practical—what actually happened, why it happened, which policies have been tried and worked and which ones have not, and what should be done next. This allows for deep dives into subregional, country, and sector cases that provide rich lessons for others. How come Japan's public debt is so large and still so seemingly sustainable? What does the PRC's great rebalance from investment to consumption mean for the debt of its corporations, provinces, and municipalities? How best should small or poor or isolated Asian countries be financed? Can fiscal deficits be reined in, fiscal space created, and fiscal risks hedged, especially after the struggle with the COVID-19 outbreak? Where will the money come from when Asia's population grows older and more dependent?

These are the kind of issues this volume dissects and debates to explore the sustainability of Asia's debt. But it also explores the new instruments that policy makers have at their disposal to tackle those issues—instruments they did not have only a decade ago. Think of

the creation of fiscal space by targeting energy subsidies through biometric identification and mobile finance. Or the hedging of fiscal risk through market insurance. Or the diversification of financing sources through thematic bonds. These are some of the largely untapped options that Asian policy makers and public debt managers have.

A final word on timing. Before COVID-19, actionable knowledge of Asia's debt would have been important. After COVID-19, it will be even more urgent. As progress with cures and vaccination combats the virus, governments and corporations will have to deal with the debt they ran up to pay their way through the crisis—a buildup on top of an already large pile. The reckoning and the rush for policy solutions will likely accelerate in the second half of 2022 and will last for several years. That is why this book is published now.

2. THE MAIN MESSAGES

Whether one looks across the entire region in all its vast diversity, at groups of countries of similar income or geography, or at individual economies, there is no question that Asia has been borrowing fast. This is true whether the debtors are governments, corporations, households, or subnationals. Every sector has tapped finance with gusto. Debt burdens—that is, debts as a percentage of gross domestic product (GDP)—have grown large, and at times, massive.² The pandemic has made them much worse.

And yet, for a number of reasons, the debt seems sustainable, at least for now. Those reasons span widely. Learning from previous crises, high- and middle-income Asia developed its domestic capital market and shifted to it most or all of its public borrowing. Others undertook or are undertaking painful structural reforms. Donors, notably bilaterals, have been generous with low-income and island-state countries. And global investors still see the region as a good bet, particularly when interest rates in advanced economies are close to zero.

But sustainable does not mean riskless. Behind the causes for comfort, there are significant dangers. To start with, Asia's fiscal space—that is, its capacity to accommodate additional unforeseen expenses in a financially sound way—has shrunk and is bound to shrink further. If economic growth does not return soon to its rapid long-term path, it is difficult to see how the post-pandemic reconstruction will be funded. Then there is the question of contingent liabilities. By law or by necessity, Asian central governments are, or are expected to be, responsible for the obligations of other entities, public and private. The values at stake sometimes dwarf those governments' own debt. Finally, there is the debt-equivalent to an elephant in the room: aging. Societies in East Asia are growing old so quickly that, short of major reforms or a technological miracle, their public debts will be multiples of their current levels. The beginning of this surge is only 20 years away. And all this assumes that forecasting the region's fiscal accounts can be done accurately—it can't. While not worse than elsewhere, projections for the evolution of fiscal deficits and public debt in Asia just one or two years out rarely pan out. The volatility of budgets is too high.

What should Asia's policy makers do about a debt burden that is huge, growing, risky, sustainable today, and unsustainable in the future? In a nutshell, they should build on their successes, put in motion today the reforms that will defuse a crisis in the future, and tap into new instruments. The region's public debt managers—and, more generally, financial sector authorities—have much to be proud of. Their efforts to develop domestic capital markets have become a key asset and should be furthered and extended to lagging countries. Those manag-

ers have begun to wrestle with contingent liabilities—more than anything by bringing them out in the open. And they have started to create national awareness about the cost and realism of price subsidies and social security promises. On both fronts, the time for action has come.

Looking forward, fiscal risks—natural, operational, financial, commodity, and others—capable of derailing public borrowing plans can be reported more accurately and addressed more thoroughly. In fact, Asian governments can now buy insurance against those risks, directly from investors or through multilateral banks. They should leverage the market for impact finance, in particular for thematic bonds (green, blue, social, gender, etc.). This market has become a major alternative source of funding for countries and companies ready to make commitments on the use of the proceeds. Not all of these instruments currently fit all countries, because financial standing and institutional capacities differ. But the menu is ample and flexible.

Diagnosis, risks, policies—these three angles on Asia's debt provide the structure of this Overview and synthesis. In what follows, the substance of each chapter is distilled and threaded into that structure. Those chapters are the source and reference for the data presented here. The analysis draws on the experience of economies across the region, and identifies challenges and opportunities.

3. A DIAGNOSIS OF ASIA'S DEBT

The analysis of debt in a region as diverse as Asia calls for both the evaluation of aggregates and the study of countries and sectors. Part I offers both. It starts with a description of trends, outcomes and forecasts, in both public and private financing. It then digs deeper and draws lessons from the two regional giants—Japan and the PRC—and from the lower-income countries, including those in the Pacific. It completes the picture by looking at the behavior of borrowers over which central governments have only indirect control—corporates, households and subnationals.

3.1 Debt's Anatomy: Asia Before and After COVID-19

From the point of view of debt, there are many Asias. Data can be cut by levels, geography, vulnerability, or even institutional capacity. A further categorization can be crafted around the economies' relationship with the Asian Development Bank (ADB). Within Asia, this includes Japan, as well as a broad and heterogeneous group of ADB's 49 regional members—which range from the PRC, the Republic of Korea (ROK), and India to Armenia, Fiji, and Maldives.³

With those definitions in mind, five stylized facts could be established at the end of 2019—that is, before the pandemic. First, Asia as a whole accounted for about a third of the world's public debt, some \$25 trillion out of \$72 trillion. About half of that \$25 trillion was owed by ADB's regional members, and about half of these economies' public debt comes from the PRC.

Second, the public debt burden of developing Asia, measured as the ratio of public debt to GDP, was not exorbitant for global standards—53 percent, compared with a world average of 75 percent, and more than 100 percent in advanced economies.

Third, while their public indebtedness was relatively modest, ADB's 49 regional members led the world in private debt. It stood at almost \$38 trillion. Nonfinancial corporations owed just over two-thirds of that (\$26 trillion). And four-fifths of that corporate debt (\$21 trillion)

was owed by Chinese firms. Behind those absolute values, there was also a world-topping burden: the private debt of ADB's regional members was equivalent to more than 170 percent of their GDP. Again, the PRC and its nonfinancial corporates carried more than half of it.

Fourth, Asia, and its ADB's regional members in particular, were not always this indebted. Their public and private sectors went on a borrowing spree after the global financial crisis of 2008. Just before COVID-19 arrived, there were signs of moderation, driven mainly by the PRC's effort at supply-side structural reform—as it will be described later on. When the virus arrived, heavy borrowing returned.

And fifth, there was—and there still is—a relieving feature in Asia's total debt: only a small portion (\$8 trillion out of some \$70 trillion) is external, that is, owed to nonresidents and in foreign currencies. This is essentially due to the unparalleled ability of Japan's government and the PRC's corporations to finance themselves locally and, to a lesser extent, efforts of other emerging countries to develop their domestic capital markets.

So, *overall*, until the end of 2019, Asia's debt problem was not the traditional—Latin American?—one of governments overborrowing in foreign currency and heavily depending on global investors to keep them afloat. That “overall” comfort hid a good deal of fiscal vulnerability and country heterogeneity. On the one hand, since the global financial crisis of 2008, economic growth in the ADB's regional members had been falling (from over 8 percent to less than 6 percent per year on average), fiscal balances had been deteriorating (from an average deficit of 1.4 percent of GDP to almost 4 percent), and saving and investment had remained stagnant (albeit still at a high level of about 35 percent of GDP). On the other hand, most governments in lower-income countries, including in the Pacific, and countries in the Caucasus and Central Asia had bucked the region's trend and had grown more dependent on external funding, at a time when their current accounts were deteriorating and their international reserves were dwindling. For the Caucasus and Central Asia, the problem was double: not only had their governments borrowed in foreign currency, so had their private sectors—in some cases by more.

Along came COVID-19 and warning lights began to appear in Asia's debt radar. The ADB's regional members added \$1.6 trillion to their collective fiscal deficit in 2020—and will have added more in 2021. That is on a par with the rest of the world—except for the much higher United States (US). By the beginning of 2022, the simple average public debt in ADB's regional members will be almost 9 percentage points of GDP higher. A fifth of those governments (Bhutan, Fiji, the Lao People's Democratic Republic [Lao PDR], Maldives, Mongolia, India, Pakistan, and Sri Lanka) will be above the “high scrutiny” threshold of the International Monetary Fund (IMF) for public debt monitoring, that is, they will have debts worth 70 percent of GDP or more.

More of concern, those high-scrutiny countries (minus India), the small Pacific island states, and the nations in the Caucasus and Central Asia will continue to depend—perhaps more heavily—on external financing to cover their public financing needs. They cannot develop their domestic capital markets fast enough. And, in places like Georgia, Kazakhstan, or the Kyrgyz Republic, the (in)ability of governments to raise funds abroad at reasonable rates will have a direct impact on the financial viability of their corporate sectors, where much of the external debt sits.

Outer years do not look much better for countries with public debts above 70 percent of GDP. Even if growth averages 4 percent per year over the next four years—a solid recovery—

their governments' indebtedness will not come below or significantly below that threshold. They will not be alone in their financial predicament. Only three ADB regional members are expected to shave 10 percentage points of GDP or more from their public debt ratios in the medium term—and that assumes that the economic rebound and fiscal consolidation both happen.

In sum, Asia as a whole, or as its developing Asia cohort, is in a sobering debt position, one which is best understood through the lens of countries and sectors. At one end are Japan and the PRC with their towering debts and their ability to borrow in local currency. At the other end is a group of low- and middle-income countries dealing with high indebtedness, acute external dependence, or both. In the same vein, the borrowing behavior of governments has been quite different from that of corporations, households and, less obvious, subnationals. The following subsections investigate each of these cases.

3.2 Japan's Public Debt: A Case of Irreplacable Sustainability

Mention a country whose public debt is twice as big as its GDP and any investor would worry. Say that the debt was growing fast and, because of a pandemic, it will now grow even faster, and you should expect a bond sell-off and a downgrade in credit rating. That is what Finance 101 would predict. Not, it seems, if the country is Japan. What lies behind that gravity-defying resilience? Two factors: the debt is denominated in yen—the local currency—and its interest rate is lower than the economy's rate of growth. This means that to stabilize or reduce the ratio of debt to GDP, the Japanese government does not need major cuts in its fiscal deficit. The adjustment is feasible, politically or otherwise. Ergo, investors feel comfortable.

Basic simulations show the point. The key variables are the interest rate, the nominal growth rate, and the primary fiscal balance. Initially, abstract from COVID-19 and assume that nominal growth stays at 1.5 percent per year over the medium term—a conservative assumption. Now think of three scenarios for annual nominal interest rates: zero (close to today's), 1 percent, and 2 percent. In these cases, Japan can put its debt stock as a percentage of GDP on a steep downward path even if it did little fiscal “consolidation”—with expenditures growing at half the speed of revenues. To be sure, that debt would still be between 100 percent and 160 percent of GDP in 2050, that is, large but much less than today and declining. Conversely, if interest rates stayed around zero, the debt ratio would stay constant even if the government ran an annual primary fiscal deficit equal to 3 percent of GDP.

Interestingly, those trends are not affected by the economic and fiscal impacts of the pandemic—only their starting points are. The stimulus package applied by the Japanese government in 2020 swelled its primary deficit by 10 percent of GDP and its debt ratio by 25 percentage points. But, if the recovery means returning to previous levels of fiscal consolidation and growth by the end of 2021, the long-term fall in the debt burden for our three interest rate scenarios holds.

The magic behind this arithmetic is the premise that growth will top interest rates. Will that be the case post-COVID-19? There are arguments both ways. If the health crisis lingers on, it may permanently reduce human and physical capital—it could “scar” the economy. This would certainly dampen long-term growth. But it is also possible that the pandemic may force a faster and broader adoption of technology, even for Japanese standards—remote working, artificial intelligence, robotics, digitalization, and others. This, if it happens, should raise pro-

ductivity and, thus, growth. Similarly, it is unclear which way interest rates will go in Japan. They may fall if the virus scares consumers into saving more. Or they may rise if, because of its much larger absolute size, public debt crowds out private investment.

But, if growth falls below interest rates, would buyers of Japanese public bonds retrench at the sight of a rising debt burden? Unlikely. For two main reasons. First, with corporate and individual income tax rates that are low for the standards of advanced economies, more fiscal austerity is doable. Second, and ultimately, those bonds are denominated in a currency the government can print and the Japanese people want to hold. In fact, measured by a narrow definition of money (known as “M1”), Japanese hold yen worth about 160 percent of GDP. This is a world-beating level of confidence in your own currency. Not many countries in Asia or elsewhere can count on that. By comparison, Koreans hold won worth about half of their GDP, not unlike Britons, Canadians, and Danes do with the pound, the loonie, and the krone. The corresponding number for Americans and the dollar is “just” 30 percent.

While this “home bias” makes Japan’s debt situation unique—and its sustainability difficult to replicate—there is another country characteristic that points in the opposite direction. The Japanese nation is aging at high speed, something that, without reforms, could make the debt sky-high and unbearable. This long-term risk, which is happening in other Asian countries too, is analyzed in section 4 below.

3.3 The PRC: Corporate Debt as a Tool for Macroeconomic Management

The size and sustainability of debt in the Chinese economy matters well beyond the PRC. It could condition growth and financial stability around the world, especially in commodity-exporting countries. The numbers are staggering: the country’s total debt soared from 141 percent of GDP in 2008 to 243 percent of GDP by the end of 2019. That is approximately a \$30 trillion jump—equivalent to about a third of today’s global GDP. Much of the jump was a policy response to the 2008–2009 global financial crisis, arguably the right macroeconomic response. As the recovery gained traction though, an effort to rein back on borrowing was launched in 2015. Enter COVID-19 with its enormous financing needs and the question now is: will the indebtedness, swollen by the pandemic, be sustainable? To answer, one needs to dissect the numbers.

The first observation is that central-government or external debt is not the problem. They are relatively low and stable. In contrast, local governments, special-purpose vehicles, and households all borrowed heavily and face sizable local-currency liabilities. But, by far, the main drivers of the PRC’s debt have been nonfinancial corporations. In the past 12 years, their liabilities rose by more than 50 percentage points of GDP, and now stand at more than 150 percent of the PRC’s GDP. No other country experienced anything remotely similar. In fact, in the US, the epicenter of the global financial crisis, the debt burden of corporations and households has remained stable or has fallen since 2009.

But, digging deeper into a database of 4 million Chinese industrial companies, reveals that the buildup of the PRC’s corporate debt has two distinctive marks. First, it is concentrated in a very small fraction of firms—probably less than a thousand—which happen to be large, state-controlled, and listed on the stock exchange. In contrast, the rest of the corporate sector has been *deleveraging* over the last 10 years and, sensibly, shed mostly short-term debt. Second, almost all that debt is owed to local state-owned banks, not to bondholders. This

linked the commercial fate of those companies to individual depositors and limited the tradability of the claims.

Chinese policy makers understood early on the systemic implications of the dangerous debt accumulation that was taking place at the core of the country's corporate sector. Their response was to launch, in November 2015, a program of "supply-side structural reform". The idea was to expose deeply indebted firms to the market discipline of consumers, creditors, and competitors. In parallel, government support would be trimmed back, and unviable—"zombie"—firms would be left to exit through bankruptcy. This, the argument went, would raise total factor productivity, increase profitability, and make corporate debt more sustainable. All the main economic institutions—from the ministry of finance and the central bank to the insurance regulator and the stock market authority—issued follow-up declarations and directives to speed up and smooth the deleveraging process. More broadly, supply-side reform became a code name for the PRC's new development model, one based on climbing the technological value chain while shifting resources from investment to consumption.

Has it worked? Up until COVID-19, there were encouraging signs. Excess and outdated industrial capacity had been reduced. Efficiency indicators like inventory turnover time had improved. So had indicators of profitability like return on assets and return on equity. A slew of closures, mergers, acquisitions, privatizations ("mixed ownership"), debt restructurings, and debt-for-equity swaps cut the absolute value of debt across the corporate sector. The average interest coverage ratio—a gauge for a firm's ability to service debt—of state-controlled enterprises rose significantly. Will the pandemic derail this progress?

The PRC was quick to control and prevent the spread of the virus. But the quarantines and lockdowns made its GDP tumble—to the tune of almost –7 percent year on year in the first quarter of 2020. The central government, like governments everywhere, responded with unprecedented fiscal and monetary stimuli. Tax cuts, looser credit, and targeted loans were all deployed. Local governments issued a new generation of bonds to build infrastructure. Even "shopping vouchers" for consumers were on the policy menu. While saving the economy in the short term, emergency corporate lifelines go against the grain of the supply-side structural reforms. Whether those reforms are quickly resumed, suspended for a while, or abandoned forever will determine whether the PRC's debt problem returns to a path toward sustainability or not.

3.4 Asia's Lower-Income Countries: Concessional Debt, Concessional Rescues

Governments in Asia's lower-income countries—those elsewhere known as low income or lower-middle income—did not sit out the wave of borrowing that dominated the last decade. By early 2020, the wave was already coming to an end, forced by an accumulation of fiscal and external imbalances. That year, the IMF reported that, of the 21 Asian lower-income economies, the risk of public debt distress was high in 12 and moderate in four—a major deterioration from five years before.⁴ While differences across countries exist, the deterioration was caused by a mix of quantity and quality: not only did debt levels rise (on average, by 11 percentage points of GDP over the past 10 years) but the composition of that debt became more problematic (more from private lenders, more non-concessional, more foreign currency, and shorter term).⁵ In a way, developing Asia never did what emerging Asia did after its crisis of the mid-1990s: it did not switch its marginal source of finance from foreign

to domestic currency. It probably couldn't, as its local capital markets stayed too small and too underdeveloped.

A certain level of comfort is found in the fact that, for those 21 countries, the large majority of public external debt is still with the ADB and other multilaterals, and with non-Paris Club bilaterals (like the PRC, India, and United Arab Emirates). Their loans are easier to roll over than traded bonds. But COVID-19, with its brutal impact on growth and fiscal balances, is likely to destabilize the financial position of many, if not most, of developing Asia. If it does, what should be done?

Debt booms and busts are not new, and each cycle has left important lessons. Latin America (borrowing in the 1970s and defaults in the early 1980s), Africa (late 1980s and mid-1990s), East Asia (early 1990s and late 1990s), and Europe (early 2000s and late 2000s), all left a mark. They taught us five main lessons. First, crises come suddenly and their effects on output last for a long time. Second, the pain of debt distress and default can be brutal but is rapidly forgotten, and countries tend to go back to borrowing before fundamental reforms to make the new debt sustainable are put in place—witness the bond issues by African governments over the past five years. Third, heavy borrowing in foreign currency does not mix well with rigid foreign-exchange regimes—it was the abandonment of Thailand's peg that triggered the crisis in East Asia. Fourth, private lenders are generous when global financial conditions make them search for yield, but quickly withdraw at first sight of international or local trouble. And fifth, debt restructuring is a messy process, and is even messier when it involves private creditors. Official lenders usually have political incentives to organize themselves and write off (or not write off) debt; the Paris Club is a reflection of that. Private bondholders, on the other hand, have an incentive to hold out. The existence of collective action clauses to force them to cooperate has, in practice, produced mixed results.

Keeping those lessons in mind, and knowing that the pandemic calls for large, additional public expenditures, how should governments in developing Asia be financed? The answer is not straightforward because, as mentioned before, most of these governments were already at a high risk of debt distress. For them, balancing debt sustainability and paying for response and recovery point to only one kind of solution, at least in the short term: concessional financing, whether as grants, loans, guarantees, or voluntary relief, all of them with no or light conditions attached. This would provide liquidity to afford health expenses, social protection, and economic stimulus. It would also implicitly help roll over amortizations and avoid macroeconomic adjustments in the midst of a deep recession.

However, concessional financing can realistically come only from official creditors. Private ones would implicitly benefit from it—they would be effectively bailed out, at least in part. That is not easy to arrange or accept. It has been the weakness at the core of the Debt Service Suspension Initiative put forward by the G20 and the Paris Club in the beginning of the pandemic. Many countries declined the offer, fearful of being perceived or rated as heightened default risks. The G20 and the Paris Club also launched a Common Framework for debt restructuring to which all official creditors (including the PRC), but no private investors have committed. Others, like the United Nations Conference on Trade and Development, have called for more radical solutions, like automatic debt standstills and international agreements to deter judicial action in all jurisdictions against defaulting governments—a proposal that would in practice lock those governments out of the market. Intermediate solutions have also been proposed, whereby private lenders accept delays or even partial write-offs if there is

external verification—through a facility at the World Bank or at other multilaterals—that the freed-up funds are used only for pandemic-related expenses.

No matter how it is tackled, the problem of uneven burden sharing between official and private creditors may be inevitable in low-income countries, including those in Asia. Holding official debt relief until no private bondholders benefit from it would inflict further pain on populations that have already been hurt by a one-in-a-century shock for which they bear no responsibility. So international politics may prevail. In exchange, countries that call for multilateral or bilateral support could and should demonstrate complete debt transparency—when you ask for help, you should be willing to open your books.

Things will be different in the medium- and long term. A mix of domestic resource mobilization, fiscal retrenchment, structural transformation, and innovative financing tools will be the priority. Once the virus is controlled by therapeutics or vaccination, and output recovery is underway, it will be time to remove legal, regulatory, fiscal, infrastructure, and other obstacles to growth. It will also be time to construct the pillars of local financial markets. That is the essence of “building back better”. For those that undertake reform, the menu of financing options will widen—to include, among others, thematic bonds, blended impact funds, and government insurance. These instruments heed lessons from previous crises, and temper the tendency toward future binge borrowing.

3.5 Small Pacific Islands’ Debt: Official, Sustainable, and Precarious

Sometimes, extreme geography just thwarts debt sustainability. This is the case with small island states in the Pacific. Isolated, at the mercy of frequent disasters triggered by natural hazards, and with few and concentrated sources of income, the challenge of financing their development has been difficult in the best of times. In the post-COVID-19 era, it seems unsurmountable—at least in pure market terms. These countries were under financial stress *before* the pandemic, and many relied on donors to balance their books.

Epidemiologically, the coronavirus had a relatively mild impact on the Pacific islands—the one benefit of a far-off location. But it was economically devastating for these nations that depend almost entirely on tourism, a single commodity, or remittances. Early estimates put the contraction in regional GDP at over 6 percent in 2020, followed by a very slow, protracted recovery—about 1.5 percent per year. Governments reacted with stimulus packages. But the sort and scale of policy responses seen in other parts of the world were not feasible. With foreign aid accounting for a large share of fiscal revenues, and with little or no capacity to borrow abroad, there was not much space for more public spending. And with pegged exchange rates, major loosening in monetary policy was not an option.

Donors did their part. Their combined financial assistance topped \$1.6 billion, equivalent to about 5 percent of the region’s GDP. They suspended debt service (G20), redirected and frontloaded funds (development banks), and came up with fresh funding (IMF, Australia). This helped. But it did not solve the fundamental debt sustainability problem, which the pandemic worsened.

That poses three questions: is a wave of debt crises in the Pacific coming? How much external financing is necessary for the region to recover its growth path? What form should the financing take to avoid financial distress down the road? To answer, it is important to keep in mind that smallness (of land, population, or GDP), remoteness (distance to trading

partners), internal dispersion (archipelagos), vulnerability (climate), and export concentration (one or two main items) have made financing the development of these islands a unique, perennial, and so-far-unsolved problem—pandemic or not. Their funding gap is structural and colossal—the World Bank puts it at a tenth of GDP per year. Their dependency on aid is thus almost inescapable—to the tune of 9 percent of GDP per year, compared with about 3 percent in sub-Saharan Africa. Their governments' capacity to carry debt is limited, as is their ability to borrow from private lenders in global financial markets.

That aid dependency defuses the imminence of a wave of debt defaults seen in, for example, Latin America in the 1980s. Almost all public external debt of the Pacific islands is owned to official creditors in concessional or “semi-concessional terms”, reducing both rollover risk and the cost of debt service. ADB is, by far, their largest lender. The PRC is the second. Workouts, if ever needed, would be easier to arrange. Only Fiji and Papua New Guinea (PNG) have tapped international bond markets. In fact, except for those two countries, the average interest rate on the region's external debt (about 2 percent) is low and below its long-term rate of economic growth—as it should be when almost the entire funding comes from official creditors.

The analysis can be traced to four Pacific countries that account for 90 percent of the region's GDP and whose financial outlooks look the most uncertain: Fiji, PNG, Samoa, and Tonga. A baseline scenario can be built where growth slowly resumes later in 2021 or early 2022. That scenario can then be “shocked” by either a lingering effect of the pandemic on growth, the realization of contingent liabilities (like public guarantees in favor of state-owned enterprises), or severe disasters triggered by natural hazards. The conclusion is that debt sustainability—defined as stable or declining public debt-to-GDP ratios—is possible but precarious.

For example, if no further shock occurs, Fiji's government needs to maintain a modest primary fiscal surplus of at least 0.3 percent of GDP—doable, by its past standards. To be sure, debt would be much higher than its pre-pandemic level but it would stabilize, at about 80 percent of GDP. Should the recovery in tourism be delayed even by a year, or another cyclone like Winston happens, or the guarantees given to Fiji Airlines be called, debt will jump to 100 percent or above of GDP—much more if those shocks came together. That would call for a fiscal consolidation for which the country has no track record.

A similar conclusion—precarious but sustainable debt position—applies to PNG, but for different reasons. The pandemic found the country with relatively low levels of public debt (around 40 percent of GDP). About two-thirds of it is in foreign currency, but in semi-concessional terms. The weakness is in the short maturity of the domestic portion of that debt, and the associated rollover risk. But the government's solvency is not at issue. What could derail this benign prognosis? A slower post-COVID-19 recovery, currency depreciation, or bailouts for state-owned enterprises could all hike the initial level of debt, but not to a level that moderate fiscal effort could not correct in the long term. This points to the main concern: if, instead of improving, the primary fiscal balance returned to its lax trend of the past decade (about 2.3 percent of GDP in the red), the burden of public debt will grow—not explosively, but significantly.

The same message applies to Samoa and Tonga. Both entered the COVID-19 crisis in weak economic and fiscal positions—they had experienced, respectively, a severe measles outbreak and consecutive cyclones. Both were considered at high risk of being debt distressed, notably by the IMF. But that assumes that both governments will not be able to bring much discipline

to their accounts (long-term primary deficits averaging over 5 percent of GDP in Samoa and just under 1 percent in Tonga). Looking at the countries' performance over the last 20 years, they did, can, and should do better than that, even accounting for the cost of disasters caused by natural hazards. Just by returning their fiscal position to the past average, they would bring their debt burdens under control. The debt-to-GDP ratio would stabilize in Samoa and decline in Tonga.

These simulations highlight the absolutely central role that fiscal policy plays in small island states. It also hints at the criticality of concessional financing. Loading governments with expensive debt, even if they have market access, weakens their primary balances, and quickly renders their overall debt unsustainable. In a way, trying to accelerate development by borrowing more in more expensive terms, ends up slowing it. This is relevant in the aftermath of the pandemic, with its urgent search for ways to fund recovery packages. Multilateral banks and bilateral donors are the obvious choice. But how big does their help need to be?

The evidence shows that the “multiplier” effect on growth of an additional dollar of public spending in small islands is small. This has to do with import dependency and institutional capacity. Using multipliers of 1 or 1.5, and recovery packages worth between 1.8 percent and 2.7 percent of GDP in each of the next three years, would bring the Pacific region's GDP to the upward trajectory it was on in 2019 by the end of the decade. That would call for an injection in the range of \$2.3 billion to \$3.5 billion over the next three years. That injection would not affect debt sustainability, if it came either as grants or in semi-concessional terms (like those of multilateral banks, the PRC's EXIM bank, or Australia's bilateral loans). Rather, the “growth dividend” of that financing would put long-term debt in the Pacific on a declining path.

3.6 Asia's Corporate Debt: Lack of Transparency Drives Financial Volatility

The East Asian miracle—rapid, sustained, and inclusive growth for over three uninterrupted decades—came to a sudden halt in 1997. That year, a financial crisis raced across the East and Southeast Asian economies. What caused the crisis were years of excessive corporate borrowing in the wrong currency. The policy response was predictable: monetary and fiscal policies were tightened, banks were closed or recapitalized and put under more rigorous regulation and supervision, and corporate laws were reformed to ease exit and improve governance.

The new discipline brought about a long period of corporate deleveraging. More importantly, it ended large foreign-currency exposures in both banks and firms. Both changes served the subregion well in 2008, when the global financial crisis broke out. From the ROK to Thailand, growth recovered its pre-crisis paths within a year or two, and bank solvency indicators did not deteriorate.

The difference in outcomes between the events of 1997 and 2008 raises a logical question: is corporate debt a systemically destabilizing factor for Asia's growth and financial stability? The answer is important for two reasons. First, several Asian countries (notably, the PRC) have, since 2010, seen a sharp resumption in borrowing by firms, albeit in local currency. Second, the region now faces the consequences of a much bigger crisis, which is COVID-19. In a way, the pandemic combined the worst element of 1997 (large corporate debt) and 2008 (a contraction in the world's demand for Asian exports).

Empirical analysis—through vector auto regression models fit to data from the past three and a half decades—proves that, indeed, corporate debt is a significant source of financial

stress in Asia. Jumps in the corporate debt-to-GDP ratio lead to higher volatility in the returns of banking, equity, bonds, and foreign-exchange markets. The response is either immediate (Japan and Singapore) or over 5 to 10 quarters (the PRC; Hong Kong, China; India; Indonesia; Japan; the ROK; Malaysia; Singapore; and Thailand). But the result is the same: less dollar-for-dollar capacity of those markets to intermediate savings.

Why would more corporate borrowing be a bad thing for financial stability? In general, a firm takes on loans to implement projects which, controlling for risk, should pay for themselves. But markets may have a different perception about how risky the project is. They would then price the stock of the firm and of its lender accordingly. This second effect seems to dominate in the Asian data. In other words, corporate transparency—or lack thereof—may be at play.

Has it always been like that? Things vary across the region. But a historical variance decomposition points out four distinct periods in the relationship between corporate debt and financial stress: pre-1997 (positive and strong, all economies in the sample), 1997 to 2008 (positive and weak, all economies), 2008 to 2018 (roughly neutral in most economies), and 2018 to today (positive in a few but major economies like the PRC; Indonesia; Japan; and Hong Kong, China).

Those past experiences carry lessons for Asia's policy response to the pandemic. The rush to inject financing into the corporate sector, welcome and necessary as it may be in the short term, is likely to cause financial volatility well into the medium term. The effect will be worse the more markets perceive that public funds go to companies whose commercial viability is in doubt—the “zombie firm” syndrome. Clear rules and transparent allocation of the public support are probably the best antidote.

3.7 Household Debt: Supply-Driven Sugar Rushes

Asia's public and corporate debts have been the focus of much analysis. Are they sustainable? And how do they affect macroeconomic performance? That focus is merited. But it is incomplete. Households have also been a major borrower in the region, but have received much less attention. Since the global financial crisis of 2008, they have taken massive amounts of debt, mostly to finance real estate. While households in the US and the euro area deleveraged, credit to households was growing much faster than the economy in the PRC; Hong Kong, China; the ROK; Malaysia; Singapore; and Thailand. By the time COVID-19 attacked, that credit ranged from 55 percent of GDP in the PRC and 95 percent in the ROK. That has brought risk onto the balance sheet of banks. And the pandemic, with its reduction in personal disposable income and its depreciation of illiquid assets, has turned that risk into a systemic threat.

In general, household indebtedness need not be a problem if it reflects investments that increase workers' productivity (like education does) or smooth their consumption (like mortgages do). But when it is large, of doubtful quality, or growing too fast, it can hurt economic growth and financial stability. Both effects may have been present in several Asian countries since 2010. To assess which effect is likely to prevail, a panel vector auto regression model was fit to the data of nine of the largest economies in Asia.⁶ The results are clear: a jump in household debt boosts economic growth in the short run but hurts it later. More specifically, an increase of 1 percentage point in the ratio of household debt to GDP causes a half-a-percentage-point expansion of the economy in the first year but a subsequent

contraction of one and a half percentage points. The net effect is negative. This is consistent with previous findings in the literature for earlier periods in other parts of the world. But, in Asia, the economy's fluctuation due to spikes in borrowing by households is both larger (up and down) and shorter-lived.

A possible explanation for Asia's relatively less benign relationship between household debt and growth is the supply-driven nature of the borrowing, that is, banks pushing loans on individuals—perhaps as a result of laxer regulations. A telltale of that push would be a negative correlation between the part of household indebtedness that cannot be explained by growth and the “mortgage-sovereign spread” (the difference between the interest rates home buyers pay and the coupon in government bonds). The data confirm that the correlation in East and Southeast Asia (Hong Kong, China; Indonesia; Japan; the ROK; Singapore; and Thailand) is negative. In fact, it is more deeply negative than in advanced economies at large. The indications of loan peddling are strong.

This does not augur well. The pandemic represents a negative shock to growth, house prices, and mortgage-sovereign spreads. How households will react now will bear on the sustainability of their debt—and of the financial sector as a whole. Will default rates rise? Micro simulations using panel data from the PRC and the ROK, the two Asian countries whose citizens have borrowed the fastest over the past decade, let us explore the question. In recent years, observed defaults have been concentrated among the two lowest quintiles of both countries' income distributions. That is predictable, as the poor are expected to have more trouble making good on their debt. In fact, about 4 percent and 5 percent, respectively, of Chinese and Korean borrowers in the first quintile fail to pay back. An adverse shock (5 percent contraction in disposable income) would have raised those default rates by about 20 percent and 10 percent, also respectively. Note that a 5 percent fall in disposable income due to COVID-19 is well within the realm of the possible.

Asia's policy makers are well aware of the problem. For the past several years, they have been trying to manage the systemic risks behind household debts. Their macroprudential regulations target variables like loan-to-value, repayment-to-income, and debt-to-service ratios, especially in the financing of residential property. But none of those regulations kept household debt from growing fast. So now, even stronger restraints were being considered, among them broader collateral and appraisal requirements. The pandemic and the need to stimulate growth may have put a stop to those reforms. The time will come to resume them.

3.8 Beyond Central Governments: Keeping Subnational Debt in Check

Since the early 1990s, rapid fiscal decentralization has been the defining trend in public administrations around the world. The transfer to states, provinces, and municipalities of the power to decide over taxes and expenditures has proven popular. That was to be expected: for the average citizen, local authorities are easier to hold accountable than national officials when public services like education, roads, or sanitation fail. But decentralization also proved popular with financiers. They found new, eager clients for their loans. Some of that lending to “subnationals” made sense. But some of it ended in defaults and bailouts by the central government—whose own creditworthiness was at times compromised, as Argentina, Brazil, Mexico, or the Russian Federation can attest. So, a search started for an optimal system to

regulate subnational borrowing. While progress has been made, the fundamental issue remains unresolved.

Asia is a prime example of the difficult dynamics between decentralization and debt—and of the attempts to put it on a sustainable path. The task is made even tougher by the region's unprecedented scale of urbanization and the associated demand for infrastructure. The World Bank has estimated that demand over the two decades through 2030 at about \$16 trillion. ADB puts the region's need to invest in infrastructure even higher, at \$1.5 trillion per year up to 2030.⁷ The bulk of such spending will be the responsibility of local governments. How should they finance it, after a pandemic that has depressed their tax revenues?

One answer is to develop subnational bond markets. In that, four Asian countries present lessons that are particularly useful—the PRC, India, Indonesia, and the Philippines. The Chinese experience speaks of gradualism and phases. During the first phase, spanning from the early 1990s to the global financial crisis of 2008, the PRC's subnationals were not really allowed to tap markets. Instead, their funding came through loans from the central government, special-purpose vehicles, and land-based leases. These instruments were not liquid or transparent enough to be traded in a market.

The second phase (from 2009 to 2014) was about capacity building. Provinces set up debt offices, integrated them into their budget decisions and, in a few cases, piloted bond issuances with the central government as their agent. It was not until 2014 that the third phase started with the "New Budget Law". It allowed subnationals to issue bonds, within centrally determined limits that depended on creditworthiness. The bonds—some \$3 trillion—were used to repay and replace loans from banks and special-purpose vehicles, effectively securitizing the entire provincial debt. Today, only a small but growing portion of those securities have been traded. Still, the trading has helped differentiate provinces by creditworthiness, form a yield curve along longer and longer maturities, and expand the investor base—from commercial banks toward insurance companies, mutual funds, even foreign asset managers. All of these are slowly bringing market discipline to subnational finance.

In contrast to the PRC's gradual and recent approach, India has since its Constitution allowed its states to issue bonds, as long as they do it in local currency. But the states did not issue them. Instead, they preferred to have the central government borrow and onlend them the funds. Looking to impose market discipline on subnationals (and avoid political meddling from the center), the practice of central onlending was ended in the mid-2000s. This pushed states onto the bond market and to the closer scrutiny of banks, insurance companies, and other investors—although bondholders are reassured by clauses that guarantee the "intercept" of state treasury accounts. Municipalities did not follow their states, at least not yet or in the same dimension. Their financing through bonds is much more recent—it started around 2015—and the full regulatory system was not set up until 2019. So, the jury is out as to how the market will evolve. So far, only about 2 percent of the country's 3700 "urban local bodies" have investment grade and are able to issue at reasonable cost.

Also under construction is the subnational debt market in Indonesia. While still small by international standards, the country's bond market grew apace over the past decade—it now stands at about 20 percent of GDP. But all the expansion was in sovereign and corporate bonds, in part due to a policy effort to reduce the economy's exposure to foreign currency. Subnationals have not tapped the market; regulatory requirements for their bond issuances were relaxed only in 2020.

Similarly, no subnational bond market has developed in the Philippines. Partly, this is because the “local government units” are not responsible for major expenditures—notably, they are not responsible for infrastructure. Partly, this is due to strict regulatory restrictions, like low ceilings on debt–service ratios. And partly, it is the result of the supremacy of public banks, which have the capacity to intercept municipal revenues. Total subnational debt is estimated at less than 1 percent of GDP, and is almost entirely owed to public banks. A guarantee corporation to spur lending from private investors was closed in 2019, for lack of use.

In all four cases, the systems to regulate borrowing by subnationals played a critical role in the development or not of their bond markets—rightly so. At its core, the regulation is about preventing the problem of the “common pool”, that is, states or municipalities taking on more debt than they can repay, thinking that the central government will be forced to bail them out with the money that belongs to the country as a whole. The incentive works for financiers too: if bailouts are to be expected, there is little risk in lending to borrowers that are not creditworthy.

The PRC tried to regulate the problem away by centrally imposing a limit on the size of each province’s outstanding debt, including guarantees, as well as laying out detailed procedures and control for issuances. These are accompanied by an early warning system and annual assessments, both managed by the central ministry of finance. India tried to tackle the common-pool issue through federal- and state-level fiscal responsibility laws. These put ceilings over variables like fiscal deficits and debt stocks. With much less-developed subnational debt markets, Indonesia and the Philippines have deployed their financial services authorities and even their central bank to keep subnational borrowing in check.

But, controlling indebtedness is in a way equivalent to controlling the symptoms. How does one control the causes of subnational debt so that it stays sustainable? The answer is in a consistent balance between the intergovernmental fiscal system, the mechanism to manage debt distress, and the transparency of contingent liabilities. The first sets out the revenue sources and expenditure responsibilities of subnationals. What can they tax? What do they have to pay for? What transfers will they get from the central government? The second tells lenders what to expect if a state or municipality cannot pay them back, so they can price and ration their credit accordingly. And the third makes sure that states and municipalities do not hide or delay their true spending by making promises they cannot pay—whether to suppliers, developers, or pensioners. On the three fronts, the systems of Asia’s largest emerging economies are still in the making.

4. THE RISKS BEHIND ASIA’S DEBT

Heeding the lessons from the Asian financial crisis of the late 1990s, the region’s policy makers have done much to ensure that private debt does not become systemically destabilizing again. Law, regulations, and practices have brought more discipline to the borrowing done by corporations, households, and even subnationals—and to the lenders that make funds available to them. With one exception: the same kind of discipline has, in the main, not applied to public debt. The one exception is the gradual shift in composition, from foreign to local currency. But borrowing by Asia’s central governments remains volatile, a reflection that their fiscal accounts remain volatile too. Part II starts by studying that volatility, in itself and through the

lens of fiscal space. It then looks at the three latent risks behind most of the region's fiscal frameworks: contingent liabilities, subsidies, and aging.

4.1 Fiscal Uncertainty: The Thankless Task of Forecasting Asia's Fiscal Accounts

The terms and price of public debt depend on the projected path of the fiscal accounts. But what if that path were volatile? Markets would then demand a premium to hold sovereign bonds. In practice, they do, for fiscal outcomes are extremely difficult to predict. Government budgets rarely pan out. The evidence of this is overwhelming. But there are major differences in the volume and sources of uncertainty when comparing advanced and developing countries. The dichotomy is true across regions, including Asia.

Define fiscal risk as the possibility of large or systematic deviations of fiscal outcomes from their expected values. Focus on forecasts one and two years ahead for variables like the ratio of public debt to GDP and the overall budget balance. And use projections and outcomes published by the IMF—arguably the best global source of fiscal predictions—in, roughly, the decade and a half up to 2019. The results are eye-opening: across all countries, one-year-ahead forecasts missed debt ratios and budget balances, on average, by 1.5 and 0.6 percentage points of GDP, respectively. Two-year-ahead errors are, as one would expect, larger: 2.4 and 1, respectively.

But a better sense of the problems associated with fiscal forecasting comes from the “inter-quartile range” in the distribution of errors in prediction across countries. Think of it as the difference between the lowest level of error for the most pessimistic quarter of countries, and the lowest level of error for the most optimistic one. That difference is 8 percent of GDP for debt and 3 percent for budget balances in one-year-ahead projections—much worse in two years.

Those are big margins if you have to assess the creditworthiness of a government or if you have to program its monetary policy. They are also heavily skewed—underestimates of debt and deficits are much more common than the opposite. Optimism prevails.

There are, however, important differences across types of countries. Forecasting errors in advanced economies are much smaller than in emerging and developing ones. For the former, the gap measured in percentage of GDP between one-year predictions for debt and deficit ratios and the actual values are 0.3 and 0.3; for the latter, they are 2 and 0.7. Asia, with its mix of rich and not-so-rich economies, does not escape the fiscal volatility. In East Asia (minus Japan and Singapore), next-year debt ratios and fiscal balances are on average underestimated by 0.5 and 0.7, respectively, while in South Asia they are overestimated by 1.2 and 0.3.

The causes of the errors also vary across national income levels. For advanced countries, having the wrong prediction for economic growth explains a relatively large share of the miss (40 percent of their variance). For the rest of the world, it only explains a tenth: country-specific factors, like commodity dependency, disasters triggered by natural hazards, and institutional quality matter much more. So do the stability of their currencies—devaluations are hard on projections when a significant portion of public debt is denominated in foreign currency. Estimates show that a 10 percent depreciation is associated with a 2.5 percentage point unexpected increase in the debt-to-GDP ratio. But, for all types of countries and in all regions, the main source of errors remains unknown: the so-called “stock-flow reconciliations”, that is, the unexplained part of the debt accounts for about half of all errors.

The behavior of forecasting errors over the economic cycle also differs by income level. In emerging and developing countries, those errors are more pronounced in bad times, even if bad times were anticipated. But downturns make no difference to the precision (or lack thereof) of forecasts in advanced economies. Their capacity to implement countercyclical fiscal policy may be behind that.

This analysis raises the question: are Asian countries—as represented by ADB’s regional members—fiscally riskier than their peers in other regions? No, as a group, they are not. But their average forecast error is still quite large—1 percent of GDP for budget balances. So is the variance among them, with small island states, commodity-dependent countries, and those with large foreign-currency debt burdens being, by far, the toughest to predict. Places like Azerbaijan, the Kyrgyz Republic, Kazakhstan, Maldives, and Tuvalu have over the past decade been outliers, both for vastly underperforming their fiscal plans in some years *and* overperforming them in others. And in a delightful illustration of the underlying uncertainty, for the *average* ADB borrower forecasts are more precise two years out than one.

The overall message is clear: fiscal frameworks are difficult to predict. Governments, even capable ones, pay a price for that. Their credit ratings are lower and their cost of borrowing is higher than they would be in a world of perfect foresight. So, forecasting capacity as well as policies and financial instruments that reduce the uncertainty ought to be a priority, in Asia and elsewhere.

4.2 Fiscal Space: Asia’s Fiscal Safety Net has Shrunk

Economies can be knocked off balance by temporary retrenchments in private consumption or private investment, or by major disasters triggered by natural hazards. At those times, governments are expected to hike expenditures or cut taxes in order to stabilize output or to kick-start reconstruction. This is critical to maintain their own creditworthiness, for public debt is perceived as riskier during downturns and catastrophes. But not all governments have the capacity to spend more or tax less without putting macro-financial stability at risk, that is, not all have “fiscal space”. Those who are already running deep deficits or who have limited access to market financing at reasonable cost could hardly afford more borrowing. In other words, fiscal space is to debt sustainability what seatbelts are to car safety.

Do Asia’s developing countries have fiscal space? And how has it been affected by their response to the pandemic—an event that combined both an aggregate demand contraction and a natural disaster? Looking at a group of 38 governments, the answer is mixed at best.⁸ While better than other developing countries, the fiscal stance of developing Asia was not strong when COVID-19 arrived. As proportions of GDP, the median public debt and fiscal deficit in that subset of the region were 41 percent and 1.8 percent, respectively. Not too bad by international standards, and better than emerging and developing economies elsewhere (53 percent and 2.5 percent).

However, a more sobering view comes from looking at the fiscal sustainability gap—the difference between the actual fiscal balance and the balance required to stabilize the public debt burden. By this measure, those Asian economies had a median, *positive* fiscal space of 0.7 percent of GDP at the end of 2019, while their peers in the rest of the world had a *negative* 1.3 percent. But that median fiscal space in Asia was a lot smaller than what it was right

before the global financial crisis of 2008, when it stood at a positive 5.4 percent of GDP. The deterioration was fast.

COVID-19 trounced whatever little fiscal space Asia had. All countries in the region suffered a collapse in growth and all responded with fiscal stimulus. Judging by IMF projections right before and right after the declaration of the pandemic, developing Asia suffered an average loss in output of 7.4 percent and an average deterioration in fiscal deficits worth 5.4 percent of GDP. That is, while slightly smaller than in the rest of the world, those were huge blows to economic and financial stability. The responses took many forms—from more cash transfers to individuals and tax relief for corporations to guarantees for bank lending and employment protection schemes. By all accounts, this must have consumed most, if not all, remaining fiscal space, at a time when bond spreads spiked and private external financing became much dearer.

The overall, steady decline in fiscal space before the pandemic, and its steep fall after, will be costly for Asia in the long run. While too early to tell, indications are that, to make ends meet, public investment in infrastructure has become those governments' adjustment variable. Available data for 24 of them indicate that 15 trimmed their capital outlays in 2020. The median trimming was about 0.2 percent of GDP, moderate compared with other developing countries (0.6 percent). In some, it was much more drastic than that—Cambodia, Sri Lanka, Tajikistan, and Viet Nam. Projects were postponed or delayed, not unlike what happened after the global financial crisis of 2008. If so, it would be a pity, for it would hamper the recovery and it would delay development.

How could developing Asian economies create more fiscal space? First, structural reforms, especially doing away with distortive and regressive subsidies—notably to fossil fuels. Second, debt relief. This goes beyond debt service suspension, as the funding need is for projects, not liquidity. Third, precisely because projects are involved, participation by the private sector should be a priority. Multilateral development banks can then play the role of mobilizing private investors, whether by financial risk mitigation or by socialization of country and sector information. And fourth, for those countries who have not done it, launching now the long process of growing the domestic capital markets, both as a means to raise the level of national savings and to channel them. This would match well an aspect of public investment that experience tells us is highly desirable in economies with limited institutional and implementation capacity: gradualism.

4.3 Contingent Liabilities: Controlling Exposures that are Difficult to Measure

It is common practice for governments to accept payment obligations that depend on whether a specific event takes place. A private contractor is invited to fund a toll road and is promised compensation by the public treasury if traffic falls below an agreed volume. A bank is given a public guarantee so it extends a loan to a state-owned enterprise. Retirees are told to expect a minimum pension, even if their savings do not generate enough return. A city may be just too large and too politically important for federal leaders to let it go bankrupt. These “contingent liabilities” are not quite debt—the underlying promises may never be called on. But if they are, they can throw fiscal plans off track. They are a major risk to debt sustainability. When they are publicly known, credit ratings will reflect them. But they are not always known, reported or even documented.

The world is strewn with stories of contingent liabilities gone bad, dating back at least to the nineteenth century. The calls for payment usually came as a “surprise”, were costly (several percentage points of GDP), and caused major macroeconomic turbulence. Asia has not been spared—witness the bank bailouts during the 1997 crisis.

How big are Asia’s contingent liabilities? Nobody knows for sure. The databases that exist differ widely in definitions, timing, coverage, and valuation methods. Debt can be defined in a traditional way (bonds and loans), as non-equity liabilities (to include things like account payables), or as only debt instruments (which would leave out options). And for a given definition, debt can be valued at face value, market value, or amortized cost.

One way to reach an estimate of *possible* contingent liabilities is just to assume that the central government is responsible—explicitly by contract or implicitly by practice—for all the debts of certain kinds of entities—provinces, municipalities, state-owned enterprises, public–private joint ventures, and so on. This relatively simple technique provides an upper-limit for exposure. Applying it to Asia’s five largest economies is telling, both for what it can and cannot reveal. Take, for example, contingent liabilities arising from subnational governments. They amount to 24 percent and 39 percent of GDP in India and Japan, but to only 0.3 percent and 2.4 percent in Indonesia and the ROK. The calculation for the PRC is trickier, at least using global databases. Best estimate is about 40 percent of GDP.

The same method can be applied to the other major source of government contingent liabilities: nonfinancial public corporations. Estimates for that debt range widely, from about a tenth of GDP in Indonesia to more than half in the PRC. (The PRC’s figure can exceed 100 percent of GDP, depending on whether special-purpose vehicles are considered debt of municipalities or of public corporations.) How about *financial* public corporations? The calculation is much less reliable because public banks lend to the central government. Without netting out those loans, the count can be enormous—it tops almost 200 percent of GDP in Japan and about 70 percent in India and the ROK. No global database carries this information for the PRC.

Clearly, a government’s liability exposure to public entities—subnational governments or public corporations—is difficult to assess. This assessment is even more difficult for exposures to private parties. Two of those parties stand out: private–public partnerships for infrastructure, and commercial banks. They usually obtain—formally or informally—government guarantees that projects will be profitable or loans will be repaid. The probability of that happening is at best uncertain and at worst unknown. So, a conservative way to calculate the size of the contingent liability in infrastructure partnerships is to assume that the government may be called upon to return the entire private investment. By that measure, Asian exposure is relatively small—less than 5 percent of GDP in the PRC, India, and Indonesia. That may or may not be the case with commercial banks, for data on public loan guarantees or on the quality of the projects the loans fund are effectively missing—and not only in Asia. An indirect, order-of-magnitude proxy is to look at the total liabilities of banks, assume that they are all covered by deposit insurance, and that the public treasury might be called to make good on them. By that very imperfect measure, the contingency in Asia would range from about half (India) to over 100 percent of GDP (the ROK).

Fortunately, problems in calculating the exact size of contingent liabilities have not prevented policy makers in Asia from trying to control them. Assuming that the liabilities are large and potentially destabilizing—probably the right assumption—they have looked for ways to control them, mostly through measurement and reporting. Countries like Bhutan,

Fiji, India, the Philippines, and Thailand disclose in their financial statements the outstanding amounts of government-guaranteed debt. This becomes part of their sovereign credit rating, putting a subtle but binding limit to how big that debt can be. Others not only report their guarantees, but also put a legal ceiling to their stock (Armenia) or flow (India). This is a welcome practice. The question remains, though, whether what counts is the value of the promise if called or that value should be adjusted down by the probability of the call (as the US does). The former is more restrictive.

But guarantees are a relatively small portion of all the contingent liabilities that governments face. So, another approach that has gained some momentum in Asia is to enlarge the perimeter of what “government” is, and include subnational entities, agencies, or public corporations. This defines a “general government”, and turns into public debt what would otherwise be contingent liabilities. This approach, pioneered by Australia, the European Union, New Zealand, and the United Kingdom, has also been adopted by Myanmar and Thailand.⁹

Whatever the tool for control (disclosure, caps, perimeters, or their combinations), the time for action is now. As part of their response to the pandemic, Asian governments have included contingent liabilities—many in the form of guarantees—in their stimulus packages (e.g., Japan and the ROK). The longer COVID-19 and its effects linger on, the more likely those liabilities will be realized.

4.4 Debt Generators: The Case of Electricity Subsidies

The accumulation of public debt—and its sustainability afterward—is driven by fiscal deficits. Simply put, government expenditures outstripping government revenues. Money being fungible, it is impossible to blame the need to borrow on a single outlay (for being too big) or intake (for being too small). But, sometimes, there is an expense in the public accounts that is so large, so regressive, and so inefficient that it is difficult to overlook. Price subsidies for electricity is one of them. In Asia, two countries best exemplify the problem and the lessons that others could heed. They are Pakistan and Sri Lanka.

There are four ways in which subsidizing electricity, or energy in general, adds to fiscal deficits. First, when suppliers are forced to sell electricity below cost, and then call on the government to fund the losses. Second, by slowing down growth; with prices below cost, there is no space or incentive to invest in more supply. Third, by giving up the opportunity to export it at world price. And, fourth, by spreading government guarantees in favor of power companies—usually compromising the domestic banking sector.

Those four channels of transmission have, at various times and with varying intensity, been present in both Pakistan and Sri Lanka. Interestingly, the subsidies recorded in their fiscal accounts (the first channel) are meaningful but do not seem exorbitant: 2.3 percent and 0.5 percent of GDP, respectively, per year on average over the past two decades. That is on a par with Bangladesh (2.6 percent), India (1.3 percent), Indonesia (2.5 percent), or Viet Nam (1.1 percent). But the impact on debt accumulation has anyway been huge. How come?

The reason has to do with the method of estimation. Rather than count cash losses, it is better to ask the question: how much lower would the public debt burden be if, during those two decades, the countries had practiced a subsidy-free electricity policy? The answer requires modeling and assumptions on growth, fiscal policy, and capitalization of state-owned power companies. Even under very conservative assumptions, the difference is dramatic for Pakistan:

its public debt, which today stands at about 80 percent of GDP, would be 25 percentage points of GDP lower. That is a much healthier and more sustainable financial position to be in. For Sri Lanka, whose public debt also hovers at around 80 percent, the effect is smaller but still significant: 10 percentage points of GDP. This reflects its much less-generous subsidy policies. And for both countries, the foreign-currency-denominated portion of public debt would have fallen by more (Pakistan) or increase by less (Sri Lanka) than it actually did.

Notice that those calculations do not take into account the entire balance sheet of the state, just its liabilities. Providing below-cost electricity discourages conservation. Pollution and other environmental damage coming from the excess consumption depreciate the country's assets more than would otherwise be necessary. This makes the increase in net indebtedness greater than what our model predicts.

Still, there may be reasons to subsidize electricity, even if that weakens public finances. The most commonly cited has to do with giving access to all citizens as a right, sometimes independently of their willingness or ability to pay. If so, selling below cost may not always work: access in heavily subsidized Pakistan has barely moved in the last 20 years (and remains at about 70 percent of the population), while in much less-subsidized Sri Lanka it has reached almost 100 percent. A similar observation can be made about the effect of electricity subsidies on labor force participation of women—Pakistan has been outperformed by Sri Lanka. Note that these outcomes happened even though both economies were growing fast (4.4 percent and 5.2 percent per year, respectively, on average during 2000–2019).

Why have countries in Asia and elsewhere not dismantled electricity subsidies? Because it is politically costly. It involves raising tariffs to consumers for a service that is currently of bad quality. Several countries in the region have tried, at least, to target the subsidies on the poor (India, Indonesia, and Malaysia). Others outside the developing Asia group, like Iran, have tried compensatory schemes, effectively returning to citizens a portion of the fiscal savings. But overall progress has been slow. Ironically, COVID-19 might bring a new impetus to this agenda: the pandemic will leave behind bloated fiscal deficits, massive debt burdens and, likely, a long path to full recovery. Governments will be looking for ways to balance their books. Cutting price subsidies to electricity seems like the obvious first place to look.

4.5 Aging: The Demographic Elephant in the Fiscal Room

Asia's richer economies are aging fast. The change is not just demographic—it is also economic. The effective labor force is shrinking, partly due to more schooling and later entry into employment. And the old-age gap, that is, the difference between consumption and labor income for those 65 and older as a percentage of the salary of an average worker, is widening. Two decades from now, the PRC; Japan; the ROK; Taipei, China; and Thailand will look like Europe does today (and a far cry from Bangladesh, India, Indonesia, Pakistan, and the Philippines). A couple of observations are quite telling: the PRC's effective labor supply is already falling by an estimated 0.7 percent per year, and Japan's old-age gap is the largest in the world. For them, the era of growth fueled by population has long ended.

Will this make their debts more or less sustainable? Difficult to say in the abstract. More older people relative to the young means more fiscal expenditures relative to tax revenue—the new old need health care and pensions, while there are fewer young to work and pay taxes. This means a larger “supply” of public debt. But the greater cohort of individuals growing in

age may “demand” more of that debt as a vehicle to hold part of their savings for retirement. The net outcome becomes an empirical matter.

So, to evaluate the effect that aging will have on the sustainability of Asia's debt, country-specific and regional projections—and assumptions—are required. It is also necessary to estimate “National Transfer Accounts”, that is, how much each age group pays in taxes and gets in government-funded age-related benefits.

The results show that, because of aging, the “supply” of total debt in Asia will triple over the next 40 years. It will more than double as a proportion of labor income, with the increase front-loaded in the coming two decades. The lion's share—about three-quarters—will remain concentrated in East and Southeast Asia. And some 40 percent of it will be public. In fact, by 2060, public debt in the PRC; Japan; the ROK; Singapore; and Taipei, China will be equivalent to 400 percent of GDP or (much) more. It will be over 600 percent, 900 percent, and 1,500 percent of GDP in the PRC, the ROK, and Japan, respectively. And its buildup will start soon: by 2040, it will have already reached 200 percent of GDP in the PRC, the ROK and Singapore, and over 600 percent in Japan.

Those numbers are multiples higher than the amount of public debt that savers will be willing and able to hold—on average for East Asia, some 150 percent of GDP by 2060. Even if those savers were to shun all private debt in favor of a public one, it would not be enough. What to do? Everything else equal, and short of a major rejuvenation through migration, the net benefit package that governments offer will need reform. In the long run, aging will make the current financial status quo unsustainable.

But everything does not need to stay equal. Technology may still save the day. A major breakthrough, say, in artificial intelligence or robotics could raise productivity well above the 1.5 percent per year assumed in our projections. That would deliver faster growth and help balance the books. But new technologies, say in genetics, could also raise life expectancy and drive the fiscal accounts deeper into the red, making public debt less sustainable sooner. So, the uncertainty works both ways. A much safer way is to start reforming tax and social security systems now, making net benefits more compatible with what can be realistically afforded.

5. WHAT NEXT? POLICIES TO KEEP ASIA'S DEBT SUSTAINABLE

As mentioned earlier, Asia's policy makers learned from the crisis of 1997. They put more discipline over private borrowing and over bank lending. They inserted more transparency in corporate finance—albeit not nearly enough. They kept a tight(er) leash on subnational debt. And, more fundamentally, they developed their domestic capital markets, which became the main and marginal source of fiscal financing. Not all countries progressed equally far or in all fronts—some still face the basic task of strengthening their public debt management capacity. But the direction is clear.

So, how to build on that progress? Two priorities. The first one is to bring debt management capacity up to standard where it is lacking. This is urgent, as financial conditions will tighten in the fiscal reckoning that will likely follow the pandemic. The second is to seek new financing instruments, for diversification of sources and for hedging of risk. Both priorities are discussed below.

5.1 Debt Management Capacity: A Tale of Three Asias

The Asian financial crisis of 1997 was not about government debt—it was about banks making bad loans in the wrong currency. But it highlighted the need to develop the region’s domestic bond markets. The task naturally fell on public debt management offices—they were after all the largest domestic issuer. Two decades on, they delivered. In most countries, those offices’ technical capacity was enlarged and enhanced. This could not have come at a better time: the volume of public and publicly guaranteed debt has since then risen fast, and has ballooned through the pandemic. What needs to be done now both to preserve Asia’s sound track record in public debt management and to navigate the new reality?

The answer calls for some categorization, as the region varies widely from a debt management perspective. Three distinctive groups of countries can be identified. First, those whose governments are primarily or exclusively financed by foreign *official* creditors and donors, with little domestic debt, and almost absent domestic bond markets. This includes most of the Pacific Island economies and other developing Asian economies such as Bhutan and Cambodia. For their public debt managers, the job remains one of selecting, recording, auditing, and reporting the best possible loans from their official lenders. But some may soon be facing a new assignment: negotiating the restructuring of their debts. Do they have the capacity? The evidence is patchy, and it comes mostly from assessments by the World Bank and regional auditing associations. While it points to recent progress, it also points to a need for support over the next couple of years.

At the other end is a second group of Asian countries whose public debt is entirely financed domestically—their capital markets are large, liquid, and deep. These are the likes of the PRC, India, Malaysia, Singapore, and Thailand. For them, the short-term priority is to manage refinancing and interest-rate risk. This, in turn, means monitoring and nurturing their domestic securities markets, where they can borrow with long tenors in local currency. Their technical capacity to do that is, in most cases, world-class.

Finally, there is the third and largest group of governments who fund themselves with a wide-ranging mix of official sources, domestic markets, and international capital markets. This is the practice in Armenia, Georgia, Indonesia, Pakistan, and the Philippines, among 24 others. Since they must be able to tap and trade off any of those markets at any time, their capacity is always stretched. By the information available, most of them have coped well. Issues of coordination and transparency remain, though—to be expected when several agencies are involved. The real test of their abilities will come soon, as many of their governments built up large debts during the COVID-19 crisis.

For all groups, the pandemic has jolted their strategies and stressed their operational systems. From changing the assumptions behind their annual borrowing plans to having their staff working from home, public debt offices have been put to the test—and the test is still unfolding. But what will happen after the dust settles? On which areas will Asian public debt managers have to focus? Five stand out. First, transparency. This is not an area where the region shines. Disclosing objectives, communicating regulations, and publishing debt stocks, composition and expected trends are crucial to keep markets stable. This will also help build better relationships with investors.

Second, fiscal risk. This involves exposures to contingent liabilities, disasters triggered by natural hazards, and commodity price volatility. They are rife across Asia. They weaken fiscal

frameworks and make financing more expensive. Responsibility over them is spread across government agencies, which makes the work of public debt offices all the more difficult. New tools exist to address the problem—like buying insurance against earthquakes or commodity price swings. But they are not common, partly because the necessary institutional capacity is yet to be developed.

Third, sovereign asset and liability management. Neither firms nor individuals make decisions about their debts without taking into account their assets. Governments, regrettably, do. And Asian governments are no exception. There are good reasons for that—calculating a complete balance sheet of the state is no easy task. But, at least for financial assets, it is possible. This would allow a better match of currencies, interest rates, liquidity, and cash flows coming from assets and liabilities. It would also improve the country's credit rating. The problem is mainly one of coordination among central banks (who hold reserves), sovereign wealth funds (bonds and stocks), ministries of finance (taxation), and state-owned enterprises (dividends). But, as Indonesia has shown, it is not an unsurmountable problem.

Fourth, thematic bonds. Over 3,000 of the world's largest asset managers have signed up to the United Nations-sponsored Principles of Responsible Investment. That means that they are committed to allocating a growing part of their portfolio to be consistent with and foster a public agenda of environmental protection, social progress, and good governance (ESG). At last count, that portfolio is worth some \$100 trillion. Not surprisingly, a growing number of borrowers—public and private—are issuing bonds with the promise to use the proceeds for ESG purposes. They do not get better financial conditions for the promise. But they expand their funding sources. By now, many corporations in Asia, as well as a growing number of governments, have tapped this market—with “green”, “blue”, “gender”, and “Islamic” bonds. This takes skills that not all public debt offices currently have.

Last, there is the long-haul task of building domestic capital markets. This is pending or just-started in the less-developed parts of Asia—13 of those countries have no domestic market at all. As explained earlier, the necessary building blocks are known and there is room for cross-country learning across public debt offices. The rewards will be big, as the region has high national saving rates, large infrastructure needs, and a healthy apprehension to borrowing in foreign currencies.

5.2 Fiscal Insurance: A New Tool of Fiscal Stability

A government's debt is as sustainable as its accounts. The cost of borrowing for the public sector—and the market price of sovereign bonds—hinges not only on the *size* but also on the *stability* of fiscal revenues and expenditures. The risk of, say, a natural disaster or the wrong turn in commodity prices is factored in credit ratings and spreads. That is why volatile deficits are more expensive to finance than stable ones. So, ministers of finance have an incentive to hedge risks. In advanced economies, they do. Countries like Australia, France, Japan, Spain, the US, and the United Kingdom have found ways to insure themselves, or the people and sectors they would otherwise have to help when shocks happen.

But why, in spite of recent successful experiences, is fiscal insurance not more common among emerging economies and developing countries? They, after all, have less financial capacity to deal with shocks. Their first response is usually to borrow more at higher cost. And, if that is not enough, they shift resources within their budgets toward the short-term emergency

and away from long-term projects—the adjustment variable is public investment. Either way, they end up with a heavier debt burden, less development, and more poverty. This is a bad position to be in, as global trends like climate change are making shocks more frequent and more severe.

In the developing world, only one country has made it a practice to buy insurance against its main fiscal risk. That country is Mexico which, since the early 1990s, has been hedging its oil income by purchasing put options—a smart move, for oil-related income has on average represented a third of its fiscal revenues. The cost has not been small, about 0.1 percent of GDP per year. But, when the options were exercised, the benefits were not small either—some 0.4 percent of GDP each time. The Mexican government has also built a sound system of fiscal insurance against disasters triggered by natural hazards, based primarily on the sale of catastrophe bonds, that is, debt whose proceeds are only accessed by the issuer, and do not have to be paid back, if a predefined crisis strikes.

For all its merits, the Mexican example was not followed until very recently and only by a limited number of countries. Their experiences have been equally positive and carry major lessons for the expansion of fiscal insurance. Take the case of the Philippines. It is extremely vulnerable to typhoons and earthquakes—just a single event in 2013 cost almost 5 percent of GDP in losses. Starting in 2016, the central and 25 provincial governments bought an insurance policy against typhoons. The policy was “parametric” (as opposed to “indemnity”); it was designed to pay out a fixed amount (not an indemnification for actual damages) if a disaster meeting certain parameters—like a storm’s speed or location—happened. The following year typhoon Vinta met those parameters, and the payout to the affected province (Davao del Sur) was four times the premium it had paid for the coverage. This created public support to expand and renew the policy to this day.

Other countries used a similar formula. Uruguay protected its fiscal accounts against droughts and spikes in oil prices. Since the vast majority of its electricity comes from hydropower, when rains fail it is forced to buy fuel abroad. Unable to pass the higher cost to consumers, the credit rating of the government was linked to the weather—perhaps the worst kind of risk. It has, since 2013, broken that link by buying insurance. Morocco (butane gas) and Tunisia (oil) have done the same. Several small island states in the Pacific (earthquakes, cyclones, tsunamis) have joined forces to pool risks and buy coverage together. So have 16 countries in the Caribbean (hurricanes).

But what made all these transactions possible? What was the innovation? In a nutshell, the fact that governments could buy the policy—whether in the form of a contract or a catastrophe bond—from a multilateral development bank (mostly the World Bank). The bank, in turn, sold a mirror policy to international investors, carrying no risk on its own balance sheet. The intermediation has helped overcome the two obstacles that had all but frozen this market. The first is on the demand side: governments are politically reluctant to buy insurance directly from a private financier, lest they be accused of corruptly “paying for nothing”. For them, it is politically easier to buy it from a developmental institution of which they are shareholders. Being nonprofit, those institutions pass the insurance at cost, for a nominal fee, effectively sharing their procurement capacity, their creditworthiness, and their market relationships (their “Rolodex”) with the country. This is no different from what development banks do with their loans except that, with insurance, the size of their capital is not a constraint. Moreover, as part of their mandate those banks are happy to form local capacity and share best practices. They

are also able to mobilize the best scientific expertise—defining and monitoring the parameters of an earthquake is no simple task.

The second obstacle is on the supply side: global investment houses are unwilling to engage in this type of operation with governments that may lack technical capacity, offer unclear legal and judicial frameworks, or have not previously signed master agreements that meet the standards of the International Swaps and Derivatives Association—that is, most developing countries. For them, the counterparty risk is too large when compared with a multilateral bank. A hint of that perception is in the fact that all intermediated transactions have been oversubscribed—in other words, private investors were crowded in.

The wedge between demand and supply points to the path forward. The scaling up of fiscal insurance may require a dedicated international agency. Isolated transactions carried out by multilateral banks as part of their existing mandates and staff envelopes may not suffice—beyond the initial demonstration effects. Instead, a new institution, focused on becoming the world's market maker for fiscal-risk instruments, may be called for. It could provide a one-stop, trade execution platform, from contracting geological experts to running offer books. It could distill and disseminate experiences and knowledge. It could offer capacity building. It could help countries articulate legal frameworks for risk management products. And it could become a source of transparency and standardization of documents. Put differently, the world has several international institutions that were created to protect investors, like the Multilateral Investment Guarantee Agency. It may be high time to create one that protects governments.

5.3 Thematic Bonds: A New Tool for Diversification of Fiscal Financing Sources

Suppose you are an investor looking to buy a bond. If you could choose between two bonds that are identical except for the fact that one credibly promises to use the proceeds for a good cause and the other one does not, which one would you choose? The answer is obvious. And it is the genesis of “thematic bonds”—securities in which the issuer commits to spending the funding on a certain “theme” or purpose. The idea was first pioneered by the World Bank back in 2006. At that time, the commitment was to use the funds to vaccinate 500 million children in 10 years. The “vaccine” bonds were thus born. They were so successful that, two years later, the same bank issued the first “green” bond to pay for climate-related projects.

Fast forward to today. Hundreds of private corporations and dozens of governments and multilaterals have issued thematic bonds—blue, gender, governance, green, Islamic, and social. The growth has been exponential, with over \$300 billion in issuances in 2019 alone. What gave momentum to the trend was the launching of the United Nations-sponsored “Principles of Responsible Investment” in 2006, calling for investors to keep ESG concerns in mind when buying and managing their investments. As mentioned earlier, more than 3,000 global asset managers have signed to those principles. They control a portfolio estimated at \$100 trillion dollars—about half the size of the world's capital market. They represent a giant opportunity for public debt offices to diversify their sources of finance, something that was valuable before the pandemic and will become priceless after it.

And yet, so far the vast majority of thematic bonds have been issued by private borrowers—commercial banks and corporations—multilateral institutions, and state-owned enterprises. Governments themselves, including in Asia, have been less enthusiastic. The first to tap this market was Poland (2017). By the end of 2020, 18 others had followed, four of which are from

Asia (Fiji; Indonesia; Hong Kong, China; and Thailand). What needs to change for more of them to adopt this type of financing?

The answer is in the incentives. Thematic bonds are not “cheaper” for the issuer, meaning, they do not necessarily command a better price, lower coupon, or longer maturity than plain bonds. This is because their credit rating still depends on ability to repay, not on how the proceeds are used. There are also extra costs, in time and money, associated with interministerial coordination, project identification, certification, monitoring, reporting, and evaluation. And, like in any new market, there are operational uncertainties. The “green” or “social” labeling of a bond is usually based on broad, voluntary guidelines from the International Capital Markets Association, but universally accepted standards do not exist. The Association of Southeast Asian Nations Capital Markets Forum, which brings together regulators from 10 Southeast Asian countries, launched its own green, social, and sustainability standards starting in 2017. And stock exchanges—London and Luxembourg—have put forward their own requirements for listing thematic bonds.

Similarly, there is no industry standard for the providers of external reviews (whether opinions, verifications, certification, or scorings) for the eligibility or impact of the projects that the bonds fund. The nature of those providers ranges widely, from nonprofit research institutions to global credit-rating agencies. With that much discretion still at play, it is not surprising to see no record of legal action against an issuer for defaulting on the promise of a thematic bond, as opposed to defaulting on its repayment.

But, beyond those teething problems, there are benefits. The first is the diversification of financing sources mentioned earlier. The second is reputational, especially for governments that are already committed to a certain cause (say, environmental protection) and want to signal that commitment. For example, France issued its first sovereign green bond in January 2017, after the signing of the Paris Climate Agreement. The third benefit is about budget stability for line ministries—the projects promised by the bonds are unlikely to see their funding cut during a fiscal crunch. And the fourth has to do with stability. There is evidence that buyers of thematic bonds tend to be buy-and-hold investors. This results in less price volatility, more long-term relationships, and easier rollovers.

Public debt managers are right to ponder those pros and cons. But time may be running short for them to decide their strategies. The community of buyers of thematic bonds is expanding fast and now includes central banks, corporations, foundations, and religious organizations, all looking for investments that can generate social or environmental impact alongside financial return. In the not-so-distant future, no asset manager may want to be on a “negative list” of those who do not care for or cater to ESG principles. Showing how funds are spent may then become a practice in most bond issuances. A 2020 survey by the World Bank asked those public debt managers what kind of questions they get from their investors. By far the most common inquiry is about their governments’ plans to issue thematic bonds—80 percent of prospective buyers ask about it.

6. CONCLUSION

Whether cut by public or private, foreign or domestic, in advanced or in developing economies, Asia’s debt seems large—in some cases extraordinarily so—but sustainable. Yes, the pandemic has worsened the burden—more borrowing, less GDP. Yes, poorer, isolated and

aid-dependent countries need help and need it soon. And, yes, shrinking fiscal space, contingent liabilities, and sticky subsidies are real and present dangers. But one gets a sense that this is not a debt problem that could not be solved by a return of economic growth to its past mean and a doable dose of fiscal consolidation. There is no sense of imminent explosion. The key word is “imminent”, as the irreversible and accelerating pace of aging will make public debt in East Asia impossible to carry in a couple of decades from now.

This leaves the region's policy makers with a mix of praise and homework. They deserve credit for their laser focus on growth, for creating enough confidence in their national currencies, and for developing their domestic capital markets. All that, which they learned from past crises, made debt much easier to carry. But their work is far from done. Reforms are needed to balance fiscal accounts in the medium term and make them more stable thereafter. They are also needed to bring more transparency to corporate borrowing and to rein in excessive lending to households. And many a social security system remains patently incompatible with demography. These reforms are not new. Some have been pending for years. COVID-19 has given them a new relevance. It would be an ironic silver lining if it took a global health crisis to get them done.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. The ratio of debt to GDP, or “debt burden”, as a proxy for debt sustainability and, more generally, for the fiscal health of the debtor has been questioned in recent literature. In the context of real interest rates that are close to zero, it has been argued that either the ratio of debt to the present value of GDP over an infinite horizon, or the ratio of interest payments to GDP, are better proxies. This book works with the traditional measure, for four reasons. First, real interest rates are *currently* close to zero only for public debt in advanced economies with no sovereign risk, but not elsewhere. In Asia, the phenomenon applies to Japan, to which a specific chapter is dedicated. Second, even in advanced economies, there is no certainty that real interest rates will remain close to zero in the future. The forces said to be pulling them down—increasing inequality, higher uncertainty, longer life expectancy, aging, changing corporate behaviors, technology-driven efficiency in the use of capital—are neither universal nor proven causes of the decline. Third, projecting GDP far into the future is fraught with uncertainty, especially in emerging and developing economies. And fourth, markets and credit-rating agencies still look at the ratio of debt to GDP to rate and price borrowing, a key input in the fiscal sustainability of most countries. For a leading proponent of the new proxies, see J. Furman and L. Summers (2020), *A Reconsideration of Fiscal Policy in the Era of Low Interest Rates*. Discussion Draft.
3. The 46 economies are grouped by subregions: Central Asia comprises Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. East Asia is made up of Hong Kong, China; Mongolia; the PRC; the ROK; Mongolia; and Taipei, China. South Asia includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka. Southeast Asia covers Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam. The Pacific includes the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia (FSM), Nauru, Niue, Palau, Papua New Guinea (PNG), Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.
4. Those 21 countries are Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Kyrgyz Republic, the Lao PDR, Maldives, the Marshall Islands, the FSM, Myanmar, Nepal, Pakistan, PNG, Samoa, Solomon Islands, Tajikistan, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

5. Note that part of the deterioration is due to methodological changes to reflect the impact of frequent disasters triggered by natural hazards which worsened risk ratings for several island economies in the Pacific.
6. The economies are the PRC; Hong Kong, China; India; Indonesia; Japan; the ROK; Malaysia; Singapore; and Thailand.
7. ADB (2019), *Meeting Asia's Infrastructure Needs*. Manila. Accessed at: <http://dx.doi.org/10.22617/FLS168388-2>.
8. The countries in question are Afghanistan, Armenia, Azerbaijan, Bangladesh, Bhutan, Cambodia, Fiji, Georgia, India, Indonesia, Kazakhstan, Kiribati, the Kyrgyz Republic, the Lao PDR, Malaysia, Maldives, the Marshall Islands, the FSM, Mongolia, Myanmar, Nauru, Nepal, Pakistan, PNG, the Philippines, the PRC, Samoa, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Tonga, Turkmenistan, Tuvalu, Uzbekistan, Vanuatu, and Viet Nam.
9. In this publication, data for Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.

PART I

A diagnosis of Asia's debt

1. Debt in Asia: anatomy, evolution, and prospects

Juan Pablo Paladino and Juan J. Pradelli¹

INTRODUCTION

This chapter presents an empirical overview of debt in Asia and analyzes recent trends and prospective sustainability, particularly in view of the coronavirus disease (COVID-19) pandemic and its aftermath. It focuses on three types of debt—public, private, and external liabilities—and the developing member economies of the Asian Development Bank (ADB), referred to as developing Asia. The availability of well-established debt databases compiled by international organizations and the institutional relevance of developing Asia for ADB explains why the chapter squarely gravitates toward these liabilities and economies.

In this chapter, public debt refers to financial liabilities of the general government, compiled following the Government Finance Statistics standards of the International Monetary Fund (IMF). Private debt includes financial obligations, particularly loans and debt securities due by households, nonfinancial corporations—both private firms and state-owned enterprises, and financial corporations. Private debt data are compiled from several sources—for example, local sources and Bank for International Settlements—which generally follow standards such as the United Nations National Accounts and the International Financial Statistics of the IMF. Finally, external debt covers financial obligations of public- and private-sector residents to nonresidents. While public and private debt are defined from the perspective of debtors assuming financial obligations (i.e., who owes), external debt is defined from the viewpoint of creditors holding financial claims (i.e., who owns).²

The chapter describes the current landscape of debt in developing Asia, focusing specifically on debt sustainability issues in the region.³ The group of Asian developing economies stands out among other regional blocs for its moderate level of public indebtedness—measured relative to gross domestic product (GDP)—although it has been on a rising trend since the aftermath of the global financial crisis in 2008, that is, even before the COVID-19 pandemic unfolded in early 2020. The external debt of Asian developing economies as a whole is also relatively low by global standards—a legacy of the policies adopted after the Asian financial crisis in 1997, which geared toward deleveraging, development of domestic government debt markets, and self-insurance via accumulation of international reserves. On the other hand, the level of private indebtedness of developing Asia, relative to GDP, is among the highest among economic blocs worldwide, and has been growing at a fast pace in the recent past even before the COVID-19 pandemic, mainly driven by the leveraging of nonfinancial corporations in the People's Republic of China (PRC).

The chapter also analyzes the specific debt situation and prospects for the individual developing Asian economies. In fact, heterogeneity across these economies, in terms of level of development, economic size, production structure, government policies, and other salient features, makes it challenging to formulate empirical and analytical generalizations for all of them. Nevertheless, stylized facts and patterns are identifiable among subgroups of developing Asian economies concerning the level, structure, and trends of their respective debts.

The debt outlook for developing Asian economies recognizes the economic and fiscal impact of the COVID-19 pandemic, whose consequences are expected to continue over the medium term, while its definitive resolution is still a policy challenge at the time of this writing. Given the uncertainty of the path of economic recovery and the reversal of policy responses adopted to cope with the pandemic in 2020, the chapter assesses the outlook for public debt over the medium term on the basis of illustrative debt-dynamic simulations.

Section 1 describes the anatomy and evolution of debt in developing Asia, highlighting recent trends and comparing the region with other major economic blocs worldwide. Section 2 analyzes the debt of individual developing Asian economies and assesses vulnerabilities related to solvency and liquidity. Section 3 focuses on the impact of the COVID-19 pandemic on fiscal and debt outcomes in 2020–2021, including the efforts undertaken to mitigate the economic effects triggered by the health crisis. Finally, section 4 explores medium-term prospects for debt of these economies, with emphasis on public and external indebtedness in the aftermath of the COVID-19 pandemic, under a few illustrative scenarios.

1. DEVELOPING ASIA'S DEBT FROM A GLOBAL PERSPECTIVE

Global indebtedness threatens to reach record high levels. For the world as a whole, public debt is approaching 100 percent of global GDP and the private debt nears \$200 trillion, according to the IMF World Economic Outlook (WEO) and Institute of International Finance Debt Database (IIFDD) data.⁴ Against this background, this section documents that by and large, developing Asia managed to maintain relatively safe levels of public and external debt, mainly due to strong economic growth, prudent fiscal policy, and cautious external public borrowing. However, a rising trend for public debt commenced in the aftermath of the global financial crisis and accelerated during the COVID-19 pandemic in 2020. Some economies, notably in South Asia, already exhibited high levels of public debt as early as in the mid-2000s. As far as private debt is concerned, soon after the global financial crisis a handful of these economies built up a heavy burden of nonfinancial corporate debt, which is now among the highest worldwide.

1.1 Public Debt

Currently, developing Asian economies contribute more to the global economy than what they add to the world's total public debt. In 2020, developing Asia accounted for about 18 percent of government liabilities worldwide, while it generated 29 percent of the global output, when using GDP in current dollars to measure a country's output valued at domestic prices.⁵ Public debt of developing Asia amounted to \$14.6 trillion in 2020, while the world's was \$82.1 trillion, of which two-thirds corresponded to the United States (US) (\$27.3 trillion), Japan (\$13.1

trillion), and the euro area (\$13.2 trillion) (see Figure 1.1). Among the group of developing Asian economies, the three largest economies in terms of output and population accounted for almost 80 percent of government liabilities: the PRC (\$9.0 trillion), India (\$2.2 trillion), and Indonesia (\$0.4 trillion).

The level of public debt relative to the economic size of developing Asia appears moderate compared with other regions. In 2020, the public debt-to-GDP ratio of developing Asia stood at 60 percent, well below the ratios for the world as a whole (98 percent) or advanced economies (129 percent), and close to the average of emerging economies (59 percent) (see Figure 1.2). From a regional perspective, public debt is the highest in South Asia compared with other geographic groups defined by ADB, and this has been so for several years (see Figures 1.2 and 1.3). As discussed in the next section, Bhutan, Maldives, Sri Lanka, India, and Pakistan currently exhibit government liabilities well above 70 percent of GDP.⁶

Developing Asia managed to preserve a moderate level of public indebtedness throughout the last 15 years, until the COVID-19 pandemic unfolded in 2020 (see Figure 1.3). The public debt-to-GDP ratio of developing Asia was 39 percent back in 2005 and grew by 13 percentage points by 2019. This mild increase is in stark contrast with the jump of 30 percentage points in the public debt ratio of advanced economies during the same period, and closer to the 9-percentage-point variation of other emerging economies. Heterogeneity within developing Asia should not be overlooked. Public debt grew in East Asia (24 percentage points) and Central Asia (12 percentage points), whose debt ratios almost doubled between 2005 and 2019. In contrast, the debt ratios changed little in the Pacific (5 percentage points), Southeast Asia (–2 percentage points), and South Asia (–6 percentage points).

For the group of Asian developing economies as a whole, the overall stability of their government liabilities relative to GDP, at least until 2019, primarily relates to sustained, high rates of economic growth. The real GDP of developing Asia expanded at an average rate of 6.8 percent per year between 2005 and 2019, nearly five times the growth rate of 1.6 percent achieved by advanced economies, and twice the 3.2 percent growth achieved by other emerging economies. In addition, as a group, governments in developing Asia tended to run more prudent fiscal policies, and borrow less, in normal times. Developing Asia even adopted a less expansionary stance when coping with the global financial crisis in 2008, while advanced economies largely resorted to public debt for financing fiscal responses, corporate and bank bailouts, and other interventions.⁷ Thus, between 2007 and 2019, the general government fiscal deficit of developing Asia averaged 2.2 percent of GDP per year, about half the deficit of 4.1 percent of GDP run by advanced economies and similar to the 2.3 percent deficit in other emerging economies.

More recently, the dynamics of government indebtedness in developing Asia looks less reassuring. Two trends have built up vulnerabilities even before the COVID-19 pandemic. First, the real GDP growth of developing Asia, albeit still high for global standards, has significantly decelerated, falling from an average annual rate of 8 percent in 2007–2011 at the height of the global financial crisis, to 6.3 percent in 2012–2015, and further to 5.8 percent in 2016–2019 (see Table 1.1). Growth deceleration is actually a common pattern across all geographic groups, and rather visible in the PRC and India.⁸ Second, since the mid-2010s, the governments of Asian developing economies have run more expansionary fiscal policies than they were used to. Between 2016 and 2019, the general government fiscal deficit of developing Asia averaged 3.8 percent of GDP per year, more than doubling the deficit of 1.6 percent

of GDP achieved from 2007 to 2015 (see Table 1.1).⁹ Deteriorating fiscal balances are also a common pattern across the geographic groups, with the sole exception of South Asia whose deficits have been high for regional standards and only marginally reduced in recent years.¹⁰

1.2 Private Debt

While developing Asian economies make a modest contribution to the world's total public debt, they account for nearly one-quarter of the global private debt. The private debt of these economies totaled \$50.9 trillion in 2020, equivalent to 26 percent of the world's (\$197.2 trillion), similar to the US (\$52 trillion), and significantly higher than the euro area (\$38.6 trillion) and Japan (\$18 trillion) (see Figure 1.1). Private debt is heavily concentrated in a small group of large economies: the PRC (\$38.3 trillion); the Republic of Korea (ROK) (\$4.8 trillion); India (\$1.7 trillion); and Hong Kong, China (\$1.8 trillion); jointly, they account for more than 90 percent of the private debt of the developing Asia group.¹¹

Private debt of developing Asia peaked at 231 percent of GDP in 2020, not far from the ratio of the world as a whole (253 percent) (see Figure 1.2). From a regional perspective, East Asia ranks first in terms of private indebtedness (see Figures 1.2 and 1.3). Excluding liabilities owed by financial corporations, which are typically highly leveraged entities, and considering only household and nonfinancial corporate debt, developing Asia accounts for an even higher share—nearly one-third of the global private debt. Actually, the household and nonfinancial corporate debts of developing Asia relative to GDP (185 percent) are among the highest worldwide—comparable to the indebtedness of Japan (187 percent) and the euro area (175 percent). As discussed in the next section, the highest private debt ratios correspond to either large economies such as the PRC (226 percent) and the ROK (211 percent), or regional financial centers such as Hong Kong, China (350 percent) and Singapore (197 percent) (see Figure 1.4).

Private liabilities in Asian developing economies are owed by firms to a large extent. Nonfinancial corporations rely particularly on debt financing compared with other regional blocs. Relative to the economic size of the group of developing Asian economies, the liabilities of these firms are also the highest in the world, amounting to 132 percent of GDP in 2020 (Chapter 7).¹² On the other hand, developing Asia households are relatively less leveraged than in other regions, and their financial obligations stood at only 53 percent of GDP in 2020 (Chapter 8).

Private debt across developing Asia is not only elevated in the present, it was also built up rather rapidly until 2016. Firms, particularly PRC private and state-owned enterprises borrowing from banks, drove corporate indebtedness; and total private liabilities actually expanded much faster than GDP, which was itself growing at a high speed (Chapter 3).¹³ During 2007–2016, the private debt-to-GDP ratio of developing Asia jumped from 136 percent to 199 percent—an increase of 63 percentage points unmatched by any other regional bloc (see Figure 1.3).¹⁴ Nonfinancial corporations and households fully explained the rise of the private debt ratio, and contributed 47 percentage points and 16 percentage points, respectively (see Figure 1.4). In contrast, private debt from 2016 to 2019 has been stable worldwide as well as in the group of developing Asian economies.¹⁵

The level and dynamics of household and corporate indebtedness in the Asian developing economies also present vulnerabilities. First, the real GDP growth of developing Asia is

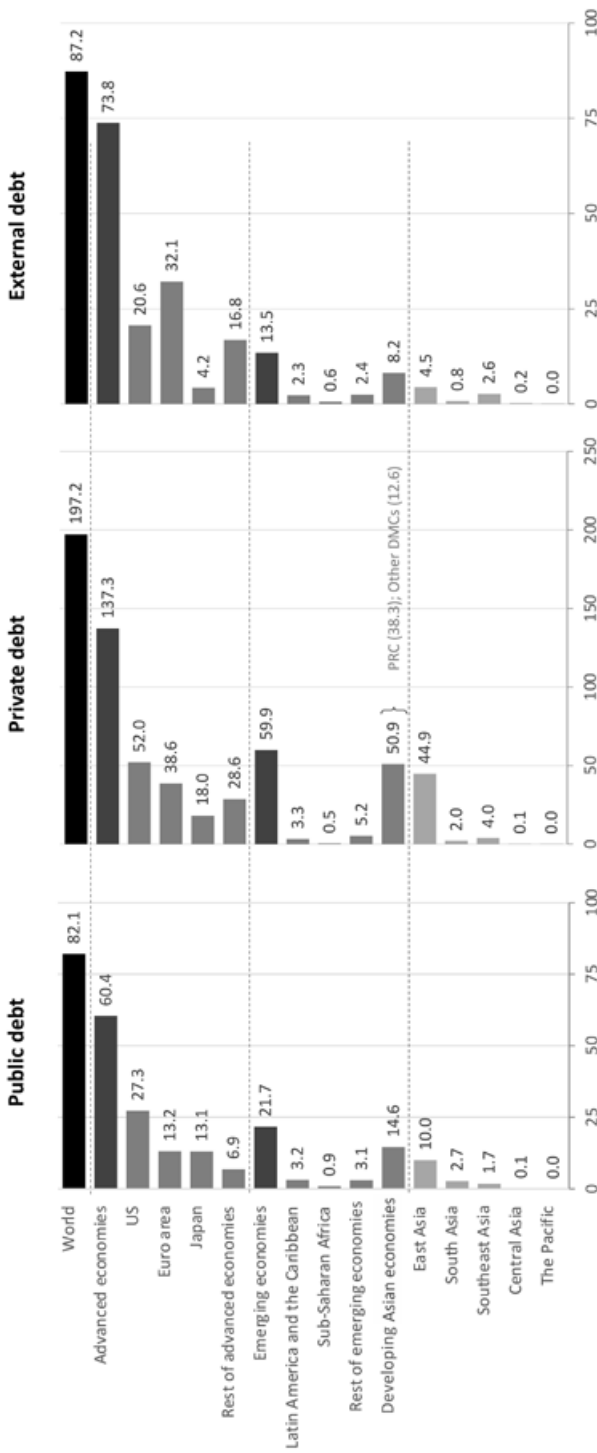
decelerating, as indicated earlier, and thus the incomes of debtor firms and households may no longer expand as fast as they used to. Second, the private debt of developing Asia may have financed investment expenditures that are increasingly less efficient, including housing construction and the acquisition of machinery and equipment by relatively inefficient firms. In this regard, a decreasing level of investment efficiency in some Asian economies, crudely measured by the incremental capital–output ratio, may also reduce debtors’ repayment capacity. As a group, developing Asian economies have maintained high investment-to-GDP ratios for world standards, with annual ratios in the range of 37 percent to 40 percent between 2007 and 2019 (see Table 1.1). However, their gains in output growth narrowed significantly, with the average annual incremental capital–output ratio rising from 4.6 in 2007–2011 to around 6 in 2012–2019.¹⁶

1.3 External Debt

Asian developing economies contribute more to the global output than to the world’s external debt. The external debt of developing Asia amounted to just \$8.2 trillion in 2019—less than 10 percent of the world’s (\$87.2 trillion) (see Figure 1.1). The PRC (\$2.1 trillion); Hong Kong, China (\$1.7 trillion); and Singapore (\$1.6 trillion) account for two-thirds of the foreign liabilities of the developing Asia group. Notably, the high volume of foreign liabilities in Singapore and Hong Kong, China results from their role as regional financial centers.

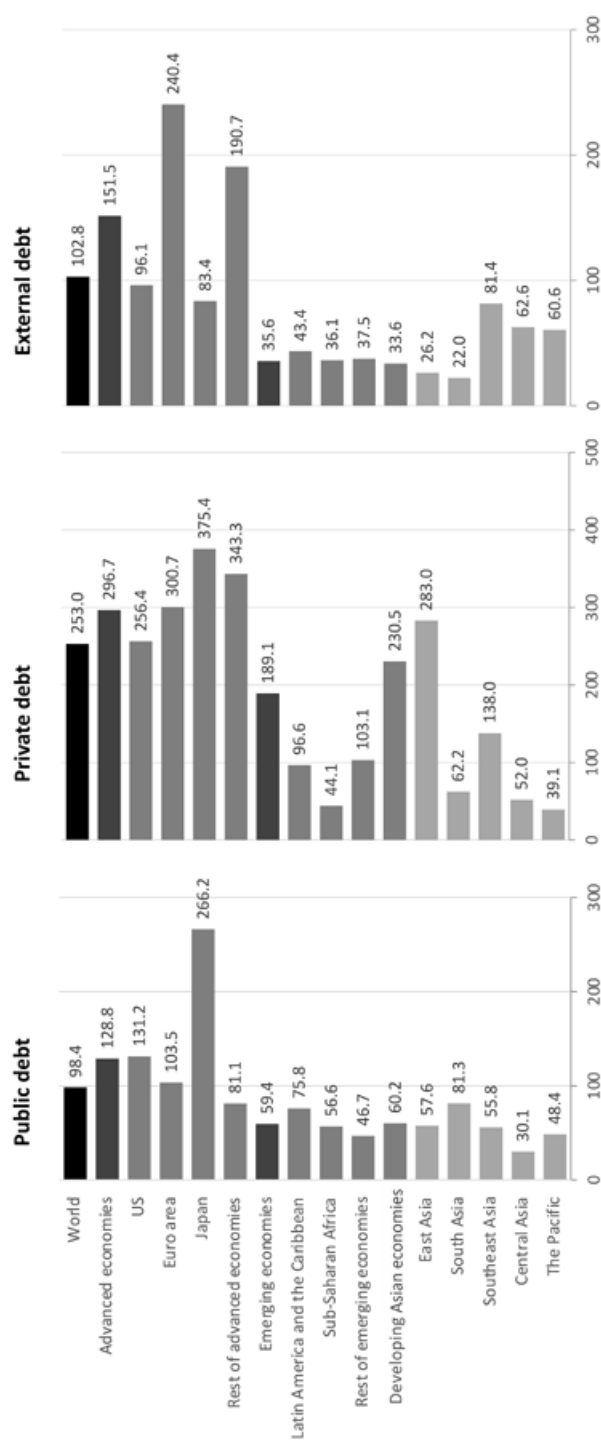
Relative to GDP, the foreign liabilities of developing Asia are among the lowest worldwide (see Figure 1.2). As developing Asian economies are rather open to international trade, and a significant share of their domestic output is exported, the external debt relative to their exports is also low by global standards. Excluding the regional financial centers, external debt is particularly salient in Central Asia, and protractedly so (see Figures 1.2 and 1.3), with a significant share owed by private-sector financial and nonfinancial corporations.¹⁷ As discussed in the next section, foreign liabilities exceed 70 percent of GDP in Mongolia, Bhutan, the Kyrgyz Republic, Georgia, Armenia, the Lao People’s Democratic Republic (Lao PDR), Kazakhstan, Papua New Guinea, Tajikistan, Sri Lanka, and Maldives.

Notably, the external debt ratio of Asian developing economies as a group has been fairly low and stable for at least the last 15 years (see Figure 1.3). Developing Asia emerged from the Asian financial crisis in 1997 with a more prudent approach to foreign borrowing—both public and private—which resulted in significant deleveraging (Chapter 7). For a group of large developing Asian economies for which data are available, the governments reduced the share of external liabilities in total public debt from 45 percent in 1995 to 10 percent by 2008, and further to about 5 percent in the present. The mirror image of reduced borrowing abroad in foreign currency was an increased domestic financing in local currency, supported by efforts to develop markets for public debt (Chapter 14).¹⁸ In addition, the governments sought to build up international reserves to provide self-insurance against external shocks and capital-flow volatility. For the same group of major developing Asian economies, the international reserves rose from 10 percent of GDP in 1995 to 40 percent by 2008, and declined to around 20 percent currently.¹⁹



Notes:
PRC = People's Republic of China; US = United States.
Public and private debt data refer to 2020, and external debt data to 2019. Advanced economies and emerging economies broadly correspond to the IMF WEO classification. Advanced economies include the US, the euro area, Japan, and the rest of advanced economies, excluding Singapore; the Republic of Korea; Taipei, China; and Hong Kong, China. Emerging economies refer to all non-advanced economies, often characterized as emerging and developing economies. Emerging economies are grouped as developing Asia, Latin America and the Caribbean, sub-Saharan Africa, and the rest of emerging economies. Public and external debt reported for 44 developing economies in Asia, and private debt for 21 developing economies in Asia.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.1 Public, private and external debt of developing Asia and the world (\$ trillion)



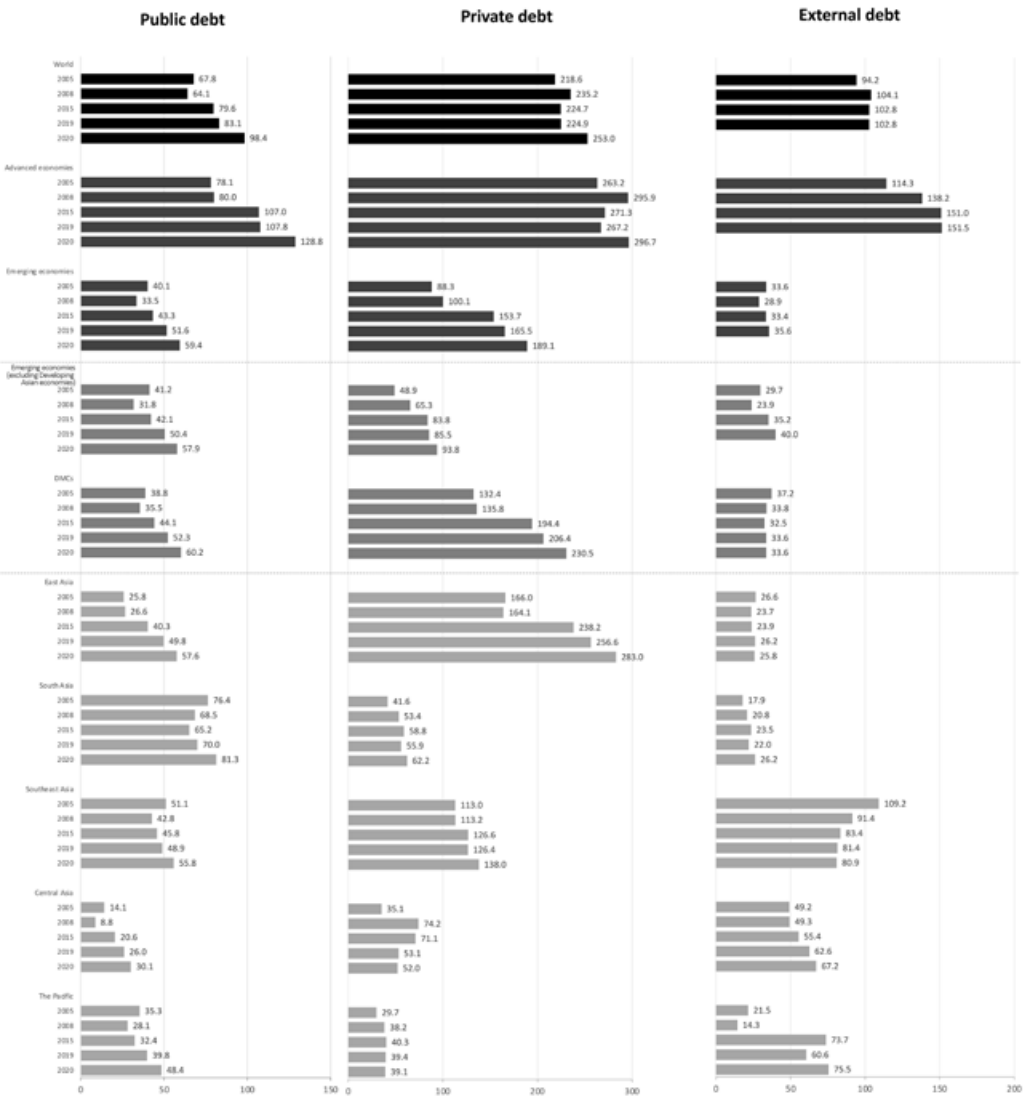
Notes:

GDP = gross domestic product; PRC = People's Republic of China; US = United States.

Public and private debt data refer to 2019, and external debt data to 2020. Regional debt ratio computed as an average of economies' ratios, weighted using GDP in current dollars. Advanced economies and emerging economies broadly correspond to the IMF WEO classification. Advanced economies include the US, the euro area, Japan, and the rest of advanced economies—excluding Singapore; the Republic of Korea; Taipei, China; and Hong Kong. China. Emerging economies refer to all non-advanced economies—often characterized as emerging and developing economies. Emerging economies are grouped as developing Asian economies, Latin America and the Caribbean, sub-Saharan Africa, and the rest of emerging economies. Public and external debt reported for 44 developing Asian economies, and private debt for 21 developing Asian economies.

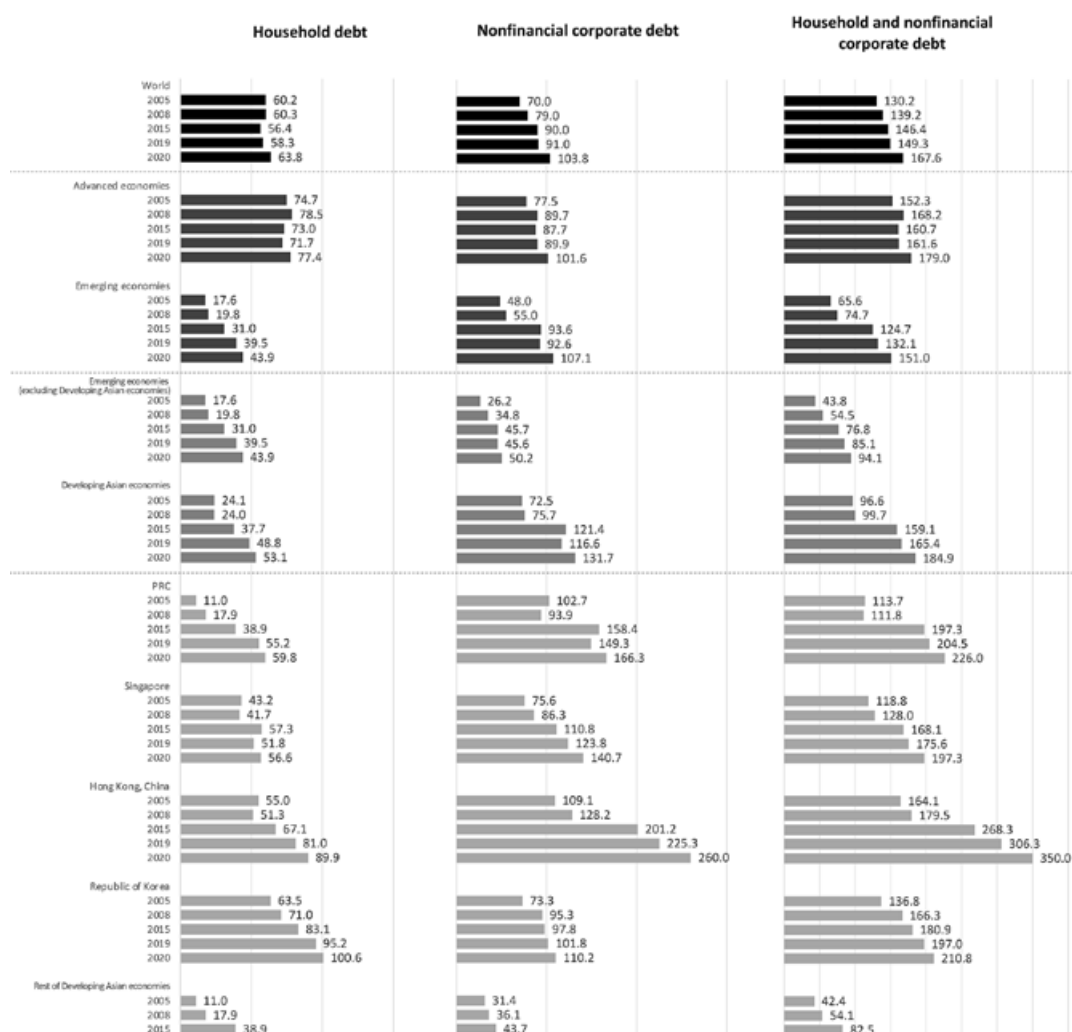
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.2 *Public, private and external debt of developing Asia and the world (% of GDP)*



Notes:
GDP = gross domestic product.
Regional debt ratio computed as an average of economies' ratios, weighted using GDP in current dollars. Advanced economies and emerging economies broadly correspond to the IMF WEO classification. Advanced economies exclude Singapore; the Republic of Korea; Taipei, China; and Hong Kong, China. Emerging economies refer to all non-advanced economies—often characterized as emerging and developing economies. Public and external debt reported for 44 developing economies in Asia, and private debt for 21 developing economies in Asia.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.3 Evolution of public, private, and external debt of developing Asia and the world since the mid-2000s (% of GDP)



Notes:

GDP = gross domestic product; PRC = People's Republic of China.

Regional debt ratio computed as an average of economies' ratios, weighted using GDP in current dollars. Advanced economies and emerging economies broadly correspond to the IMF WEO classification. Advanced economies exclude Singapore; the Republic of Korea; Taipei, China; and Hong Kong, China. Emerging economies refer to all non-advanced economies—often characterized as emerging and developing economies. Private debt reported for 14 developing economies in Asia.

Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.4 *Evolution of household and nonfinancial corporate debt of developing Asia and the world since the mid-2000s (% of GDP)*

Table 1.1 *Macroeconomic performance of developing Asia, 2007–2019*

	Annual Average	Developing Asia	South Asia	Central Asia	Southeast Asia	The Pacific	East Asia	PRC	East Asia (excluding the PRC)
Real GDP	2007–2011	8.0	7.3	7.0	5.3	3.9	8.9	10.7	4.0
growth rate	2012–2015	6.3	6.4	5.1	5.1	6.5	6.6	7.5	2.8
(%)	2016–2019	5.8	6.2	4.0	4.9	2.9	6.0	6.7	2.6
Fiscal	2007–2011	–1.4	–7.4	3.6	–0.6	0.8	–0.2	–0.4	0.3
balance	2012–2015	–1.8	–6.8	1.3	–1.0	–3.6	–1.0	–1.2	0.0
(% of GDP)	2016–2019	–3.8	–6.6	–0.7	–1.2	–2.7	–3.7	–4.6	1.0
Gross	2007–2011	37.0	34.3	25.9	27.3	21.4	40.6	44.5	29.0
capital	2012–2015	38.3	32.3	25.6	28.8	21.1	42.0	45.2	27.5
formation	2016–2019	37.1	29.4	26.7	28.4	20.2	40.7	43.2	27.8
(% of GDP)									
Gross	2007–2012	41.0	31.9	29.7	32.2	1.4	46.0	50.4	33.4
national	2012–2015	40.5	30.4	27.4	31.0	13.8	45.0	47.5	34.0
savings	2016–2019	38.6	27.7	24.5	30.9	10.6	42.7	44.4	34.6
(% of GDP)									
Current	2007–2011	4.0	–2.4	4.1	5.6	–9.3	5.4	5.9	4.2
account	2012–2015	2.2	–1.9	1.0	2.5	–5.9	3.0	2.3	6.2
(% of GDP)	2016–2019	1.5	–1.6	–2.4	2.7	17.4	2.0	1.1	6.4

Notes:

GDP = gross domestic product; PRC = People's Republic of China.

Developing Asia refers to groups of developing economies in Asia, depending on data availability. Regional figures computed as an average of economies' values, weighted using GDP in current dollars. Real GDP growth rate, fiscal balance, and current account reported for 44 economies; gross capital formation for 34 economies; and gross national savings for 30 economies.

Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

2. DEBT VULNERABILITIES OF DEVELOPING ASIA

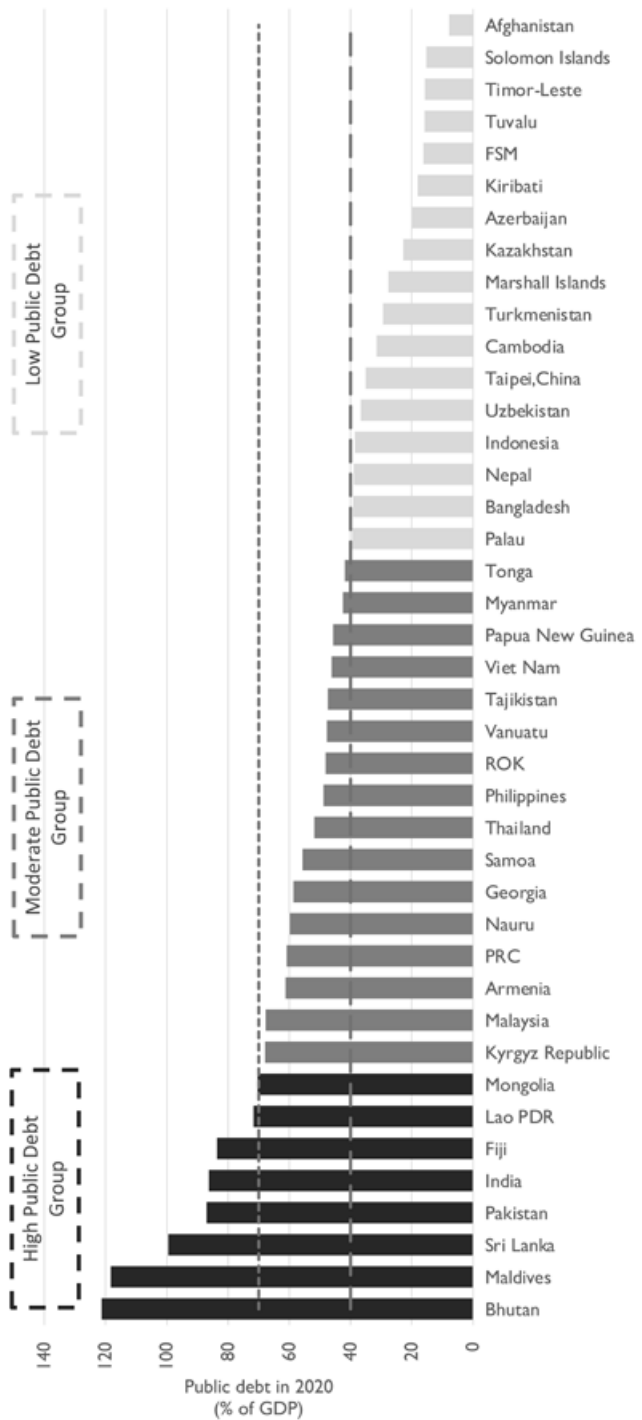
Developing Asian economies are very heterogeneous in relation to their current levels of public, external and private debt, and their associated vulnerabilities. Key vulnerabilities refer to (1) the current size of *debt stocks* and *gross financing needs*—often related to the notions of solvency and liquidity, respectively; (2) the *debt structure*, which creates exposure to risks (e.g., exchange-rate, interest-rate, and rollover risk); and (3) the *debt dynamics*, related to both the past trend and prospective outlook for debt stocks. This section explores the debt levels of developing Asia and identifies a number of economies that exhibit debt vulnerabilities in relation to solvency and liquidity. In general terms, developing Asian economies with severe public debt vulnerabilities are concentrated in South Asia, those with elevated private debt are located in East Asia, and economies with significant external debt vulnerabilities are found in Central Asia.

2.1 Public Debt

Public debt vulnerabilities may emerge from the performance of the economy and the government's policies. The government's own repayment capacity and opportunities to smoothly secure borrowed funds, including rollovers, will depend on the actual performance of the economy, as well as on the prospective growth and policy outlook perceived by creditors, investors, and policy makers. Fiscal policies and debt management also matter, and largely impact on vulnerabilities related to solvency, liquidity, and risk exposure. A government's capacity to undertake expansionary fiscal stimulus and fund attendant deficits while preserving sustainable levels of debt is referred to as "fiscal space" (Chapter 10). Alongside, a government's ability to modify the public debt structure and access a variety of sources of financing is referred to as "debt management capacity" (Chapter 14).

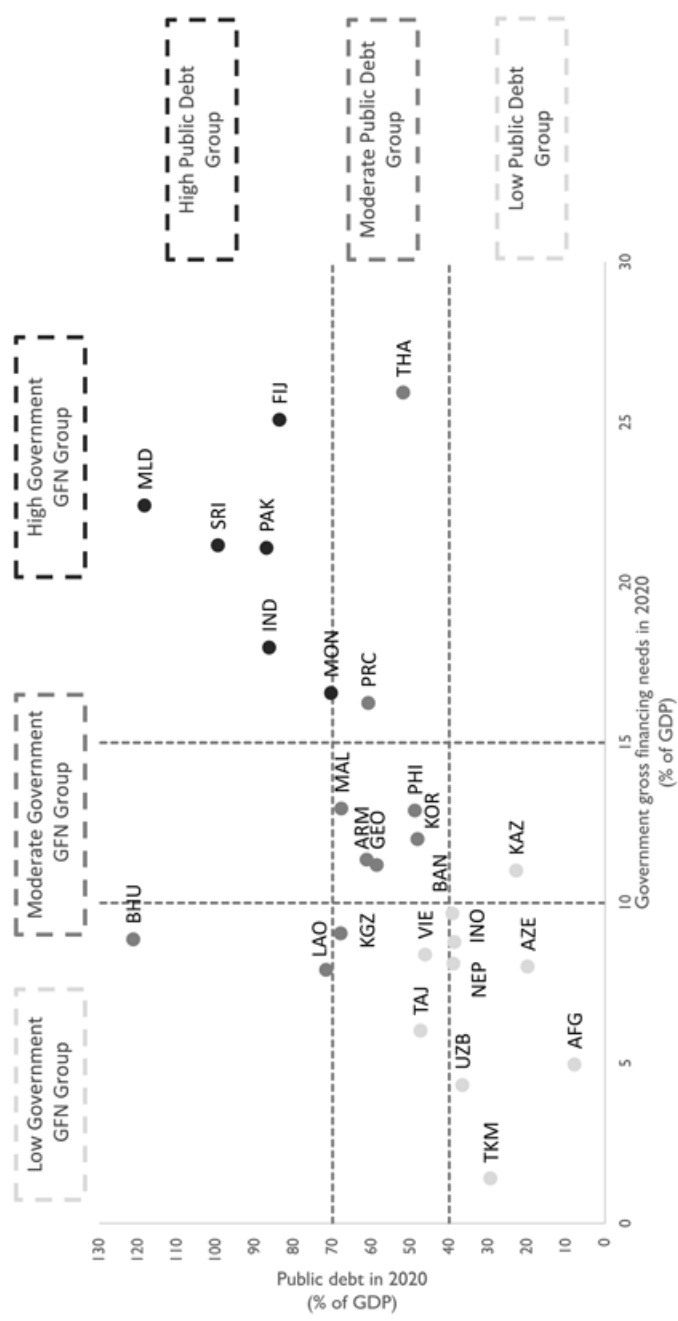
Developing Asian economies exhibiting high levels of government debt are vulnerable in relation to their solvency.²⁰ The public debt-to-GDP ratio indicates the government's debt burden relative to its repayment capacity, proxied by the size of the economy and measured with the nominal GDP. A public debt ratio above 70 percent signals a level of (solvency-related) debt vulnerability that often calls for stricter monitoring by international organizations, while a ratio below 40 percent indicates a relatively safer level of government liabilities (see Figure 1.5).²¹ A few economies exhibit high public debt ratios, signaling solvency-related vulnerabilities. Bhutan, Maldives, Sri Lanka, India, Pakistan, Fiji, the Lao PDR, and Mongolia exhibit public debt ratios above 70 percent, thus being in a vulnerable position in terms of the size of the government debt. Besides, 16 economies have ratios between 40 percent and 70 percent, and 17 economies have ratios below 40 percent. Economies whose public debt ratio is below—although close to—the 70 percent level are the Kyrgyz Republic, Malaysia, the PRC, and Armenia.

Highly indebted developing Asian economies also face significant government gross financing needs (GFN), which make them vulnerable to liquidity risk, with the exception of Bhutan and the Lao PDR.²² The government GFN-to-GDP ratio proxies the government's borrowing requirements relative to its repayment capacity. High public debt levels tend to build up significant interest burdens, which constitute an important driver of annual fiscal deficits and attendant government GFN. Concessionality of foreign loans, however, reduces the interest burden as well as rollover risks for any given level of debt. A government GFN ratio above 15 percent signals a level of (liquidity-related) debt vulnerability that also calls for closer monitoring, while a ratio below 10 percent is a relatively safer level of borrowing requirements (see Figure 1.6).²³ Maldives, Sri Lanka, India, Pakistan, Fiji, and Mongolia face government GFN ratios above 15 percent, and hence both their debt stocks and borrowing-requirement flows are relatively high among developing Asian economies. Thanks to long-term financing of projects with moderate debt-service obligations, the government GFN for Bhutan and the Lao PDR are below 10 percent of GDP. Among those economies whose public debt ratio is below—although close to—the 70 percent level, only the PRC also exhibits a government GFN ratio above 15 percent, while the Kyrgyz Republic, Malaysia, and Armenia face lower GFN. Thailand has a high government GFN despite its moderate public debt ratio. Overall, 8 developing Asian economies have ratios above 15 percent, 6 economies have ratios between 10 percent and 15 percent, and 12 economies have ratios below 10 percent.



Notes:
FSM = Federated States of Micronesia; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; ROK = Republic of Korea; PRC = People's Republic of China.
Few developing economies in Asia exhibit high public debt ratios, signaling solvency-related vulnerabilities.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.5 Public debt of developing Asia (% of GDP)



Notes:
GDP = gross domestic product; GFN = gross financing needs.
Most highly indebted developing economies in Asia also have high government financing needs and liquidity-related vulnerabilities.
Data for Afghanistan were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.6 Government gross financing needs of developing Asia (% of GDP)

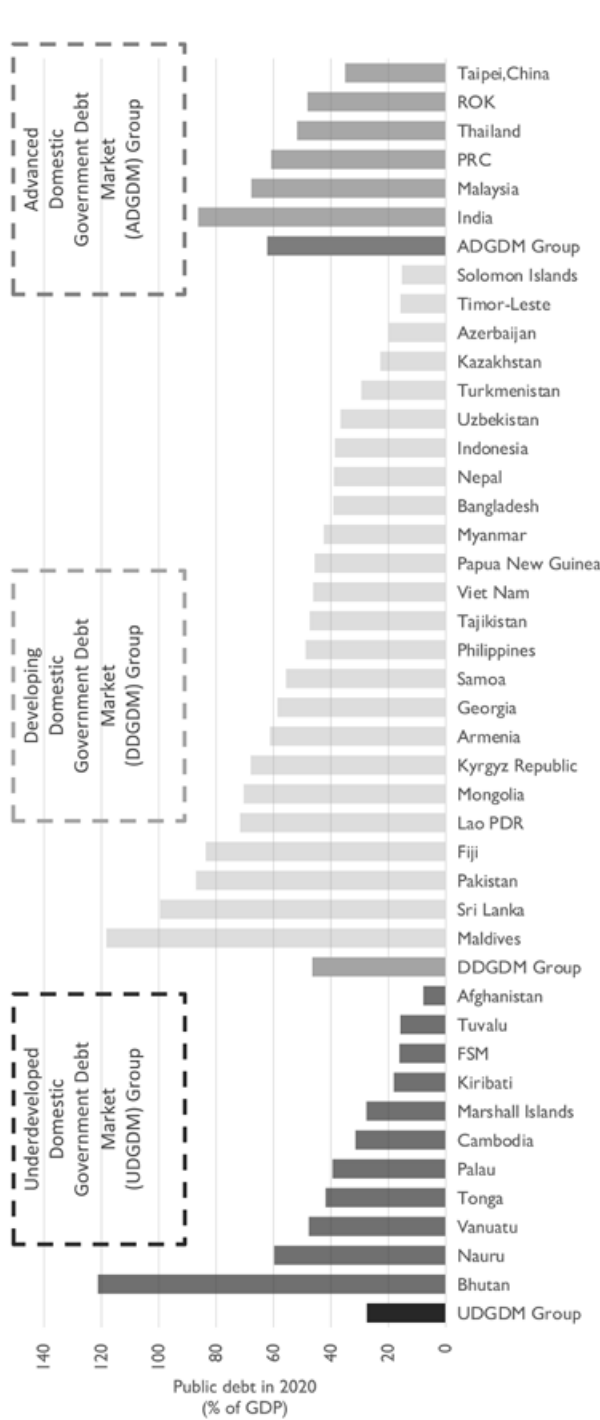
A government's debt management capacity can mitigate, or amplify, the vulnerabilities associated with the public debt. Three groups of developing Asian economies can be identified according to their debt management capacity, as proposed in Chapter 14. In one cluster named Underdeveloped Domestic Government Debt Market group, comprising mainly the Pacific and a few other economies, the governments largely rely on official, external sources of financing and have very limited domestic debt—notably, domestic markets for government debt are underdeveloped and constrain the debt management capacity. In another set named Advanced Domestic Government Debt Market group, which includes long-standing emerging markets like the PRC, India, Malaysia, and Thailand, the governments mainly borrow from domestic sources and have significant domestic debt—notably, local markets for government debt are well developed and widen the debt management capacity. The third cluster, named Developing Domestic Government Debt Market group, includes the remaining economies that lie in-between the other two groups, and whose governments combine different sources of financing—while the domestic market for government debt ranges from nascent to mature.

Highly indebted developing Asian economies do not have strong debt management capacity, except India (Figure 1.7). Bhutan belongs to the Underdeveloped Domestic Government Debt Market group, and its public debt relates to the financing of hydropower projects undertaken in close cooperation with India, a factor that largely mitigates the solvency-related vulnerability suggested by its high level of government debt. India itself is the only case among the highly indebted economies that belongs to the Advanced Domestic Government Debt Market group and thus benefits from wider debt management capacity and access to domestic financing—a factor that mitigates its own solvency-related vulnerability. On the other hand, Maldives, Sri Lanka, Pakistan, Fiji, the Lao PDR, and Mongolia belong to the Developing Domestic Government Debt Market group and have limited debt management capacity and opportunities for domestic borrowing, which does not bode well in view of their vulnerabilities. For economies whose public debt ratio is below—although close to—the 70 percent level, the Kyrgyz Republic and Armenia are included in the Developing Domestic Government Debt Market group, while Malaysia and the PRC are in the Advanced Domestic Government Debt Market group.

2.2 Private Debt

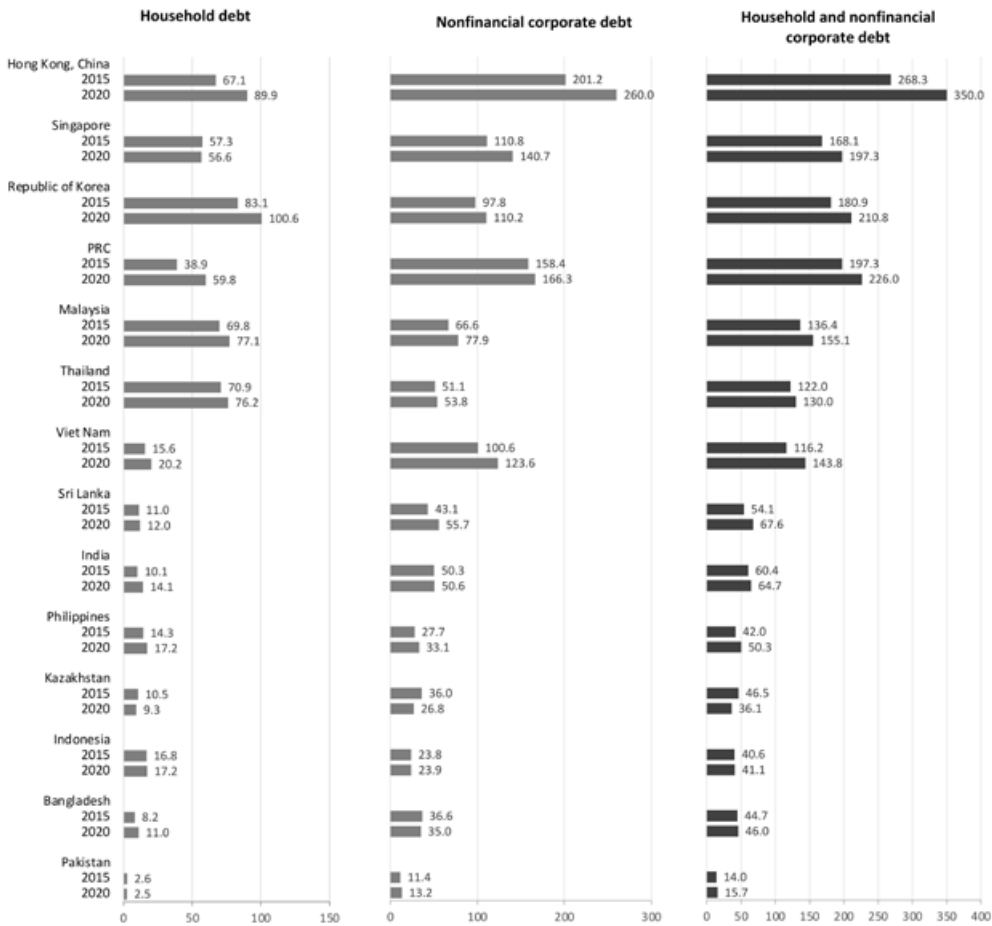
A few developing Asian economies have significant levels of private debt, either due to financial centers' leverage (e.g., Singapore and Hong Kong, China) or indebtedness by households (the ROK) or firms (the PRC) (Figure 1.8).²⁴ Private-sector liabilities are the highest in Hong Kong, China, where private debt is above 500 percent of GDP; and in Singapore, whose private debt ratio nears 400 percent. Both being important regional financial centers, significant indebtedness by corporations takes place, and is recorded within their jurisdictions disproportionately to their small economic size in terms of output and population. The ROK and the PRC exhibit private debt ratios around 300 percent. Among these economies, households in the ROK are the most indebted, with their liabilities reaching 100 percent of GDP. The PRC's nonfinancial corporations (especially state-owned enterprises) are also highly leveraged, with debts exceeding 150 percent of GDP.

Private debt ratios in developing Asia as a whole grew rapidly from 2007 to 2016, thus building up financial fragility. Household and nonfinancial corporate debts jumped from 100 percent of GDP to nearly 155 percent of GDP in just a decade, and another increase by 15 percentage points



Notes: ADGDM = Advanced Domestic Government Debt Market group; DDGDM = Developing Domestic Government Debt Market group; FSM = Federated States of Micronesia; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; ROK = Republic of Korea; PRC = People's Republic of China; UDGDM = Underdeveloped Domestic Government Debt Market group.
Most highly indebted developing economies in Asia do not have strong debt management capacity and developed domestic debt markets.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.7 Public debt of developing Asia by debt management capacity groups (% of GDP)



Notes:
GDP = gross domestic product; PRC = People’s Republic of China.
High private debt ratios observed in regional financial centers, the PRC, and the Republic of Korea.
Source: Authors’ own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.8 Private debt of selected developing Asian economies (% of GDP)

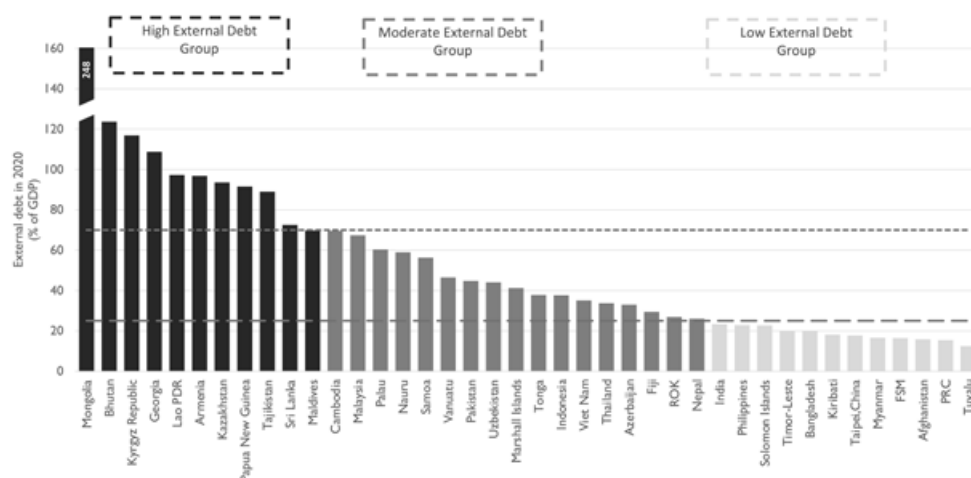
occurred from 2016 to 2020. The private debt ratios of individual economies—like Hong Kong, China; Singapore; and Viet Nam—were still rising before the COVID-19 pandemic unfolded.

A fast-growing private debt ratio is the hallmark of financial fragility—that is, a situation where debtors experience an increase in debt-service obligations relative to their incomes and thus become more dependent on either future income growth, debt refinancing, or both. If income growth slows down, debt refinancing opportunities narrow, or both, private debtors are more likely forced to undertake expenditure adjustments to stay current on their obligations.²⁵ Developing Asian economies with high levels of private debt thus face vulnerabilities to the

extent that their economic growth rates decelerate, the quality of investment deteriorates, and the pool of domestic savings narrows.

2.3 External Debt

Developing Asian economies exhibiting high levels of external debt are vulnerable in relation to their economy-wide solvency.²⁶ The external debt-to-GDP ratio indicates the debt burden of all residents (including public and private sectors) relative to the economy-wide repayment capacity. An external debt ratio exceeding 70 percent indicates a level of (solvency-related) debt vulnerability relatively high within the group of developing Asian economies, while a ratio below 25 percent implies a safer level of foreign liabilities (Figure 1.9).²⁷ External debt ratios surpass 70 percent in Mongolia, Bhutan, the Kyrgyz Republic, Georgia, Armenia, the Lao PDR, Kazakhstan, Papua New Guinea, Tajikistan, Sri Lanka, and Maldives. Besides, 17 economies have ratios between 25 percent and 70 percent, and 12 economies have ratios below 25 percent. The external debt ratio of Cambodia and Malaysia is below—although close to—the 70 percent level.



Notes:

FSM = Federated States of Micronesia; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; ROK = Republic of Korea; PRC = People's Republic of China.

Few developing economies in Asia exhibit high external debt ratios, signaling solvency-related vulnerabilities.

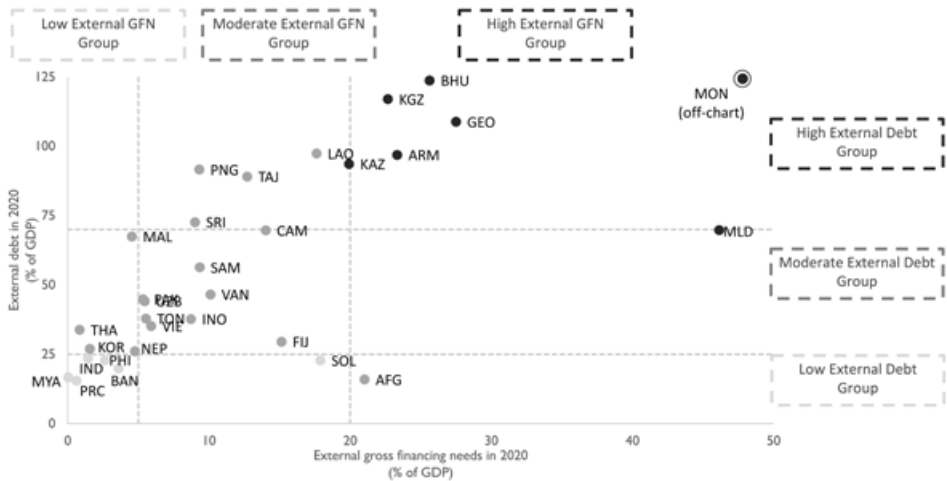
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.9 External debt of developing Asia (% of GDP)

Highly indebted developing Asian economies also tend to exhibit large external GFN, which implies vulnerability in relation to their external liquidity—with the exception of the Lao PDR, Sri Lanka, Tajikistan, and Papua New Guinea.²⁸ The external GFN-to-GDP ratio proxies the residents' foreign borrowing requirements relative to their repayment capacity. High external

debt levels build up heavy interest burdens—or similarly, sustained foreign direct investment flows may generate large profit remittances, which constitute an important driver of annual current account deficits and attendant external GFN. An external GFN ratio above 20 percent signals a level of (liquidity-related) debt vulnerability that calls for stricter monitoring, while a ratio below 5 percent indicates a relatively safer level of borrowing requirements (Figure 1.10).²⁹ Mongolia, Bhutan, Armenia, Kazakhstan, the Kyrgyz Republic, Georgia, and Maldives have external GFN ratios above 20 percent, and thus both their debt stocks and borrowing-requirement flows imply vulnerabilities. Cambodia is in a similar situation, since its external GFN ratio is close to 20 percent while its external debt ratio nears 70 percent. On the other hand, despite their high level of foreign liabilities, the Lao PDR, Tajikistan, and Sri Lanka maintain moderate external GFN. Given their current account surpluses, Papua New Guinea and Malaysia also face limited external GFN. Overall, 7 economies have ratios above 20 percent, 15 economies have ratios between 5 percent and 20 percent, 9 economies have ratios below 5 percent, and 3 economies have no external GFN.

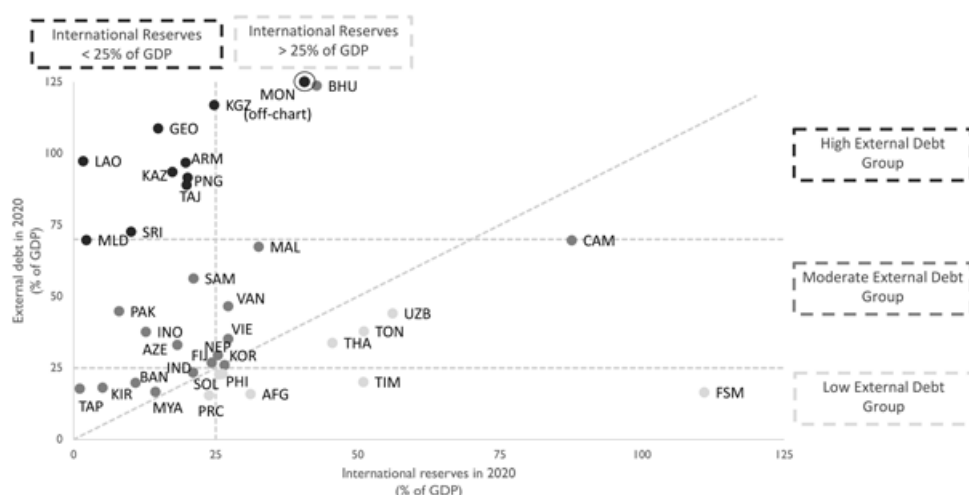


Notes:
GDP = gross domestic product; GFN = gross financing needs.
Most highly indebted developing economies in Asia also have high external financing needs and liquidity-related vulnerabilities.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.10 External gross financing needs of developing Asia (% of GDP)

Highly indebted developing Asian economies tend to have small international reserve stocks, which heighten their liquidity-related vulnerability. The international reserve stock-to-GDP ratio measures the availability of internationally liquid resources (often in the balance sheet of the Central Bank), relative to the size of the economy. International reserves represent repayment capacity to honor the stock of foreign liabilities, thus mitigating a solvency-related

vulnerability—as well as a financial reserve that can be utilized to meet the flow of external GFN in the short term, thus alleviating a liquidity-related vulnerability. An international reserve ratio above 25 percent is deemed an adequate level of internationally liquid resources, while a ratio below 25 percent signals a relatively limited availability (Figure 1.11).³⁰ Mongolia, Armenia, Kazakhstan, Maldives, the Lao PDR, Tajikistan, Sri Lanka, the Kyrgyz Republic, Georgia, and Papua New Guinea exhibit international reserve ratios below 25 percent, with nominal reserves well below their external debt stocks. Bhutan and Cambodia, instead, hold a significant international reserve position that mitigates the vulnerability associated to their high level of external debt. Malaysia, which also carries a large external debt, eases its own vulnerability through both small external GFN and a robust stock of international reserves.



Notes:

GDP = gross domestic product.

Most highly indebted developing economies in Asia have limited international reserves.

Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

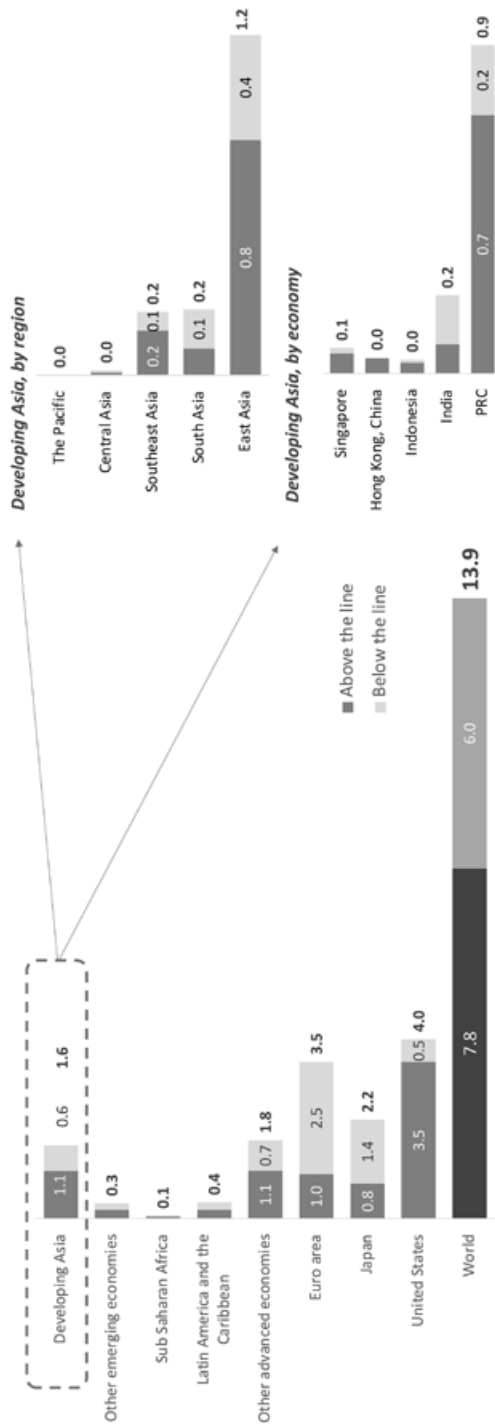
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.11 International reserves of developing Asia (% of GDP)

3. THE FISCAL AND DEBT IMPACT OF THE COVID-19 PANDEMIC

The economic effects of the COVID-19 pandemic caused budget balances and government debt levels to deteriorate worldwide. Developing Asian economies undertook efforts to cope with the health emergency to the extent that their fiscal policy space permitted and the attendant borrowings—jointly with an output contraction, or growth slowdown—increased their public debt burdens to unprecedented levels. This section documents the overall fiscal effort in the Asian developing economies as a whole and the impact on their public debt burden.

Worldwide, the fiscal support to cope with the COVID-19 pandemic in 2020 totaled as much as \$14 trillion—equivalent to about 16 percent of global GDP, according to estimates



Note: PRC = People's Republic of China.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.12 Fiscal measures to cope with COVID-19 economic effects, 2020 (\$ trillion)

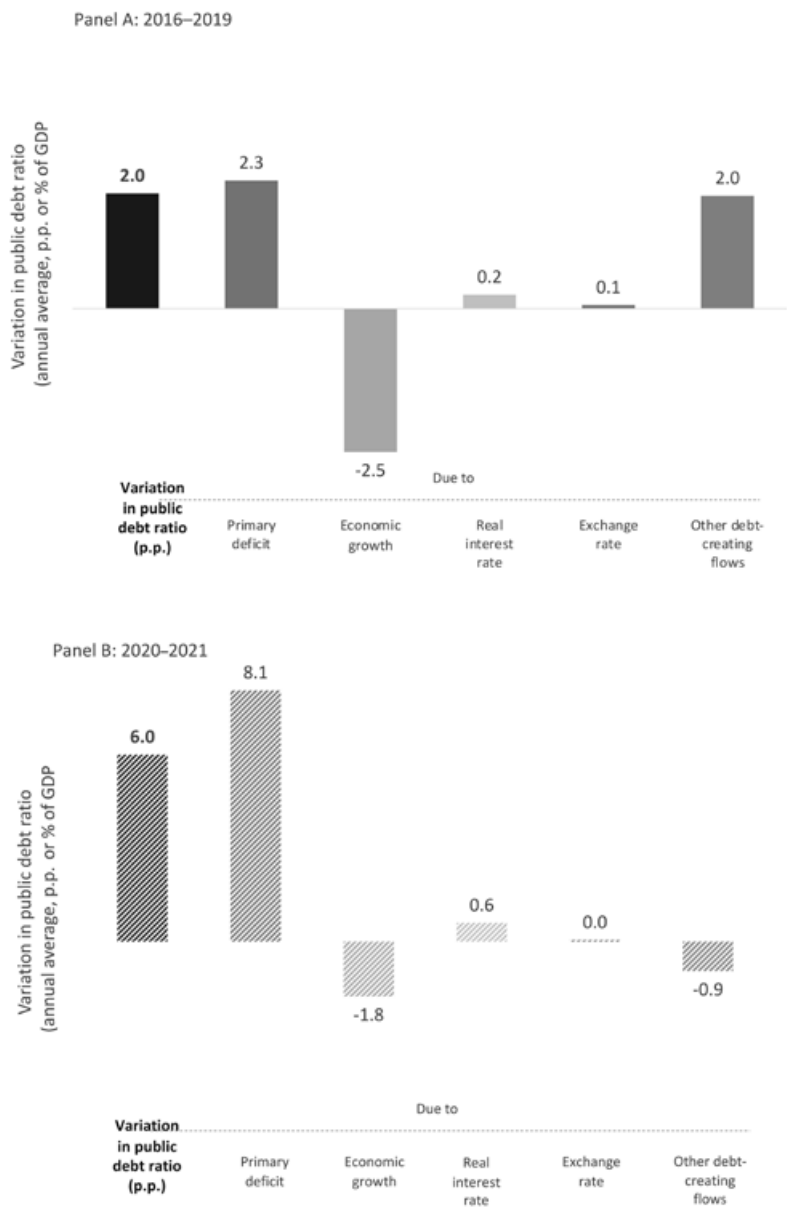
by the IMF (IMF 2021a, 2021b) (Figure 1.12). Within this massive effort, \$8 trillion corresponded to either higher public spending or forgone revenue (referred to as “above-the-line” fiscal measures), and \$6 trillion consisting of loans or capital injections (“below-the-line” fiscal measures).³¹ In particular, the developing Asia group jointly undertook a fiscal effort amounting to \$1.6 trillion, of which \$1.1 trillion and \$0.5 trillion implemented, respectively, as above- and below-the-line measures.

Developing Asia undertook different fiscal efforts depending on the direct economic effect of the COVID-19 pandemic and available fiscal space. The PRC, having ample fiscal space, afforded measures to the tune of \$0.9 trillion, which included spending on epidemic prevention and control, production of medical equipment, unemployment insurance, tax relief, and public investment. India’s fiscal effort totaled \$0.2 trillion, involving direct transfers (in-kind and cash), wage support and insurance coverage for workers in the health-care sector, guarantees for a collateral-free lending program, and credit and liquidity provisions. Singapore adopted measures amounting to \$0.1 trillion to support households with cash payouts, wage subsidies, and job creation.

Due to the economic effects of the COVID-19 pandemic and the fiscal efforts to mitigate them, the dynamic of public debt of developing Asia as a whole expected for 2020–2021 largely breaks from the recent past—which was already building up vulnerabilities, as indicated in section 1. For developing Asia as a whole, public debt is projected to reach an unprecedented level of 64 percent of GDP by 2021, thus jumping up by around 12 percentage points of GDP relative to the pre-pandemic mark in 2019 (Figure 1.13). While economic growth contributed to reduce the public debt ratio by 2.5 percentage points per year (on average) in 2016–2019, its effect would be just 1.8 percentage points in 2020–2021. On the other hand, primary deficits pushed the ratio up by 2.3 percentage points per year before the pandemic, while its impact would be as much as 8.1 percentage points in 2020–2021. As a consequence, the public debt ratio for developing Asia as a whole is expected to increase by 6 percentage points annually (on average) in 2020–2021—hence, tripling the growth observed back in 2016–2019, which was itself larger than before the global financial crisis. Therefore, the COVID-19 pandemic may leave a legacy of high levels of government debt and heightened solvency-related vulnerabilities for the group of developing Asian economies.

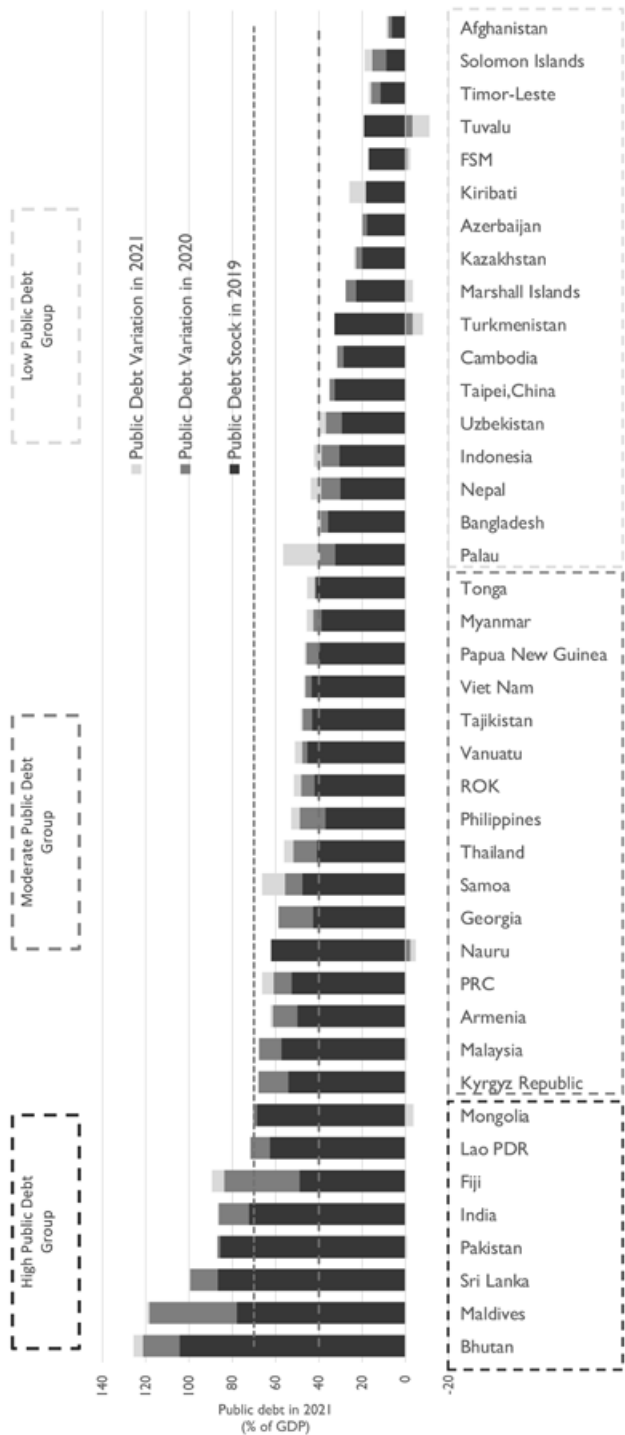
With a few exceptions, developing Asia experienced a heavier debt burden in 2020 relative to the pre-pandemic mark in 2019 (Figure 1.14). A combination of economic contraction (or growth slowdown) and a large fiscal deficit drove the public debt ratios up in 9 out of 10 economies in 2020. The increase in government debt exceeded 30 percentage points of GDP in Maldives and Fiji, both severely hit by the contraction in tourism and international travel, and related fiscal revenues. Fiji actually joined the group of highly indebted economies in 2020, while its public debt burden was moderate before the COVID-19 pandemic. The public debt ratios of Bhutan, India, and Georgia increased by 15 percentage points. On the other hand, only a handful of economies reduced their ratios—the Federated States of Micronesia, Kiribati, Turkmenistan, Nauru, and Tuvalu.

The government debt of developing Asia will continue growing in 2021, although the expected economic recovery would offset the sustained fiscal deficit and thus attenuate the increase in the public debt burden—and even slightly reduce that burden in a few cases (Figure 1.14). Thus, even a quick upturn in 2021 will not cause the higher debt levels reached in the preceding year to return. The COVID-19 pandemic then leaves a common legacy of heavier



Notes:
GDP = gross domestic product; p.p. = percentage point.
Public debt dynamics of developing Asia accelerated during the COVID-19 pandemic.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.13 Public debt dynamics of developing Asia during the COVID-19 pandemic



Notes:
FSM = Federated States of Micronesia; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; ROK = Republic of Korea; PRC = People's Republic of China.
Public debt burdens increased in most developing economies in Asia during the COVID-19 pandemic.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.14 Public debt burdens of developing Asia during the COVID-19 pandemic

public debt burdens for all individual economies and, as indicated below in section 4, the outlook for the next few years does not suggest any alleviation is to come.

4. DEBT OUTLOOK IN THE AFTERMATH OF THE COVID-19 PANDEMIC

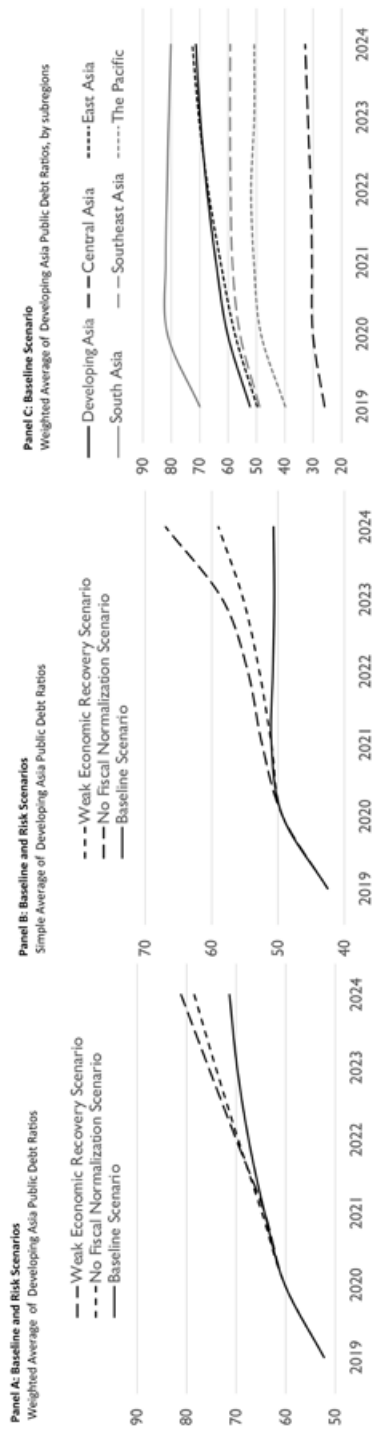
While vaccines and preventive measures may eventually resolve the public health crisis triggered by the COVID-19 pandemic, its legacy in terms of public debt will not fade away soon. Furthermore, there is still uncertainty on the path of economic recovery and normalization of fiscal policies adopted in 2020. This section assesses the outlook for public and external debt over the medium term (2021–2024) on the basis of illustrative debt-dynamic simulations. For developing Asia as a whole, the baseline scenario points to an overall stabilization of public and external debt at the levels already observed in 2020. A few developing Asian economies may even see their public debt burdens worsening under such an outlook. Illustrative simulation addressing the risk of a slow recovery, or a failure to normalize fiscal policies, suggest that the public debt ratio of the developing Asia group may near 80 percent of GDP by 2024.

4.1 Public Debt

For most developing Asian economies, the public debt ratios are expected to remain at their current levels in the medium term under the baseline scenario.³² Such an outlook contemplates a V-shaped recovery of economic activity in 2021, robust output growth in the medium term (2022–2024), and a gradual normalization of fiscal policy, including phasing out measures taken in 2020 to cope with the COVID-19 pandemic. However, as discussed below, in most economies, significant fiscal deficits will persist over the medium term, and the economic growth will barely offset those imbalances. The weighted average of the public debt ratios of economies—using GDP in current dollars as weights—is projected to grow from 64 percent in 2021 to 71 percent of GDP by 2024 (Figure 1.15). A rising government debt burden in the PRC and the ROK is a major factor driving such dynamics. Instead, the simple average of the public debt ratios of developing Asia stabilizes around 51 percent of GDP in 2021–2024. Public debt stabilization is expected in all regions, except in East Asia.

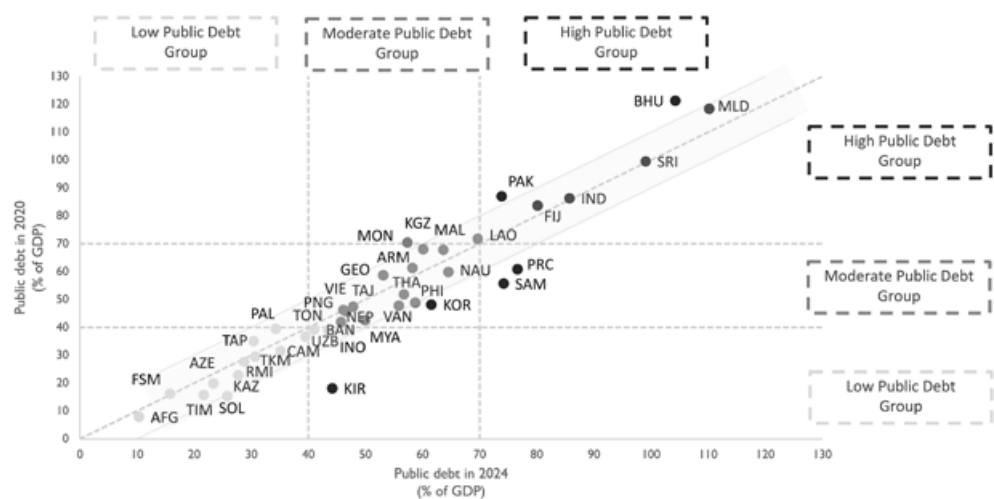
Overall, developing Asian economies are anticipated to broadly stabilize their levels of public debt in 2021–2024. For a majority of Asian developing economies, the public debt ratio in 2024 will deviate from the 2020 ratio within a range of ± 10 percentage points (Figure 1.16). In broad terms, therefore, the outlook for developing Asia reveals a stabilization of public debt burdens over the next few years, at the current levels. A handful of cases will instead exhibit higher public debt ratios and thus heightened (solvency-related) vulnerabilities. For instance, the ratios of the PRC, the ROK, Samoa, and Kiribati are projected to increase by more than 10 percentage points between 2020 and 2024. On the other hand, Bhutan, Pakistan, and Mongolia will achieve lower ratios, with reductions larger than 10 percentage points.

For the group of highly indebted developing Asian economies, the debt vulnerabilities observed in the present will not fade away soon. In most of these economies, the projected fiscal policies in 2021–2024 will widen the budget deficits observed before the COVID-19 pandemic. Mounting deficits will boost the growth of government debt in the medium term (Figure 1.17).³³ The fiscal deficit ratios of Bhutan, Maldives, Sri Lanka, India, and Fiji are



Notes:
GDP = gross domestic product.
Public debt ratios expected to remain at current levels in the medium term, but may increase significantly if risks to fiscal policy and growth materialize.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.15 Public debt projection for developing Asia as a group, in baseline and risk scenarios



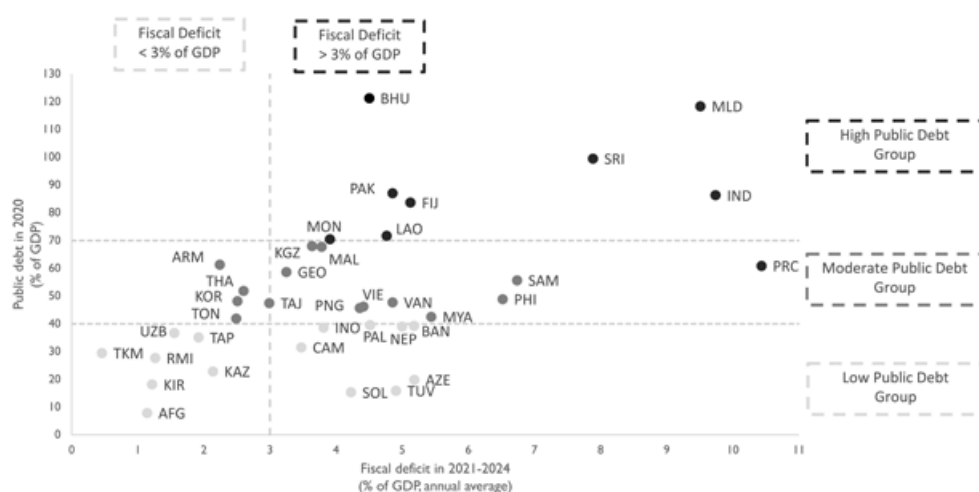
Notes:
GDP = gross domestic product.
Values within the shaded area deviate by +/-10 percentage points of GDP relative to the 45-degree line. Most developing economies in Asia are expected to broadly stabilize their public debt ratios at current levels in the baseline outlook.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.16 Public debt projection for developing Asia in baseline scenario, 2020 and 2024 (% of GDP)

anticipated to exceed their own historical average observed in 2016–2019. On the other hand, fiscal consolidation efforts are expected to be pursued by Pakistan (ostensibly led by recurrent IMF-supported programs), and, to a lesser extent, also by the Lao PDR. Projected economic growth in 2021–2024 will not be sufficient for highly indebted economies to reduce their public debt ratios below 70 percent by 2024. These economies will not grow out of government debt enough for their (solvency-related) debt vulnerabilities to soften over the next few years (Figure 1.18). The public debt ratios of Bhutan, Maldives, Sri Lanka, India, Pakistan, and Fiji are expected to continue exceeding 70 percent by 2024, despite significant economic growth helping them to reduce (or stabilize) their public debt burdens relative to 2020. Economic growth will allow Mongolia and the Lao PDR to achieve a moderate public debt ratio by 2024—although the Lao PDR’s debt ratio will remain very close to the 70 percent level.

For the group of developing Asian economies whose public debt ratio is below—although close to—the 70 percent level in 2020, the debt outlook appears stable, with the exception of the PRC. The Kyrgyz Republic, Malaysia, and Armenia are expected to run moderate fiscal deficits and slightly reduce their public debt burden between 2020 and 2024. On the other hand, the PRC’s fiscal deficits are projected to reach 10 percent of GDP—far larger than those observed before the COVID-19 pandemic—while the growth slowdown continues. As a result, the PRC government debt may increase from 62 percent of GDP in 2020 to 77 percent by 2024.³⁴

Public debt burdens may deteriorate even further if governments fail to normalize fiscal policy, or if the economy fails to recover strongly (see Figure 1.15). Given the uncertainty surrounding the expected outlook, particularly the highly uncertain prospects in the current



Notes:

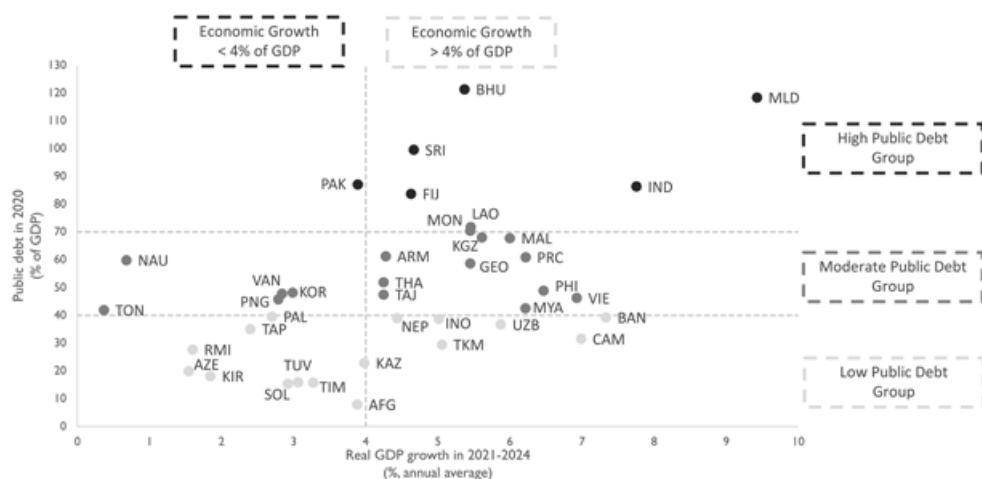
GDP = gross domestic product.

Most highly indebted developing economies in Asia are expected to run large fiscal deficits in 2021–2024.

Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.17 General government fiscal deficit projection for developing Asia in baseline scenario, 2021–2024 (% of GDP)



Notes:

GDP = gross domestic product.

Most highly indebted developing economies in Asia will not grow enough in 2021–2024 to reduce their public debt ratios below 70%.

Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.18 Economic growth projection for developing Asia in baseline scenario, 2021–2024 (real GDP growth rate, %)

juncture of the COVID-19 pandemic, two alternative scenarios are formulated to assess risks. One risk scenario contemplates a failure (or political impossibility) to normalize fiscal policy and phase out the measures adopted in 2020. It then assumes that the fiscal deficit-to-GDP ratio remains at the 2020 level all throughout the 2021–2024 period. The other risk scenario envisages a weak economic recovery, possibly caused by a deterioration of long-term growth potential in the aftermath of the COVID-19 pandemic. Economic growth rates in 2022–2024 are then assumed to be half those foreseen in the baseline scenario. In both risk scenarios, the weighted average of the public debt ratio of developing Asia reaches nearly 80 percent of GDP by 2024, while the simple average exceeds 60 percent of GDP. In all cases, the projected ratios rise by 10 percentage points (or more) over and above the baseline outlook.

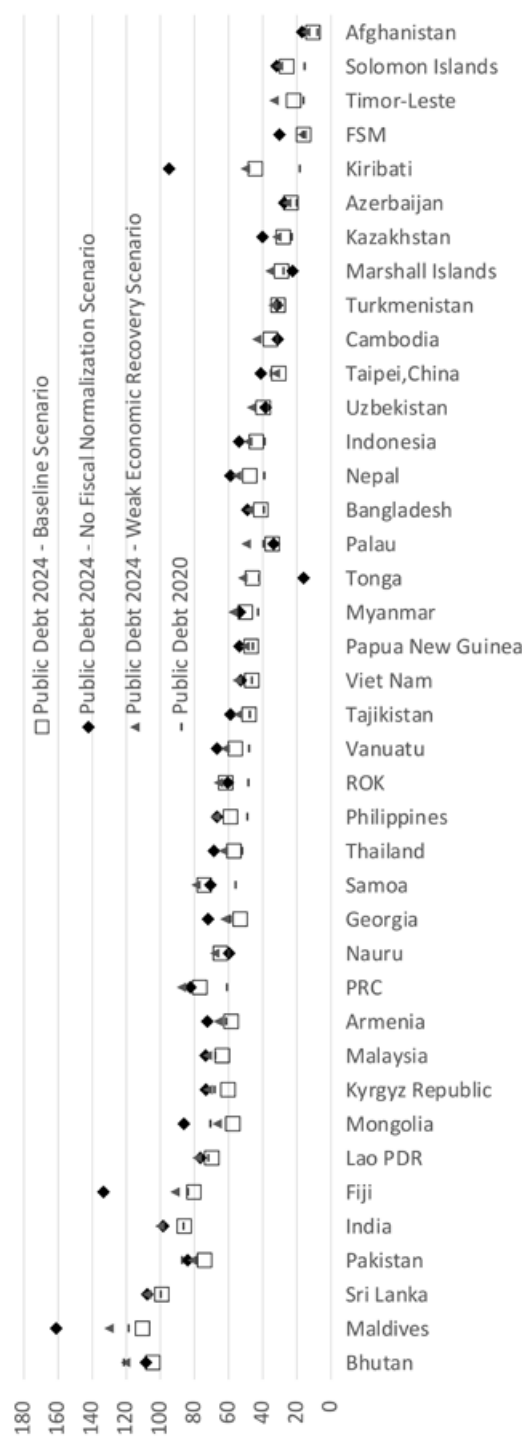
Highly indebted developing Asian economies are particularly sensitive to the risks to fiscal policy and economic recovery (Figure 1.19). If the fiscal policy is not normalized in Pakistan, or if growth falters in Bhutan and Mongolia, their public debt ratios in 2024 will be similar to those observed in 2020—not lower, as expected under the baseline outlook. Failure to normalize fiscal policy could push the ratios of Maldives and Fiji up by more than 40 percentage points above their current levels. Similarly, a weak economic recovery could push the ratios of Sri Lanka, India, and the Lao PDR up by more than 10 percentage points above their current levels. In both risk scenarios, the public debt burdens of the Kyrgyz Republic, Malaysia, and Armenia exceed 70 percent of GDP in 2024, while the PRC's surpasses 80 percent.

4.2 External Debt

Foreign liabilities of the developing Asia group are also expected to remain stable in the medium term under the baseline outlook. The weighted average of the external debt ratio of developing Asia using GDP in current dollars as weights is projected to remain around 20 percent between 2021 and 2024, while the simple average stabilizes at 56 percent in the same period. All regions either stabilize, or slightly reduce, their external debt ratios in the medium term. Central Asia, in particular, will reduce its foreign liabilities but still carry a heavy external debt burden.

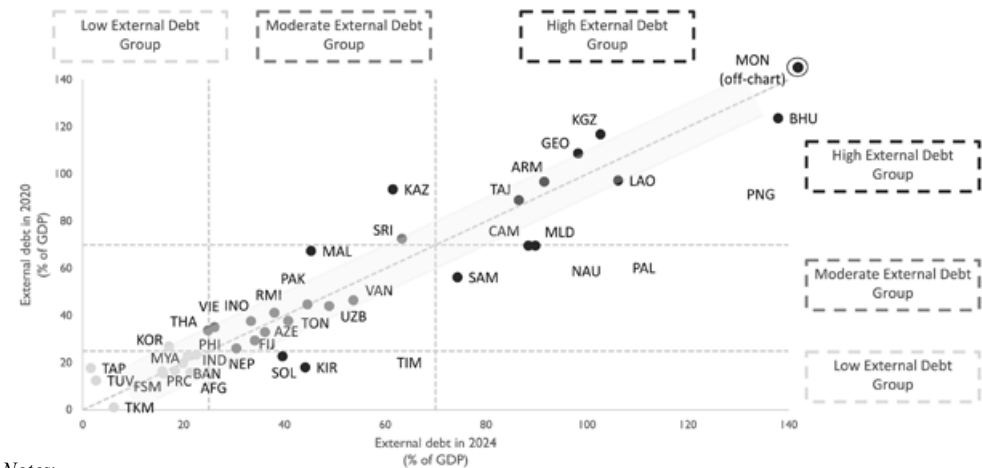
Similar to public debt, most developing Asian economies are anticipated to stabilize their external debt ratios in 2021–2024. For several Asian developing economies that have reliable data apt for making projections, the external debt ratio in 2024 will deviate from the 2020 ratio within a range of ± 10 percentage points (Figure 1.20).³⁵ Overall, the outlook for developing Asia indicates a stabilization of external debt burdens in the medium term—at the levels currently observed. However, rising foreign liabilities are expected in some cases, for example, the external debt ratio of Maldives and Cambodia is projected to increase by around 20 percentage points between 2020 and 2024. On the other hand, Kazakhstan and Malaysia will achieve lower ratios, with reductions larger than 20 percentage points.

External debt burdens may also worsen if the economy fails to recover strongly, and a handful of developing Asian economies with significant foreign liabilities will be particularly affected (Figure 1.21). For instance, Bhutan, Maldives, the Lao PDR, and Cambodia are expected to increase their external debt ratios by more than 25 percentage points relative to the current levels.



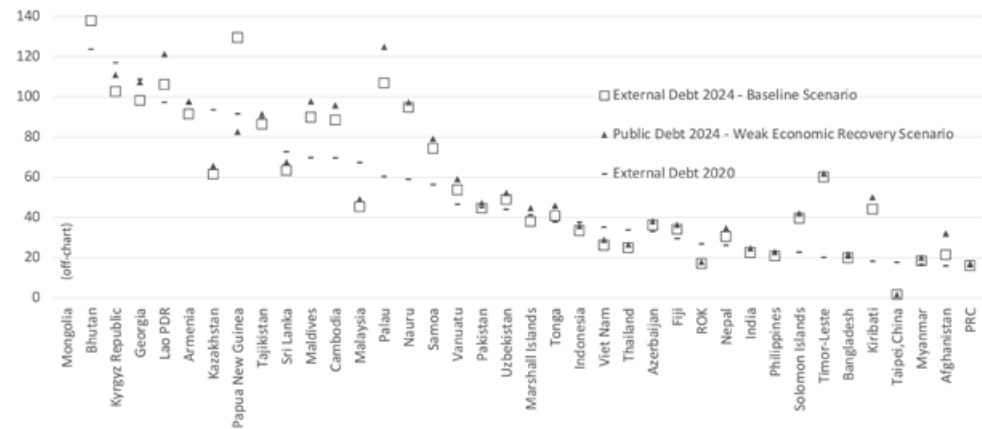
Notes:
FSM = Federated States of Micronesia; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; ROK = Republic of Korea; PRC = People's Republic of China.
Public debt ratios will increase in most developing economies in Asia if growth falters or fiscal policy fails to be normalized.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.19 Public debt projection for developing Asia in baseline and risk scenarios, 2020 and 2024 (% of GDP)



Notes:
GDP = gross domestic product.
Values within the shaded area deviate by +/-10 percentage points of GDP relative to the 45-degree line. Most developing economies in Asia are expected to broadly stabilize their external debt ratios at current levels in the baseline outlook.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.20 External debt projection for developing Asia in baseline scenario, 2020 and 2024 (% of GDP)



Notes:
FSM = Federated States of Micronesia; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; ROK = Republic of Korea; PRC = People's Republic of China.
External debt ratios of developing economies in Asia will increase in most economies if growth falters.
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: Authors' own calculations, based on the data sources listed in endnote 2, as of 14 December 2020.

Figure 1.21 External debt projection for developing Asia in baseline and risk scenarios, 2020 and 2024 (% of GDP)

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. Data sources for the empirical analysis in this chapter include the IMF's Global Debt Database (<https://www.imf.org/external/datamapper/datasets/GDD>) and World Economic Outlook (WEO) datasets (<https://www.imf.org/en/Publications/WEO>), especially for fiscal forecast assumptions; the ADB's Asian Development Outlook (ADO) (<https://www.adb.org/publications/series/asian-development-outlook>); the World Bank Group's World Development Indicators (WDI) (<https://datatopics.worldbank.org/world-development-indicators>) and Debt Reporting System Database (DRS) (<https://data.worldbank.org/products/ids>); and the Institute of International Finance Debt Database (IIFDD) (<https://www.iif.com/Research/Capital-Flows-and-Debt/Global-Debt-Monitor>).
3. Ferrarini et al. (2012) and Ferrarini and Ramayandi (2015) describe ADB's earlier analysis on public debt sustainability in Asia.
4. IMF's WEO (<https://www.imf.org/en/Publications/WEO>) and IIFDD (<https://www.iif.com/Research/Capital-Flows-and-Debt/Global-Debt-Monitor>).
5. The contribution of developing Asia to global output rises to 38 percent when GDP in purchasing power parity dollars is used instead, thus adjusting for differences in domestic prices across economies.
6. Chapter 12 discusses energy-related public indebtedness in Pakistan and Sri Lanka.
7. Ferrarini and Ramayandi (2012) analyzed empirically the fiscal policy undertaken by selected developing Asian economies from the late 1990s to the global financial crisis, and found evidence consistent with the hypothesis that governments adjust budget balances in response to increasing public debt levels—that is, as if fiscal reaction functions were in place.
8. The ongoing structural transformation and rebalancing of the PRC economy largely accounts for the regional growth slowdown. The PRC currently generates at least half of the total output produced by Asian developing economies. In 2020, it accounted for nearly 60 percent of developing Asia output when using GDP in current dollars, or about 50 percent, if utilizing GDP in purchasing power parity dollars. Growth deceleration in the PRC economy is transmitted to other regions through, *inter alia*, supply chains (e.g., East Asia and Southeast Asia) and commodity prices (e.g., Central Asia).
9. Notably, while the advanced economies' public debt ratio jumped from 73 percent in 2007 to 108 percent by 2013 as result of policy responses to the global financial crisis, it remained fairly stable until 2019, with fiscal deficits reduced. In contrast, the public debt ratio of developing Asia was fairly stable between 2007 and 2013, and then it increased by nearly 10 percentage points of GDP until 2019, with fiscal deficits growing. Other emerging economies also experienced a broadly stable public debt ratio from 2017 to 2013, and a rising one afterwards.
10. Public debt has increased in several developing Asian economies even before the COVID-19 pandemic: 16 economies exhibited public debt ratios exceeding 50 percent in 2019, compared with only 9 back in 2007.
11. IIFDD compiles private debt data mainly from advanced economies, emerging markets, and middle-income economies; thus, many developing Asian economies are not included.
12. State-owned enterprises play an important role in private leveraging. According to IIFDD data on firms listed on domestic stock exchanges, those classified as state-owned, based on equity ownership, account for a large share of nonfinancial corporate debt, notably in the PRC (85 percent), Malaysia (80 percent), and India (55 percent).
13. The PRC generated 35 percent of the \$100 trillion flow of new public debt issued globally between 2005 and 2020.
14. In stark contrast, the world's private debt ratio was broadly stable around 225 percent throughout the same period, while the ratios of major countries like the US even declined.
15. Policy reforms adopted by the PRC since 2015 contributed to slowing down the nonfinancial corporate indebtedness. Some reforms actually substituted public debt for private debt: for example, the debt swap converting off-budget liabilities owed by the special purpose vehicles (often created by local governments for undertaking and financing infrastructure investments) into on-budget government debt; and the establishment of a bond market for subnational borrowing to mitigate off-budget

fiscal activity (Chapter 6). In addition, between 2016 and 2019, general government fiscal deficit in the PRC averaged 4.6 percent of GDP per year, far higher than the deficit recorded from 2007 to 2015 (Table 1.1).

16. The investment rates in developing Asia remain high and broadly stable, but the national gross savings rates are declining overall, notably in the PRC, following the rebalancing toward consumption (Table 1.1). To the extent that households and firms rely on domestic financing, a narrowing pool of savings may constrain their borrowing opportunities. Fueled by domestic savings, the demand for financial assets is analyzed by Chapter 13 in the context of aging populations in Asia.
17. Singapore and Hong Kong, China represent only 3 percent of the regional GDP but owe nearly 40 percent of the external debt of developing Asia as a whole.
18. The development of domestic government debt markets in developing Asia and the expansion of local-currency public debt have been regularly monitored and analyzed in ADB's Asian Bonds Online at AsianBondsOnline. <https://asianbondsonline.adb.org/>.
19. Sustained, large current account surpluses were instrumental to external deleveraging and international reserve accumulation in developing Asia. Since the aftermath of the global financial crisis, however, the buildup of reserves slowed down markedly, driven by the contraction in external surpluses (Table 1.1.) and a few episodes of financial turmoil where central banks intervened to stabilize foreign exchange markets (e.g., the taper tantrum in 2013 or the PRC sell-off in 2015).
20. From a theoretical perspective, solvency refers to a government's capacity to repay its outstanding financial obligations over an extended period of time, in view of an intertemporal balance between its revenues and expenditures under the current fiscal policies. A creditworthy government is deemed able to generate sufficient budgetary resources to afford debt-service obligations over the medium- to long term, without having to borrow systematically in order to roll over maturing liabilities and pay interests. It is also expected to generate those budgetary resources broadly as a result of its current fiscal policies without having to undertake major policy adjustments that are politically, economically or socially untenable, or to restructure current or future financial obligations, or to outright default on them. In practice, a nonexplosive dynamic of the public debt-to-GDP ratio signals a balanced evolution of financial obligations and repayment capacity (including both budgetary resources and access to rollovers). For a discussion on the notion of solvency and sustainability from the perspective of practitioners in international organizations, see IMF (2017, 2021a) and Debrun et al. (2019).
21. Public debt at the end of 2020 refers to the general government and is an estimate from the ASDM based on the Asian Development Outlook December 2020 growth and inflation forecasts (ADB 2020) and the WEO October 2020 fiscal forecasts (IMF, 2020). The IMF's Market-Access Country Debt Sustainability Analysis (MAC DSA) uses the 70 percent value as a benchmark for debt vulnerabilities of emerging markets, and 85 percent for advanced economies (IMF 2013, 2021a). The 40 percent value is established based on percentiles within the group of developing Asian economies. Singapore; Hong Kong, China; and Brunei Darussalam are excluded from the classification because their public debts do not play a major role in deficit financing. Niue and the Cook Islands are excluded due to lack of reliable data.
22. Conceptually, liquidity refers to a government's capacity to borrow funds in the short term, at a reasonable cost, in order to meet its Gross Financing Needs (GFN) (e.g., fiscal deficit, amortization payments, and other debt-creating transactions). A government with access to liquidity is deemed able to issue debt in the short term to secure borrowed resources and fund fiscal deficits and debt-service obligations fully or to a significant extent, without facing higher-than-normal interest rates (inclusive of risk premia) or severe disruptions in the financing flows provided by regular creditors and investors holding public debt (i.e., low rollover risk). In practice, a low (or moderate) level of government GFN, measured relative to nominal GDP or fiscal revenue, is an indication that sufficient liquidity may be accessed at a reasonable cost. In theory, a solvent debtor would always be liquid because creditors would recognize the short-term borrowing sought by the former is part of a long-term path where their financial liabilities and repayment capacity are balanced. Thus, creditors would see no heightened risk in extending new financing, engaging in debt rollovers, or maintaining their exposure to public debt and associated risks. In practice, however, problems with creditors' coordination or information may arise, including deep uncertainty about a debtor's

- resources or capacity to undertake policy adjustments. In this context, a government debtor who is essentially solvent may fail to secure sufficient liquid resources at a reasonable cost from its creditors, and eventually fail to repay maturing debts or suffer an unbearable interest burden, thus becoming an insolvent debtor. For a discussion on the relation between liquidity and sustainability, see IMF (2017, 2021a) and Debrun et al. (2019).
23. Government GFN in 2020 is an estimate from the ASDM based on the ADO December 2020 growth and inflation forecasts (ADB 2020), the WEO October 2020 fiscal forecasts (IMF 2020), and the World Bank DRS government debt data. GFN are computed as the sum of fiscal deficit in 2020 plus the central government's debt outstanding at the end of 2019 whose residual maturity is 12 months or less. The IMF's MAC DSA uses the 15 percent value as a benchmark for debt vulnerabilities of emerging markets, and 20 percent for advanced economies (IMF 2013, 2021a). The 10 percent value is established based on percentiles within the group of developing Asian economies. Singapore; Hong Kong, China; and Brunei Darussalam are excluded from the classification, for reasons explained elsewhere, as well as several economies in the Pacific; Taipei, China; and Cambodia—due to lack of reliable data.
 24. Private debt in 2020 is sourced from the IIFDD (which contains information for 14 economies: Bangladesh; Hong Kong, China; India; Indonesia; Kazakhstan; Malaysia; Pakistan; the Philippines; the PRC; the ROK; Singapore; Sri Lanka; Thailand; and Viet Nam) and the IMF Global Debt Database (which reports data for another 7 developing Asian economies: Afghanistan, Myanmar, Nepal, Samoa, Solomon Islands, Tajikistan, and Vanuatu). Private debt comprises households, nonfinancial corporations, and financial corporations. There are no established thresholds to signal vulnerabilities concerning private debt.
 25. A protracted period of increasing financial fragility builds systemic liquidity and solvency risks, which ultimately can undermine the sustainability of private debt.
 26. From a theoretical perspective, external solvency refers to the capacity of all residents of a given economy to repay their outstanding foreign liabilities over an extended period of time, in view of an intertemporal balance between exports and imports under the current macroeconomic policies. Similar to public-sector solvency, external creditworthiness rules out systematic rollovers of maturing external debt, restructuring or defaults, as well as major policy adjustments to correct external imbalances. In practice, a nonexplosive dynamic of the external debt-to-GDP ratio (or a ratio relative to exports) signals economy-wide solvency. See IMF (2021a) and Manasse and Roubini (2005).
 27. External debt at the end of 2020 is an estimate from the ASDM based on the ADO December 2020 growth and inflation forecasts (ADB 2020), the WEO October 2020 foreign trade forecasts (IMF 2020), and the World Bank WDI external debt data. The 70 percent and 25 percent values are chosen based on percentiles of the empirical distribution of external debt within developing Asia as a group. There are no institutionalized thresholds for foreign liabilities akin to those in the IMF's MAC DSA concerning public debt. Singapore and Hong Kong, China are excluded from the classification in view of their role as financial centers. Brunei Darussalam, Niue, the Cook Islands, and Turkmenistan are excluded due to lack of reliable data.
 28. Conceptually, external liquidity refers to the ability of all residents of a given economy to borrow from abroad in the short term, at a reasonable cost, in order to meet their GFN (e.g., current account deficit and amortization payments, net of financing flows such as foreign direct investment or use of international reserves). Similar to public-sector liquidity, external liquidity rules out adverse conditions for rollover maturing liabilities and securing new foreign financing. In practice, a low (or moderate) level of external GFN—measured relative to nominal GDP or exports—is an indication that sufficient liquidity may be accessed at a reasonable cost. See IMF (2013, 2021a).
 29. External GFN in 2020 is an estimate from the ASDM based on the ADO December 2020 growth and inflation forecasts (ADB 2020), the WEO October 2020 foreign trade forecasts (IMF 2020), and the DRS external debt data. External GFN are computed as the sum of current account deficit in 2020 plus external debt outstanding at the end of 2019 whose residual maturity is 12 months or less. The IMF's MAC DSA uses the 20 percent value as a benchmark for debt vulnerabilities of emerging markets, and 35 percent for advanced economies (IMF 2013, 2021a). The 5 percent value is established based on percentiles within developing Asia as a group. The classification excludes financial centers, Turkmenistan, a few economies in the Pacific for which reliable data are not available, and

economies with no external GFN, that is, whose current account surplus exceeded the amortizations of foreign liabilities.

30. International reserves in 2020 are an estimate from the ASDM based on the ADO December 2020 growth and inflation forecasts (ADB 2020), the WEO October 2020 foreign trade forecasts (IMF 2020), and the World Bank WDI international reserve data. The 25 percent value is chosen based on percentiles of the empirical distribution of international reserves across developing Asia. There are no institutionalized thresholds for foreign assets. Developing Asian economies for which the external debt ratio was not reported are also excluded from the analysis in the main text.
31. “Above-the-line” measures include additional spending in the health sector (such as health-care equipment or testing facilities) and protective aid to vulnerable groups (e.g., in-kind and cash transfers, wage support to poor households). “Below-the-line” measures refer to equity infusions, subsidized lending, and capital injections to state-owned enterprises and private businesses.
32. The baseline scenario includes projections from 2021 to 2024 reported in the ASDM based on the ADO December 2020 growth and inflation forecasts (ADB 2020), the WEO October 2020 growth (IMF 2020), fiscal and foreign trade forecasts, and the World Bank WDI and DRS external debt data. A few developing economies are excluded from the scenario analysis: Brunei Darussalam; the Cook Islands; Hong Kong, China; Niue; and Singapore; and only from the risk scenarios, Tonga and Vanuatu.
33. An average annual fiscal deficit of 3 percent in 2021–2024 is used as a benchmark to assess developing Asia. Fiscal deficit forecasts are from the WEO October 2020 (IMF 2020). In addition, an average annual growth rate of real GDP of 4 percent in 2021–2024 is used as a benchmark, which is close to the unweighted regional average. Growth forecasts are from the ASDM based on the ADO December 2020 (ADB 2020) and the WEO October 2020 (IMF 2020).
34. Vulnerabilities from household and nonfinancial corporate debts may intensify in developing Asian economies like the PRC, which are undergoing a slowdown in prospective economic growth relative to historical trends. Financial fragility built up before the COVID-19 pandemic may heighten in the PRC, where private debt is high, and the prospects of growth deceleration more likely.
35. External debt ratios are not calculated for Brunei Darussalam; Hong Kong, China; Singapore; Turkmenistan; and several economies in the Pacific. For a detailed analysis of indebtedness in developing economies in the Pacific, see Chapter 5.

REFERENCES

- Asian Development Bank (ADB). 2020. *Asian Development Outlook (ADO) 2020: What Drives Innovation in Asia?*. Manila.
- Debrun, X., J. Ostry, T. Willems and C. Wyplosz. 2019. Debt Sustainability. In S. Ali Abbas, A. Pienkowski and K. Rogoff (eds), *Sovereign Debt: A Guide for Economists and Practitioners*. Oxford: International Monetary Fund and Oxford University Press.
- Ferrarini, B. and A. Ramayandi. 2012. Public Debt Sustainability Assessments for Developing Asia. In B. Ferrarini, J. Raghbendra and A. Ramayandi. *Public Debt Sustainability in Developing Asia*. Manila: ADB.
- Ferrarini, B. and A. Ramayandi. 2015. Public Debt Sustainability in Developing Asia: An Update. *ADB Economics Working Paper Series*. No. 468. Manila: ADB.
- Ferrarini, B., J. Raghbendra and A. Ramayandi. 2012. *Public Debt Sustainability in Developing Asia*. Manila: ADB.
- International Monetary Fund (IMF). 2013. Staff Guidance Note for Public Debt Sustainability Analysis in Market-Access Countries. Washington, DC.
- International Monetary Fund (IMF). 2017. Review of the Debt Sustainability Framework in Low-Income Countries: Proposed Reforms. IMF Policy Paper. Washington, DC.
- International Monetary Fund (IMF). 2020. World Economic Outlook, October 2020: A Long and Difficult Ascent. Washington, DC.
- International Monetary Fund (IMF). 2021a. Review of the Debt Sustainability Framework for Market Access Countries. IMF Policy Paper. No. 2021/003. Washington, DC.
- International Monetary Fund (IMF). 2021b. Government Support is Vital as Countries Race to Vaccinate. Fiscal Monitor Update, January 2021. Washington, DC. Accessed at: <https://www.imf.org/en/Publications/FM/Issues/2021/01/20/fiscal-monitor-update-january-2021>.
- Manasse, P. and N. Roubini. 2005. “Rules of Thumb” for Sovereign Debt Crises. *International Monetary Fund Working Paper*. No. 05/42. Washington, DC: IMF.

2. Japan's public debt sustainability before and after COVID-19

Jérémie Cohen-Setton and Keita Oikawa¹

1. INTRODUCTION

The secular decline in interest rates is fundamentally reshaping the way economists assess debt sustainability (Blanchard 2019; Blanchard et al. 2020; Furman and Summers 2020). When high interest rates prevail, a large stock of debt necessarily translates into elevated fiscal costs. But with low interest rates, the level of debt becomes less informative as an indicator of debt sustainability.

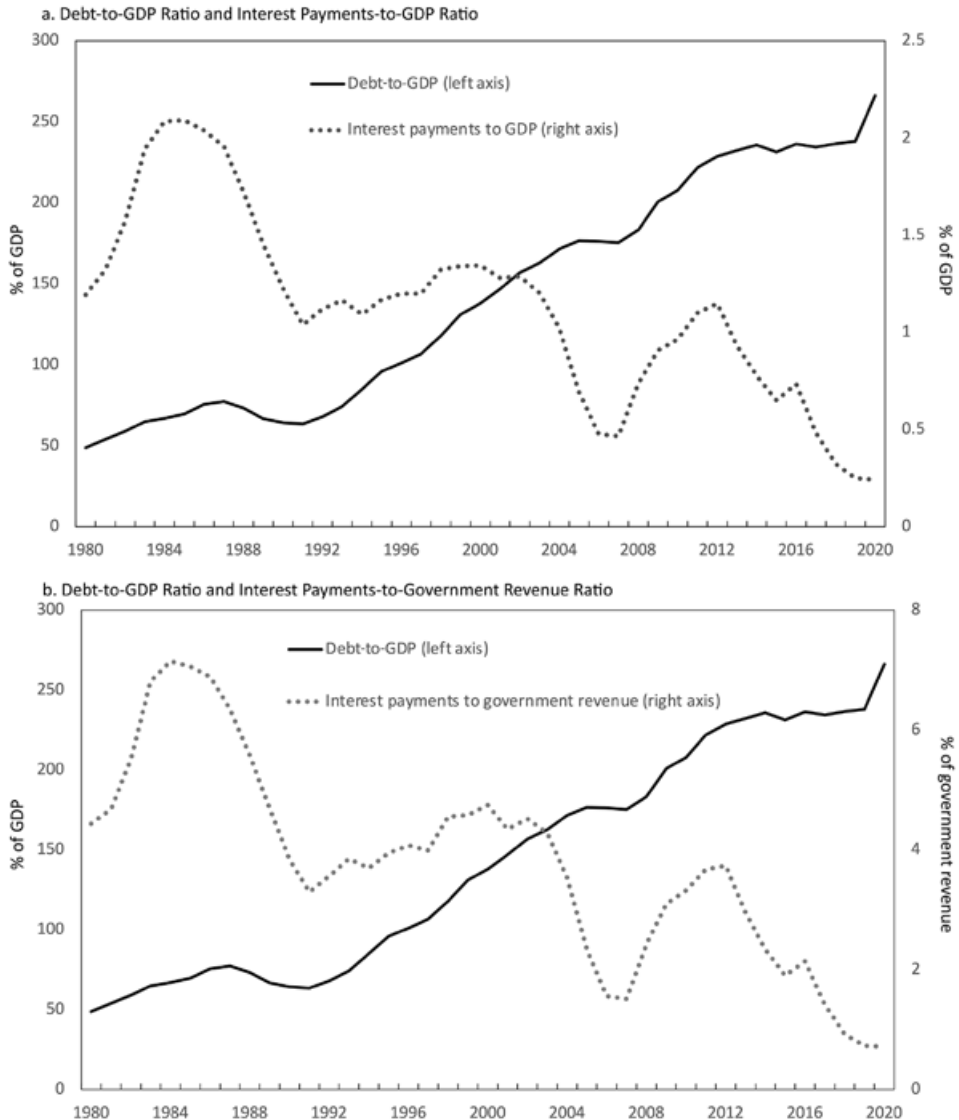
Figure 2.1 illustrates such disconnect between the level of debt and its cost. Over the last 40 years, Japan has experienced the largest increase in its public debt (Box 2.1). And yet, that buildup in government debt has been associated with a decline in debt service costs, rather than an increase. While the debt-to-GDP ratio increased fivefold from less than 50 percent of gross domestic product (GDP) to more than 250 percent of GDP, interest payments have been halved as a share of GDP and have fallen by 80 percent as a share of government revenues. Surely, paying 50 percent less in debt service costs makes the level of government debt more, not less, sustainable.²

The rest of this chapter develops this argument in more detail. We begin our analysis by considering how the decline in interest rates affects the traditional analysis of debt sustainability. Our analysis shows that with a negative interest rate–growth rate differential, the government can stabilize its debt-to-GDP ratio despite running primary deficits permanently. It also shows that a large increase in the debt ratio does not automatically translate into a worsening of fiscal sustainability as the effect of a favorable interest rate–growth rate differential increases with the level of debt.

We illustrate these theoretical findings by simulating the impact of different macroeconomic and fiscal conditions on the trajectory of Japanese public debt. To account for the impact of the coronavirus disease (COVID-19) on debt sustainability, we run scenarios on both pre- and post-pandemic economic forecasts. Our analysis suggests that, despite a significant deterioration of public finances with COVID-19, Japan's long-term fiscal outlook remains for the most part unchanged thanks to the favorable interest rate–growth rate differential.

We then discuss whether this benign environment for public finances is likely to persist and how it affects other economies. Based on market forecasts and an analysis of the impact of higher debt on the safe interest rate, we argue that the recent buildup in government debt is unlikely to reverse the favorable interest rate–growth rate differential for advanced economies. While the decline in the safe interest rate also helps emerging and developing

economies (EMDEs), we note that the buildup in government debt associated with COVID-19 is likely to generate rollover risks for countries with weak institutions and high foreign currency-denominated debt.



Note: GDP = gross domestic product.

Sources: International Monetary Fund. World Economic Outlook Database, October 2020; and authors' calculations.

Figure 2.1 Public debt and interest payments: debt-to-GDP ratio and interest payments-to-GDP ratio

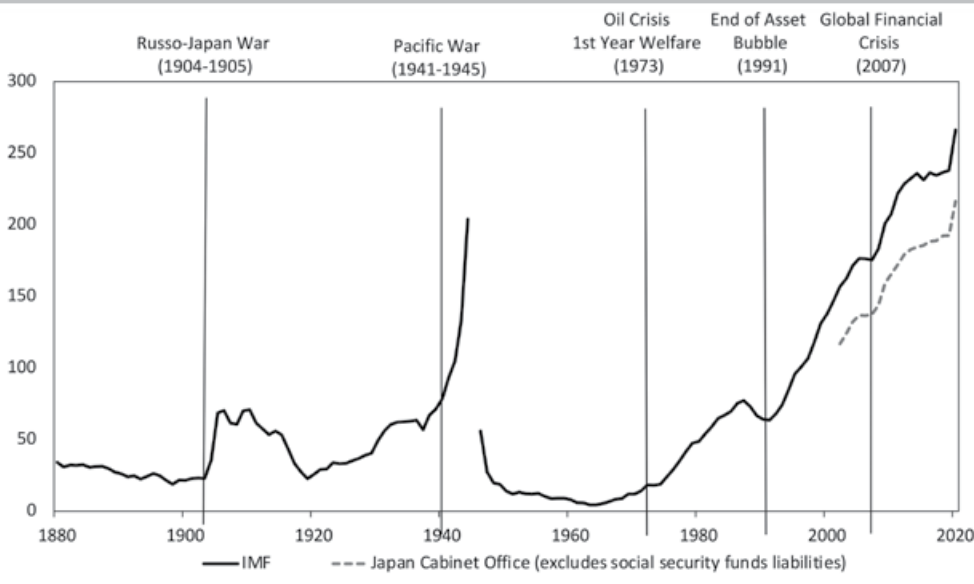
BOX 2.1 A BRIEF HISTORY OF JAPAN’S DEBT-TO-GDP RATIO

Today, Japan has the highest public debt-to-GDP ratio in the world. In fact, the only economy with a comparable debt level is Venezuela.³ Before exploring why and how Japan can maintain such a high debt level, we look at how it has evolved since the late nineteenth century.

After being stable for 25 years, the debt ratio spiked for the first time during the Russo–Japanese war of 1904–1905. Although the ratio experienced a threefold increase, it reverted relatively quickly to its prewar lows thanks to sustained nominal GDP growth, and the introduction of new temporary and permanent taxes (Ministry of Finance 1969).

After reaching its trough in 1919, the ratio monotonically increased until the eve of World War II, especially in the 1930s during the Great Depression and military preparations. But it was not until Japan officially entered the Pacific War that the ratio exploded and increased by more than 100 percent of GDP throughout the war.

By 1944, the ratio was above 200 percent of GDP. According to Reinhart and Rogoff (2009), Japan’s outstanding government debt as of the end of March 1945 was equivalent to about 267 percent of national income. That spike was eventually reversed through outright default, a sudden burst in inflation,⁴ and various forms of financial repression.



Notes: IMF = International Monetary Fund. Debt is defined as the gross debt of the general government. Japan Cabinet Office (2020b) excludes liabilities of the social security fund.
Sources: IMF Historical Public Debt Database; IMF World Economic Outlook (after 1980); and Japan Cabinet Office (2020b).

Figure 2.2 Japan’s debt-to-GDP ratio from 1880 to 2019 (% of GDP)

After World War II, the debt-to-GDP ratio continually declined, reaching a trough of less than 5 percent of GDP in the early 1960s. No government bonds, not even “construction bonds”, which could be used to finance infrastructure expenditures under the Public Finance Law of 1947, were issued before the 1965 recession (Saito 2011). And it was only in 1975 that Japan abandoned its balanced budget rule and started issuing deficit-financing bonds. 1973 was not just the year of the first oil shock; it was also the “First Year of Welfare” (Ministry of Health and Welfare 1999), with the government providing free medical care for the elderly, reducing out-of-pocket medical expenditures for families, and raising the pension replacement ratio to 60 percent.

Altogether, the reliance on debt financing steadily increased from less than 5 percent of total expenditure in fiscal year (FY) 1970 (fiscal year ending 31 March 1971) to almost 44 percent in FY1979 (Ministry of Finance 2005). The debt-to-GDP ratio continued to increase in the 1980s and reached a first peak of 76 percent of GDP in 1986. This was followed by a temporary decline against the backdrop of the high growth and buoyant tax revenues associated with the Japanese asset price bubble.

After the asset price bubble burst in 1991, Japan experienced a protracted decline in real growth, inflation, and tax revenues. Together with the introduction of several economic stimulus packages and the upward trend in social security expenditures, these developments resulted in a threefold increase in the debt ratio from 64 percent of GDP in 1991 to 180 percent in 2004.

As in the mid-1980s, the debt ratio temporarily declined in the mid-2000s, but reflected stronger efforts to contain expenditure growth and to generate permanently higher tax revenues. The global financial crisis, however, put an abrupt stop to this improvement, with the debt-to-GDP ratio further increasing and reaching unprecedented levels above 200 percent of GDP.

Source: Authors.

2. THE ANALYTICS OF GOVERNMENT DEBT SUSTAINABILITY UNDER LOW INTEREST RATES

Already before the COVID-19 pandemic, many wondered how Japan could keep on running fiscal deficits with such high levels of public debt. For the most part, explanations focused on factors that made Japan exceptional. After all, it is true that Japan benefits from high savings rate, from a strong preference for holding domestic assets, and from a relatively low tax rate that leaves room for future tax increases (Hoshi and Ito 2014).⁵

But a more fundamental reason explains why Japan (and other advanced economies) has managed to sustain higher debt levels: the secular decline in interest rates (Blanchard 2019; Blanchard et al. 2020; Furman and Summers 2020). With safe interest rates below (rather than above) growth rates, the analytics of debt sustainability is fundamentally changed.

To see this, consider the basic equation of debt dynamics, where $(i - g)$ is the interest rate–growth rate differential:⁶

$$\left(\frac{Debt}{GDP}\right)_t - \left(\frac{Debt}{GDP}\right)_{t-1} \approx (i_t - g_t) \left(\frac{Debt}{GDP}\right)_{t-1} + \left(\frac{Primary\ Deficit}{GDP}\right)_t$$

The equation shows that the change in the debt-to-GDP ratio is a function of two terms:

- 1. the product of the interest rate–growth rate differential and the stock of debt;
- 2. the primary deficit.

Clearly, the higher the level of debt the the more the interest rate–growth rate differential matters for a country’s fiscal trajectory (Furman and Summers 2020). With a debt level close to 200 percent of GDP in 2019 (Japan Cabinet Office 2020a), the interest rate–growth rate differential was already critical to Japan’s debt trajectory before COVID-19.⁷ With a positive differential, Japan would have had to run primary surpluses to stabilize its debt-to-GDP ratio. With a negative differential, Japan could already stabilize its debt ratio while running primary deficits (Table 2.1).

Table 2.1 Primary balance required to stabilize the debt-to-GDP ratio at 194.5%

Effective nominal interest rate (%)								
Growth rate (%)			0	0.5	1	1.5	2	2.5
	0		0	1.0	1.9	2.9	3.9	4.9
	0.5		–1.0	0	1.0	1.9	2.9	3.9
	1		–1.9	–1.0	0	1.0	1.9	2.9
	1.5		–2.9	–1.9	–1.0	0	1.0	1.9
	2		–3.9	–2.9	–1.9	–1.0	0	1.0
	2.5		–4.9	–3.9	–2.9	–1.9	–1.0	0

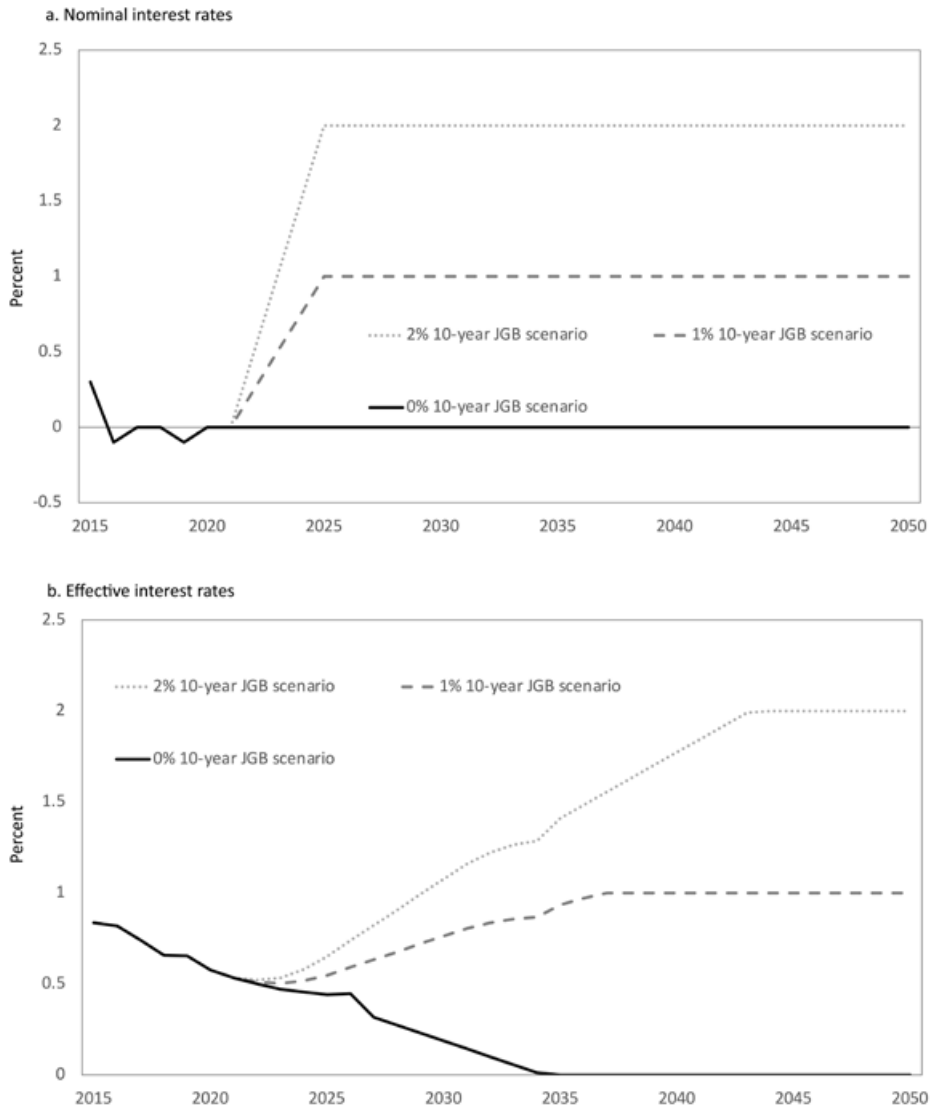
Note: GDP = gross domestic product.
Sources: Japan Cabinet Office (2020a); and authors’ calculations.

3. JAPAN’S GOVERNMENT DEBT SUSTAINABILITY

To see more precisely how different interest rates, growth rates, and primary deficits affect Japan’s debt trajectory, we conduct a standard debt sustainability analysis. More specifically, we show how various assumptions about future macroeconomic conditions and fiscal policies impact the debt-to-GDP trajectory. To isolate the impact of COVID-19, our analysis is first done using pre-pandemic forecasts (Japan Cabinet Office 2020a) and then using post-pandemic forecasts (Japan Cabinet Office 2020b).

For years after 2021, nominal GDP is assumed to grow at a rate of 1.5 percent per year. This rate corresponds to the growth rate of Japan between FY2013 and FY2018. It is higher than the baseline scenario of Japan’s Cabinet Office, which assumed before the pandemic that nominal growth would decline below 1.5 percent after 2023 to stabilize at around 1.1 percent (Japan

Cabinet Office 2020a). But it is also more conservative than the more optimistic scenario considered by Japan's Cabinet Office, where the policies of Abenomics are assumed to overcome deflation, spur economic revitalization, and eventually translate into a nominal growth rate of 3 percent per year.⁸



Note: JGB = Japan government bond.

Sources: Japan Cabinet Office (2020a); and authors' calculations.

Figure 2.3 Alternative paths for nominal and effective 10-year interest rates: 10-year JGB yields

We consider two scenarios for fiscal policy (see Figure 2.4): one with fiscal consolidation and one without. In both scenarios, we assume that tax revenues grow at the same rate as GDP. The fiscal consolidation case implies that government expenditures grow more slowly than GDP.⁹

We also consider three paths for the 10-year nominal rate after 2025: 0 percent, 1 percent and 2 percent (Figure 2.3). With a significant part of current outstanding debt issued in the past, current increases in Japanese government bond (JGB) yields do not, however, translate one-to-one into higher interest payments now. To account for this transmission lag, we follow Baba (2020a) and estimate a model where the effective interest rate (calculated by dividing interest payments by the debt stock) follows a 10-year moving average of nominal interest rates.

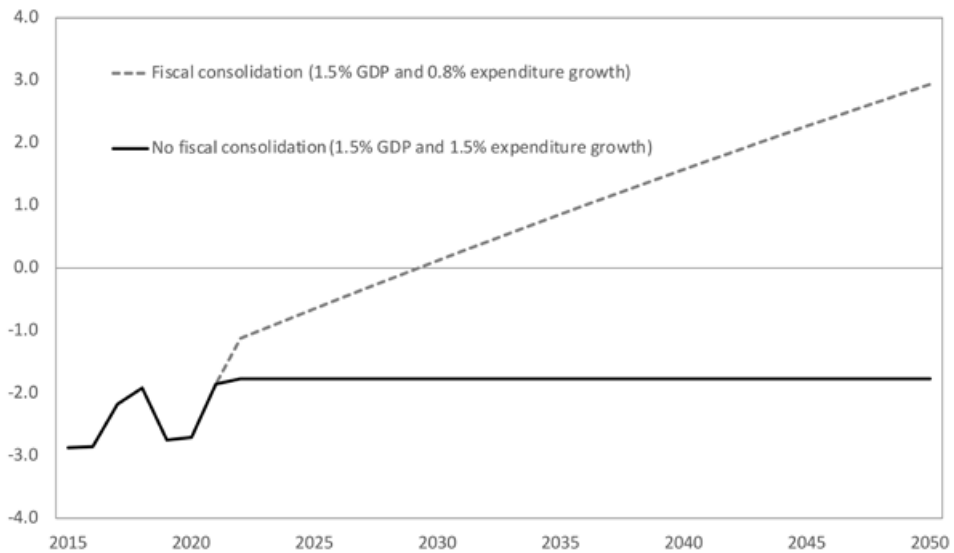
As should be clear from the description of the scenarios above, this exercise abstracts from the impact that monetary and fiscal policies have on output in the short term. This assumption is clearly incorrect. But adopting a purely public finance view of fiscal policy is, however, useful to obtain transparent benchmarks. When relevant, we discuss the effect of relaxing these assumptions in what follows.

4. JAPAN'S GOVERNMENT DEBT TRAJECTORY BEFORE COVID-19

At the end of 2019, Japan's debt was 194.5 percent of GDP. Before the pandemic, the expectation (Japan Cabinet Office 2020a) was that nominal GDP would grow by 2.4 percent. With a 10-year JGB nominal interest rate of 0 percent (that translated into a 0.6 percent effective nominal interest rate) and a primary deficit of 2.7 percent, the debt-to-GDP ratio was forecast to decrease to 191 percent of GDP in 2020.¹⁰ In 2021, the expectation was that growth would slow down to 1.9 percent and that the primary deficit would decline to 1.9 percent of GDP. Together with the same assumption for interest rates in 2020, this implied a further reduction in debt-to-GDP to 190 percent of GDP.

Figure 2.4 shows the two scenarios we consider for fiscal policy after 2021. The solid black line shows the path with no fiscal consolidation. With government expenditures and GDP growing at the same rate, the primary deficit would remain close to its 2021 level and be equal to 1.8 percent of GDP in 2022 and forever after. The dashed gray line shows the primary balance path associated with a fiscal consolidation scenario where government expenditures grow at around half the rate of GDP.

The specific parameters underlying the fiscal consolidation scenario are meant to illustrate the impact of a relatively slow and mild adjustment to fiscal policy. At this pace, the primary balance would only turn into a surplus by 2030. Under that scenario, the pace of consolidation over the next six years would be equal to one-third of the adjustment of 2013 and 2019 and would bring the primary deficit from 7 percent to 2.6 percent of GDP.¹¹

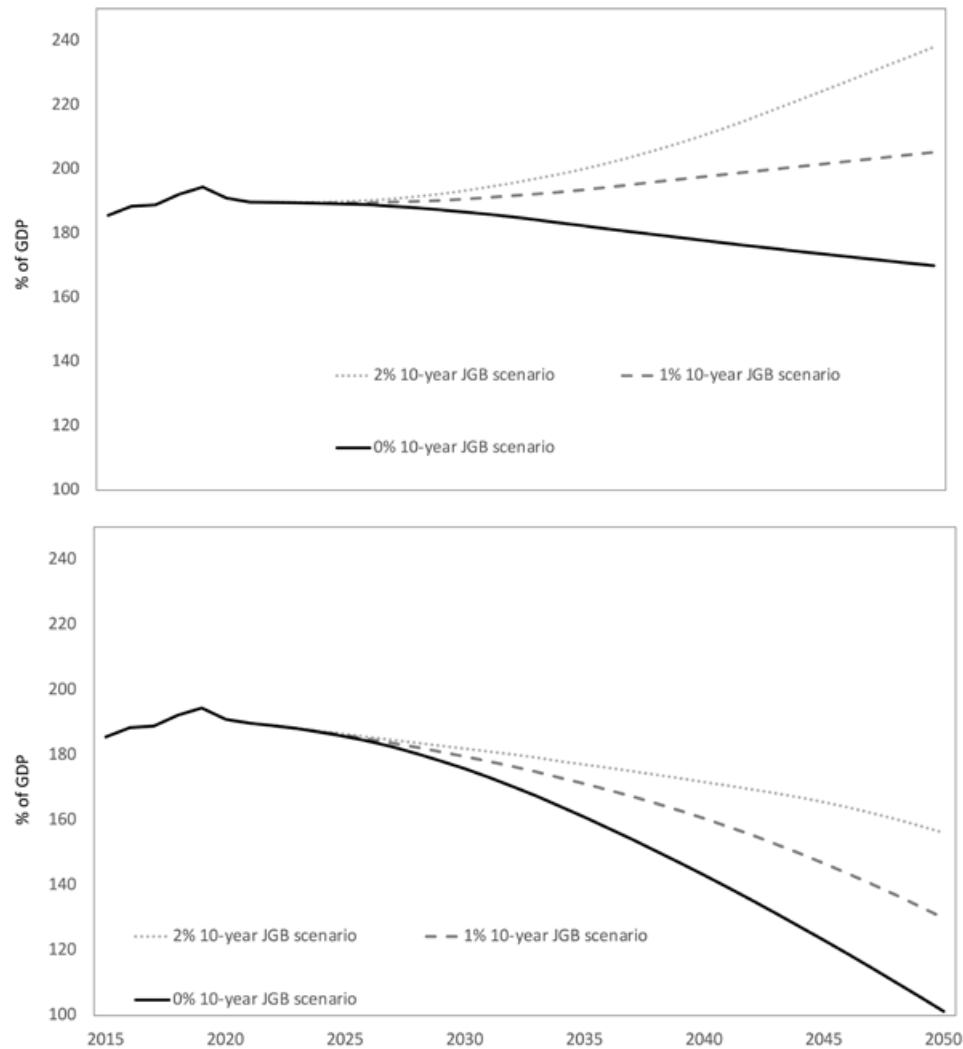


Note: GDP = gross domestic product.

Sources: Japan Cabinet Office (2020a); and authors' calculations.

Figure 2.4 Alternative paths for the primary balance before COVID-19 (% of GDP)

Figure 2.5 shows the results of our simulations for the debt trajectory. A first notable result is that it is possible to sustain a stable or even declining debt-to-GDP ratio without consolidating fiscal policy. At 1.8 percent in the no consolidation scenario, the primary deficit is in fact lower than the one Japan could afford with an interest rate–growth rate differential between -1.5 percent and -0.5 percent (Table 2.1). A second notable result is that higher interest rates could be countered with a relatively mild adjustment to fiscal policy. In fact, even with JGB yield converging to 2 percent after 2025, the debt-to-GDP ratio would decline under our relatively mild fiscal consolidation scenario.



Note: GDP = gross domestic product; JGB = Japan government bond.
Sources: Japan Cabinet Office (2020a); and authors' calculations.

Figure 2.5 Debt trajectory before COVID-19: pre-COVID-19 debt-to-GDP ratio without consolidation (upper panel) and with consolidation (lower panel)

5. INCREASE IN GOVERNMENT DEBT WITH COVID-19

COVID-19 has had a large impact on Japan's public finances. With Japan not only letting automatic stabilizers operate—through increases in regular unemployment allowances, increases in the volume of means-tested social benefits, and declines in personal and corporate income tax liabilities—but also implementing one of the largest fiscal policy packages (see Box 2.2), the primary deficit is expected to increase by more 10 percent of GDP in 2020.

The size of Japan's fiscal package is notable for several reasons: first, because it was exceptionally large (IMF 2020) despite Japan experiencing a relatively shallow recession compared with other advanced economies. The Organisation for Economic Co-operation and Development (OECD) (OECD 2020), for example, estimates that the decline in real GDP was significantly smaller in Japan than in France, Italy, and the United Kingdom where output was expected to fall by 9.4 percent, 10.5 percent, and 10.1 percent, respectively.¹² Second, with the highest debt-to-GDP ratio in the world (see Box 2.1), one could have expected it to have constrained Japan's fiscal response. It clearly didn't.

In its July 2020 projections, Japan's Cabinet Office estimated that the downturn in economic activity and the fiscal measures taken in response will increase the primary deficit by about 10 percentage points from 2.6 percent to 12.8 percent of GDP and increase the debt-to-GDP ratio by almost 25 percentage points in 2020 (Table 2.2).

Table 2.2 July 2020 economic and fiscal projections

	2019	2020	2021
Nominal GDP growth (%)		0.8	−4.1
Primary balance (% of GDP)	−2.6	−12.8	−4.3
Debt-to-GDP (% of GDP)	192.5	216.4	213

Note: Debt-to-GDP ratio for 2019 was revised downward compared with Japan Cabinet Office (2020a).

Source: Japan Cabinet Office (2020b).

BOX 2.2 THE COVID-19 FISCAL PACKAGE

Because Japan's fiscal package combines grants, loans and equity support, not all policy measures (such as the Fiscal Investment and Loan Program) directly impact the fiscal balance.¹³

Direct Expenditures (¥69.1 Trillion, 12.5% of GDP)

1. Health Sector

Transfers to local governments for spending on COVID-19-related measures (¥5.4 trillion).

Production, procurement, and distribution of critical equipment such as masks and ventilators (¥0.6 trillion).

Other health-related measures (such as support for the development of vaccines).

2. Non-health Sector

Cash handout to all residents (¥12.9 trillion).

Lump-sum transfer to affected firms (¥2 million per firm for small and medium-sized enterprises (SMEs), ¥1 million for the self-employed) (¥4.3 trillion).

Rent relief program (¥6 million per firm for SMEs, ¥3 million for the self-employed) (¥2.0 trillion).

Subsidies for job retention (¥2.1 trillion).

Subsidies for public/private financial institutions' lending (¥15.5 trillion).

Measures to accelerate recovery and rebuild resilient economic structures such as incentive measures for consumption in affected service sectors and infrastructure investments (in the post-containment phase) (¥10.8 trillion).

Contingency reserve funds for COVID-19 (¥11.5 trillion).

Other measures: reduction of property tax, expansion of the loss carry-back program, etc.

Deferrals of Payments (¥26 Trillion, 4.7% of GDP)

Deferral of payment of taxes and social security premiums by affected firms and households for 1 year (¥26 trillion).

Equity Injections, Asset Purchases, Loans, Debt Assumptions, Quasi-Fiscal Operations, and Use of Extra-Budgetary Funds (¥137.1 Trillion, 25% of GDP)

Government-boosted special financing and guarantees primarily for micro, small and medium-sized business operators affected by COVID-19 through the Japan Finance Corporation and other institutions (¥129.1 trillion).

Other off-budget operations using the Development Bank of Japan and other agencies (primarily for infrastructure projects in the post-containment phase) (¥8 trillion).

Government Guarantees and Other Contingent Liabilities (¥2 Trillion, 0% of GDP)

Guarantees on bonds/borrowing by the Development Bank of Japan and the Japan Finance Corporation (¥1 trillion).

Guarantees on external bonds issued by the Development Bank of Japan and Japan Bank for International Cooperation (¥1 trillion).

Addendum: Prime Minister Suga announced a new economic package in December 2020 with a headline size of ¥73.6 trillion (14 percent of GDP) and “fiscal measures” of ¥40 trillion (7.6 percent of GDP). The government’s accompanying documentation suggests that of the ¥30.6 trillion in central government spending, the FY2020 supplemental budget, which will finance a bulk of net new additional spending, will be ¥20.1 trillion (3.8 percent of GDP).

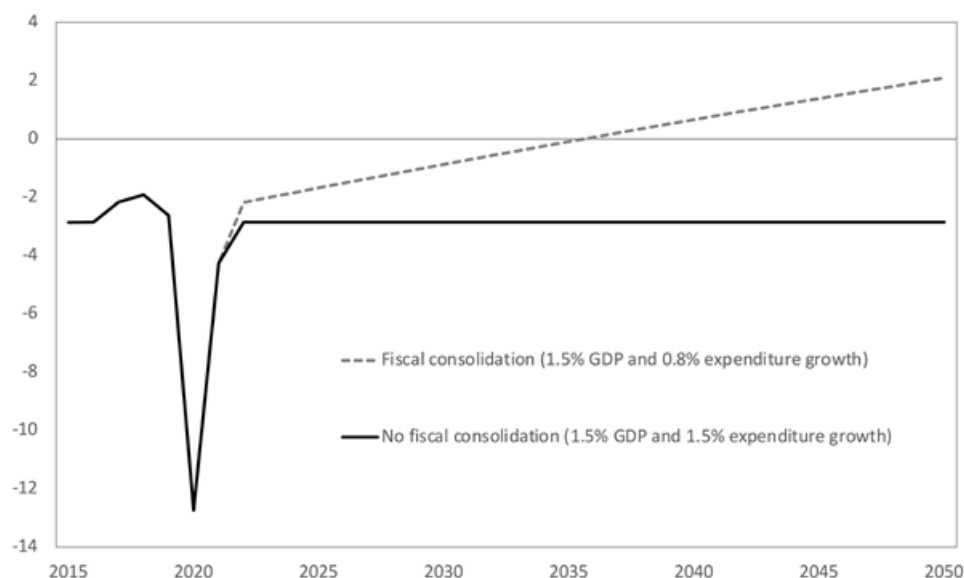
Note: Measures are expressed in percentage of 2019 GDP.

Sources: IMF Fiscal Policies Database (June 2018); Ministry of Finance, Japan Cabinet Office; and authors’ calculations.

6. THE GOVERNMENT DEBT TRAJECTORY AFTER COVID-19

After COVID-19, Japan is expected to end FY2020 with a primary fiscal deficit of almost 13 percent of GDP and a debt-to-GDP ratio of over 215 percent of GDP. How does this change Japan's dynamics debt? In short, by not much. To see why, it is useful to apply the exact same scenarios but to the post-pandemic macroeconomic and fiscal conditions.

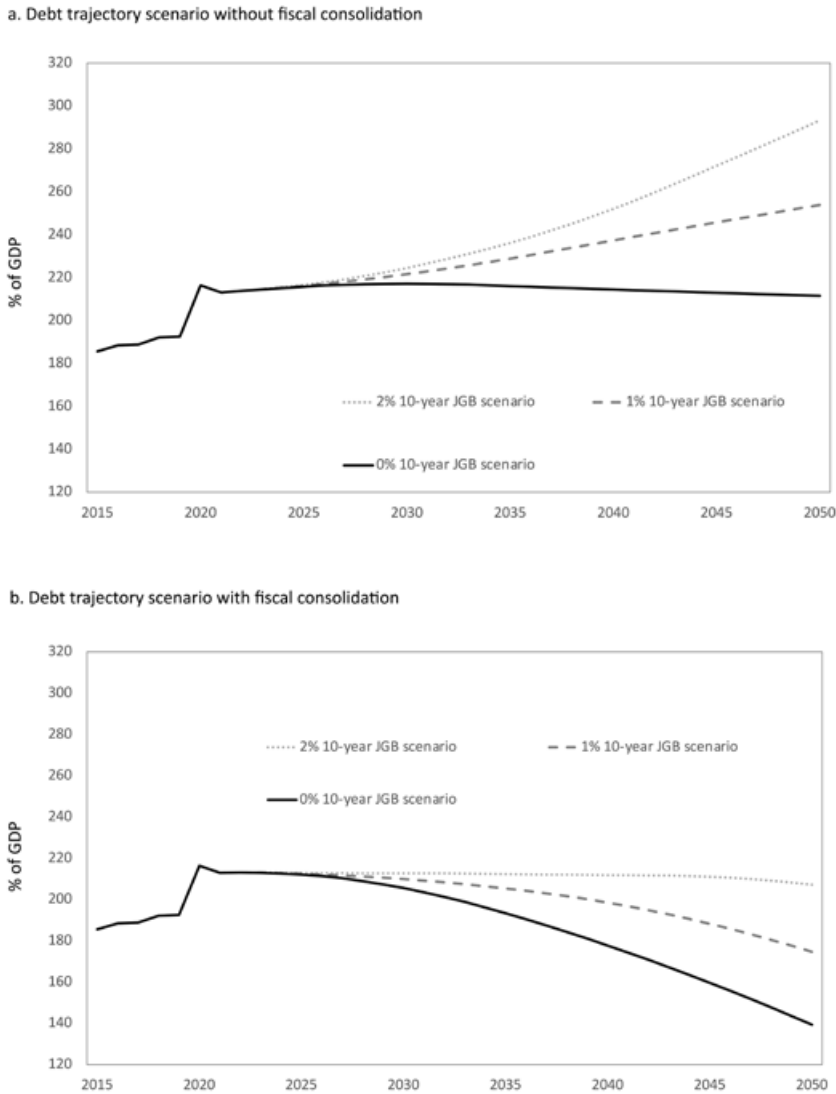
One should note that by "the same scenarios", we do not mean the exact same primary deficits after 2021 as in the previous section. Rather, we simply mean scenarios both with and without fiscal consolidation. Given the deterioration of public finances during COVID-19, the "without fiscal consolidation" scenario now implies a primary deficit of 2.9 percent of GDP, rather than just 1.8 percent, after the year 2021. Similarly, the "with fiscal consolidation" scenario implies that the primary balance would only turn into a surplus in 2036, a delay of six years compared to the pre-pandemic period (Figure 2.6). The size of the fiscal adjustment that we assume is modest as it would imply a reduction in the primary deficit of less than 3 percent of GDP over six years. This is smaller than the adjustment that occurred under Prime Minister Abe.¹⁴



Note: GDP = gross domestic product.

Sources: Japan Cabinet Office (2020b); and authors' calculations.

Figure 2.6 Alternative paths for the primary balance after COVID-19 (% of GDP)



Note: GDP = gross domestic product; JGB = Japan government bond.
Sources: Japan Cabinet Office (2020b); and authors' calculations.

Figure 2.7 Debt trajectory after COVID-19: post-COVID-19 debt-to-GDP ratio with and without consolidation

Figure 2.7 shows the results of the new simulations. The initial debt ratio in 2020 is over 215 percent of GDP.¹⁵ Clearly, and despite the sizable deterioration of public finances in the immediate short run, the long-term sustainability outlook is not fundamentally different than before the pandemic.

In fact, with a negative interest rate–growth rate differential, Japan can stabilize its debt ratio while running even higher primary deficits compared to before the pandemic (3.2 percent versus 2.9 percent). This reflects the fact that the higher a country's debt, the more the interest rate–growth rate differential matters for its fiscal trajectory (Furman and Summers 2020).

A corollary of that result is that a reversal in the interest rate–growth rate differential would require a larger fiscal adjustment than before COVID-19 to stabilize the debt ratio. Despite this, Figure 2.7 shows that the relatively minor fiscal adjustment entertained in our fiscal consolidation scenario would be enough to stabilize the debt ratio.

As in the pre-pandemic analysis, the same caveats apply with respect to the simplifying assumption that fiscal policy has no short-term effect on output. Even with an economic recovery under way at the start of 2021, the amount of spare capacity may remain considerable for at least several quarters until pre-pandemic GDP levels have been restored. Until then, the withdrawal of fiscal support could have large effects (Cohen-Setton et al. 2019; Ramey 2019). If anything, it would be prudent to backload rather than frontload fiscal consolidation in that environment.

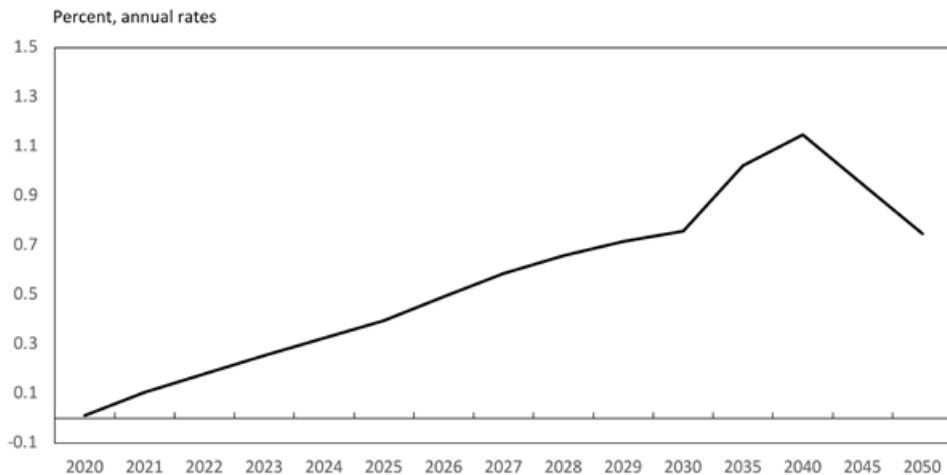
7. THE LIKELY PATH OF THE INTEREST RATE–GROWTH RATE DIFFERENTIAL

Our analysis suggests that, despite a significant deterioration of public finances with COVID-19, Japan's long-term fiscal outlook remains for the most part unchanged. In fact, with a significantly higher level of initial debt and a favorable interest rate–growth rate differential, Japan can run even larger primary deficits than before while stabilizing its debt-to-GDP ratio.¹⁶

An obvious question is whether this benign macroeconomic environment for fiscal sustainability is likely to persist. If growth rates decline further and/or if interest rates normalize to higher levels, the interest rate–growth rate differential could become positive and require that fiscal policy switch from deficit to surplus to maintain a stable debt-to-GDP ratio. But how likely is this scenario? And would a reversal of the differential require a fiscal effort that is beyond Japan's economic and political capacity?

The immediate aftermath of COVID-19 is unlikely to be associated with higher interest rates for several reasons. First, the Bank of Japan has pledged to maintain its yield curve control policy for the foreseeable future (Box 2.3). Second, the aftermath of pandemics tends to be associated with lower rather than higher natural rates of interest as precautionary savings increase (Jorda et al. 2020).

Discussing the exact reasons underlying low natural rates and what they imply for the persistence of the trend is beyond the scope of this chapter.¹⁷ Whatever the exact reason, bond markets however expect that low rates will persist. The 5-year forward 10-year JGB nominal bond rate is at the time of this writing only 0.5 percent. Even the 10-year forward expectation of the 10-year JGB rate is only around 1 percent (Figure 2.8). That situation is not specific to Japan, with Furman and Summers (2020) documenting similar findings for the US, and Blanchard et al. (2020) for Europe. The latter not only found that the average expectation is that rates will be low, but that investors put extremely low weight on the probability that interest rates will rise above 3 percent (1 percent probability in 5 years; 7 percent probability in 10 years).



Notes: JGB = Japan government bond. Data retrieved on 10 December 2020.

Sources: Bloomberg; and authors' calculations.

Figure 2.8 Market-implied interest rates on 10-year JGB yield

BOX 2.3 CHANGES IN THE BANK OF JAPAN'S FORWARD GUIDANCE ON INTEREST RATES

Another short-term risk for fiscal sustainability would be that the Bank of Japan (BOJ) quickly normalizes policy interest rates. This risk, however, appears particularly small in the case of Japan, first, because Japan does not face the risk of a balance of payments crisis, which would require a sudden increase to stem capital outflows; second, because Japan has already managed to keep long-run interest rates (10-year JGB) around zero (or even negative) since September 2016; and third, because BOJ has if anything strengthened rather than loosened its forward guidance language with COVID-19 (Bank of Japan 2020), as we illustrate below.

31 July 2018: Introduction of Forward Guidance for Policy Rates

BOJ intends to maintain the current extremely low levels of short- and long-term interest rates for an extended period of time, taking into account uncertainties regarding economic activity and prices, including the effects of the consumption tax hike scheduled to take place in October 2019.

25 April 2019: Clarification of Forward Guidance

BOJ intends to maintain the current extremely low levels of short- and long-term interest rates for an extended period of time, at least through around spring 2020, taking into account uncertainties regarding economic activity and prices, including developments in overseas economies and the effects of the scheduled consumption tax hike.

31 October 2019: New Forward Guidance for Policy Rates

BOJ expects short- and long-term interest rates to remain at their present or lower levels as long as it is necessary to pay close attention to the possibility that the momentum toward achieving the price stability target will be lost.

27 April 2020: Forward Guidance in the Wake of COVID-19 Pandemic

For the time being, BOJ will closely monitor the impact of COVID-19 and will not hesitate to take additional easing measures if necessary, and also it expects short- and long-term policy interest rates to remain at their present or lower levels.

Source: Bank of Japan.

Markets can, however, be wrong. In particular, they may fail to fully incorporate the extent to which the higher government debt generated by COVID-19 could increase safe interest rates. As discussed in Blanchard et al. (2020), higher debt may lead to higher safe interest rates for at least two reasons.

First, higher government debt may crowd out private capital, reduce capital formation, and thus eventually increase the marginal product of capital. With financial markets integrated internationally, the strength of this effect is not, however, a function of Japan's supply of sovereign bonds, but rather the world's supply of such bonds.

Second, COVID-19 may affect the relative supply of Japanese sovereign bonds. In fact, given the strength of Japan's fiscal response to COVID-19, the proportion of Japanese bonds in investors' portfolios will likely increase. For this to happen, investors may require a higher safe interest rate.

According to Blanchard et al. (2020), a good rule of thumb for the strength of these channels is that a 1 percentage point increase in the debt ratio translates into an increase in the safe interest rate of 2 to 4 basis points. To be conservative, let's use the upper bound of these estimates and see the extent to which the buildup in public debt associated with COVID-19 could increase interest rates. With an increase in the debt-to-GDP ratio of about 25 percentage points, interest rates would be expected to increase by about 1 percent, which is actually in line with what markets expect (see Figure 2.8).

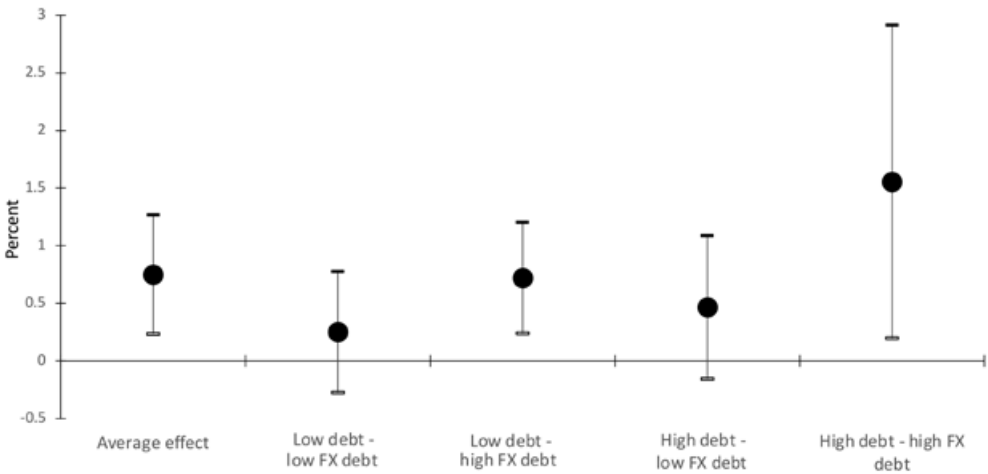
With a debt ratio of 215 percent of GDP and an interest rate–growth rate differential of –0.5 percent (1 percent interest rate minus 1.5 percent nominal growth), Japan could still stabilize its debt-to-GDP ratio while running a primary deficit. It would however have to be below 1.1 percent of GDP.

COVID-19 could also affect long-term growth rates. But it is at this point almost impossible to even assess the direction of these changes. Potential growth rates could be decreased through scarring and hysteresis effects, but could also be bolstered by the impetus to biotechnology and vaccine research, which the fight against COVID-19 generated, and the wider adoption of previously existing technologies (Brynjolfsson et al. 2017).

8. WHAT MAKES EMERGING ECONOMIES DIFFERENT

Our analysis has so far abstracted from the fact that the Japanese risk premium may also increase as a result of higher debt. With higher debt, investors may start to worry about debt sustainability and require a higher compensation. But that higher compensation required by investors may in fact create more fiscal risks and thus increase the probability of default in a self-fulfilling manner.¹⁸

For debt denominated in domestic currency, this problem can be eliminated by having the central bank commit to buy as many bonds as necessary at the lower interest rate. Doing so requires that the central bank is credible enough to maintain confidence in the currency and avoid the risk of fiscal dominance. For debt denominated in foreign currency, the risk is harder to avoid. But with only 10 percent of its government debt held by foreign creditors and 0.2 percent of its government debt denominated in foreign currency, Japan is for the most part immune from that risk.¹⁹



Notes:
FX = foreign currency.
This figure shows the interest-rate exposures to large negative growth shocks for countries with different debt levels and different shares of foreign currency-denominated debt. More specifically, it shows the estimated coefficients of regressing nominal long-term interest rates on the growth shock, defined as a dummy equal to 1 if the country-realized GDP growth in year t is 1 percent or more lower than the forecast in October of year $t-1$, and zero otherwise. The four different debt categories are defined by splitting the observations in low- and high-public debt and then, within each category, between low- and high foreign currency-denominated public debt. The low versus high split is done along the sample median. The lines show the 90 percent confidence intervals of the point estimates.
Source: Lian et al. (2020, Table A5).

Figure 2.9 Interest rate exposures to negative growth shocks and public debt structure

Few EMDEs are, however, in the same situation as Japan. In the case of EMDEs, the central bank cannot generally commit to buying bonds at the lower interest rate without disanchoring inflation expectations and thus turning a debt problem into an inflation problem. Despite also

benefiting from the decline in natural interest rates (Cohen-Setton et al. 2018), the increase in the debt associated with COVID-19 may thus imply greater rollover risks for EMDEs in Asia.

Lian et al. (2020) illustrated this problem by studying the impact of large negative growth shocks for countries with different levels of public debt and levels of foreign currency-denominated debt (Figure 2.9). In advanced economies, which typically have high public debt but only a low component of it denominated in foreign currency, a negative growth surprise does not translate into a higher interest rate. For EMDEs with low public debt but high foreign currency-denominated debt, the point estimate indicates that interest rates increase by 73 basis points in response to a negative growth shock of at least 1 percent. For EMDEs with high debt and high foreign currency-denominated debt, interest rates increase by 155 basis points in response to a negative growth shock of at least 1 percent.²⁰

Altogether, it is thus not surprising that the risk of debt distress has doubled for EMDEs after COVID-19 (Zettelmeyer 2020). As in advanced economies, lower safe rates also make their debt levels more sustainable. But the increase in public debt associated with COVID-19 also makes them more vulnerable to classic rollover risks.²¹

9. POLICY RECOMMENDATIONS FOR JAPAN

Our analysis suggests that despite being historically high, low interest rates have made Japan's debt both more affordable and manageable than in the past. This has several implications for fiscal policy over the next few years.

A first implication is that there is no urgency to decrease fiscal support. This lack of emergency was already clear before COVID-19. But our analysis suggests that the higher debt stock associated with COVID-19 does not require a more rapid return to fiscal balance. If anything, fiscal support will likely be needed for longer to avoid the unnecessary scarring effects that a shortfall in aggregate demand could do to the growth potential.

A second implication is that fiscal policy will remain in the front seat rather than in the back seat when it comes to stabilizing output. Even after pre-pandemic GDP levels are restored, the likely persistence of low natural rates will continue to constrain monetary policy. In that context, the Japanese government should refrain from promising to return to primary fiscal surplus by a certain date as it has repeatedly done in the past. Instead, the government should indicate that fiscal support will continue until the labor market is on track to reach maximum employment and inflation is on track to reach its inflation target.

A third implication is that the government should make full use of the policy instruments that it possesses to mitigate the risk and impact associated with a reversal of the interest rate–growth rate differential. Issuing longer-dated debt would not only help lock in the current low rates of funding, but would also provide the government with more time to progressively adjust its fiscal trajectory if and when the differential reverses. The government could also adopt contingency plans that stipulate in advance how revenues would be increased and expenditures decreased if the interest rate–growth rate differential reversed and became persistently positive (Blanchard and Tashiro 2019).

NOTES

1. This chapter was completed before one of the authors joined the Independent Evaluation Office of the International Monetary Fund. The views expressed therein are those of the authors only and do not represent the views of the IEO, the IMF, or ADB, its Board of Governors or the governments they represent.
2. Chapter 9 of this volume shows that interest payments over GDP are a better measure of debt sustainability in advanced economies than debt over GDP by analyzing the correlations of fiscal risk with these two ratios.
3. International Monetary Fund. General Government Gross Debt. Accessed at: https://www.imf.org/external/datamapper/GGXWDG_NGDP@WEO/OEMDC/ADVEC/WEOWORLD.
4. The wholesale price index in 1949 was about 220 times higher than that in 1934–1936 (Ito 2012).
5. In 2018, the tax-to-GDP ratio was 32 percent in Japan, 33.9 percent for the OECD average, and above 40 percent for seven European countries. See OECD (2020); and OECD tax revenue (indicator), doi: 10.1787/d98b8cf5-en (accessed 13 December 2020).
6. The equation can alternatively be written in real terms with i and g defined, respectively, as the real interest rate and the real growth rate of GDP. The change in the debt-to-GDP ratio is not exactly equal to the expression on the right-hand side because of stock-flow adjustments, including valuation effects of foreign currency-denominated bonds. These adjustments would be relevant to the short-run dynamics of debt or risks of fiscal distress if Japan depended on foreign investors and issued foreign-currency bonds. The stock-flow adjustment also includes the realization of contingent liabilities.
7. To ensure consistency with available interest payment data and the Economic and Fiscal Projections for Medium- to Long-Term Analysis conducted twice a year by the Cabinet Office, government debt is defined as the sum of central and local government debt. When the liabilities of the social security funds are included, the debt ratio in 2019 is 238 percent of GDP. For more on the difference between the two definitions, see https://www.mof.go.jp/budget/fiscal_condition/related_data/202007_01.pdf. In addition, our simulation is based on the figures up to 2021 of the January 2020 Japan Cabinet Office (CAO) Projections (Japan Cabinet Office 2020a) for pre-COVID-19 debt dynamics and the July 2020 CAO Projections (Japan Cabinet Office 2020b) for post-COVID-19. The CAO only reveals primary and fiscal balance and does not disclose the levels of expenditure and revenue, and we create these series according to the method of Doi (2017). July 2020 CAO projections. Accessed at: <https://www5.cao.go.jp/keizai3/projection-e/projection202007.pdf>.
8. See January 2020 CAO Projections (Japan Cabinet Office 2020a).
9. Under the Abe administration, fiscal consolidation was not uniquely implemented through expenditure cuts. It also took the form of increases in government revenues, by increasing the consumption tax rate from 5 percent to 8 percent in April 2014 and from 8 percent to 10 percent in October 2019.
10. The forecasts for GDP and the primary balance are obtained from the January 2020 Economic and Fiscal Projections of the Cabinet Office (Japan Cabinet Office 2020c). Alternative forecasts for GDP could be obtained from the 15 January 2020 release of the Japan Center for Economic Research (JCER) (<https://www.jcer.or.jp/en/esp-forecast-top>), which surveys around 40 professional economic forecasters.
11. See IMF. Primary Net Lending/Borrowing (also referred to as Primary Balance). Accessed at: https://www.imf.org/external/datamapper/GGXONLB_G01_GDP_PT@FM/JPN.
12. The decline in economic activity is, however, expected to be smaller in Australia, Germany, the Republic of Korea, and the United States at respectively –4.1 percent, –5.4 percent, –1.0 percent, and –3.8 percent.
13. Baba (2020b), for example, estimates that only ¥32 trillion or 5.8 percent of GDP have been appropriated for the new budget. The difficulty of measuring the exact discretionary fiscal impulse from budgetary plans is not specific to Japan. For a comparison of the fiscal packages of the United States and France, see Cohen-Setton and Pisani-Ferry (2020).
14. With a primary deficit of 4.3 percent in 2021, it would imply a reduction of less than 3 percentage points over six years, which is less than two-thirds the adjustment that occurred between 2013 and

2019. See IMF. Primary Net Lending/Borrowing (also referred to as primary balance). Accessed at: https://www.imf.org/external/datamapper/GGXONLB_G01_GDP_PT@FM/JPN.
15. There is a discrepancy between the debt-to-GDP ratio in 2019 in Japan Cabinet Office (2020a) (194.5 percent) and Japan Cabinet Office (2020b) (192.5 percent). The reason is that CAO's pre-COVID-19 projection was conducted and published in January 2020, which is before the end of FY2019 (March 2020). Simply put, the figures of 2019 are projections, and not actual ones. We do not change the figures of pre-COVID-19 because the primary balance is also obtained from CAO's pre-COVID-19 projection. Moreover, the difference is small and does not affect the analysis.
 16. Chapter 11 emphasizes the importance of including explicit and implicit contingent liabilities in debt sustainability analyses as the materialization of these liabilities can lead to spikes in the debt-to-GDP ratio. Currie and Velandia (2002) provide a useful list. Explicit liabilities include (1) credit guarantees; (2) public insurance schemes (e.g., against losses associated with crop failures or disasters triggered by natural hazards); and (3) legal proceedings and disputes. As noted by Chapter 13 of this volume, future explicit liabilities also include social transfers under current law.
 17. Furman and Summers (2020) provide a useful overview. For an opposite view, see Goodhart and Pradhan (2020).
 18. As argued by Blanchard et al. (2020), the range of debt ratios for which both a good equilibrium (low rate, no default) and a bad equilibrium (high rate, default) coexist can be very large.
 19. Economic and Social Research Institute. General Government Gross Debt. Accessed at: <https://www.esri.cao.go.jp/en/sna/sddsplus/tables/ggd.xlsx>.
 20. Chapter 9 of this volume also reports that exchange rate depreciations are a significant determinant of fiscal risk in EMDEs but not in advanced economies, based on regressions of fiscal risk on changes in exchange rates.
 21. A distress event is defined as a restructuring event and/or a crisis that triggers an IMF program.

REFERENCES

- Baba, N. 2020a. Government Debt Dynamics and Monetary Policy in the Post-COVID-19 Period. Goldman Sachs Economics Research. 14 May.
- Baba, N. 2020b. Japan Economic Flash: First Take on Second Supplementary Budget. Goldman Sachs Economics Research. 27 May.
- Bank of Japan. 2020. Summary of Opinions at the Monetary Policy Meeting. Accessed at: https://www.boj.or.jp/en/mopo/mpmsche_minu/opinion_2020/opi200427.pdf.
- Blanchard, O. 2019. Public Debt and Low Interest Rates. *American Economic Review*. 109(4), pp. 1197–229.
- Blanchard, O. and T. Tashiro. 2019. Fiscal Policy Options for Japan. Policy Briefs PB19–7. Washington, DC: Peterson Institute for International Economics.
- Blanchard, O., A. Leandro and J. Zettelmeyer. 2020. Redesigning EU Fiscal Rules: From Rules to Standards. Mimeo. 30 August. Accessed at: https://www.economic-policy.org/wp-content/uploads/2020/10/9100_Reducing-EU-Fiscal-Rules.pdf.
- Brynjolfsson, E., D. Rock and C. Syverson. 2017. Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics. *NBER Working Paper*. 24001. Cambridge, MA: National Bureau of Economic Research.
- Cohen-Setton, J. and J. Pisani-Ferry. 2020. When More Delivers Less: Comparing the US and French COVID-19 Crisis Responses. *Policy Brief*. 20–9. June. Washington, DC: Peterson Institute for International Economics.
- Cohen-Setton, J., E. Gornostay and C. Ladreit. 2019. Aggregate Effects of Budget Stimulus: Evidence from the Large Fiscal Expansions Database. *Working Paper* 19–12. July. Washington, DC: Peterson Institute for International Economics.
- Cohen-Setton, J., T. Helbing, A.S. Posen and C. Rhee (eds) 2018. *Sustaining Economic Growth in Asia*. Washington, DC: Peterson Institute Press.
- Currie, E. and A. Velandia. 2002. Risk Management of Contingent Liabilities Within a Sovereign Asset Liability Framework. *World Bank Working Paper Series*. No. 174069. Washington, DC.

- Doi, T. 2017. When Can the Primary Balance Surplus be Achieved? Dissecting the Economic and Fiscal Projections for Medium to Long Term Analysis. Research Institute of Economy, Trade and Industry (RIETI) BBL Seminar. 22 November 2017 [in Japanese].
- Furman, J. and L. Summers. 2020. A Reconsideration of Fiscal Policy in the Era of Low Interest Rates. Mimeo. 30 November. Accessed at: <https://www.brookings.edu/wp-content/uploads/2020/11/furman-summers-fiscal-reconsideration-discussion-draft.pdf>.
- Goodhart, C. and M. Pradhan. 2020. *The Great Demographic Reversal: Ageing Societies, Waning Inequality, and Inflation Revival*. Cham: Springer Nature.
- Government of Japan, Cabinet Office (Japan Cabinet Office). 2020a. Economic and Fiscal Projections for Medium to Long Term Analysis. 17 January. Tokyo. Accessed at: <https://www5.cao.go.jp/keizai3/econome/projection202001.pdf>.
- Government of Japan, Cabinet Office (Japan Cabinet Office). 2020b. Economic and Fiscal Projections for Medium to Long Term Analysis. 31 July. Tokyo. Accessed at: <https://www5.cao.go.jp/keizai3/projection-e/projection202007.pdf>.
- Government of Japan, Cabinet Office (Japan Cabinet Office). 2020c. Executive Summary: Economic and Fiscal Projections for Medium to Long Term Analysis (January 2020). Accessed at: <https://www5.cao.go.jp/keizai3/econome/projection202001sum.pdf>.
- Hoshi, T. and T. Ito. 2014. Defying Gravity: Can Japanese Sovereign Debt Continue to Increase without a Crisis?. *Economic Policy*. 29(77), pp. 5–44.
- International Monetary Fund (IMF). 2020. Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic. Accessed at: <https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19>.
- Ito, M. 2012. Sengo Haipa Infure to Chuoginko [The Hyper Inflation after the War and the Central Bank]. *Kinyu Kenkyu [Monetary and Economic Studies]*. 31(1), pp. 181–226 [in Japanese].
- Jorda, O., S.R. Singh and A. Taylor. 2020. The Long Economic Hangover of Pandemics. *Finance and Development*. June 2020. Washington, DC: IMF. Accessed at: <https://www.imf.org/external/pubs/ft/fandd/2020/06/pdf/long-term-economic-impact-of-pandemics-jorda.pdf>.
- Lian, W., A.F. Presbitero and U. Wiriadinata. 2020. Public Debt and r - g at Risk. *IMF Working Papers*. No. 20/137. Washington, DC: IMF.
- Ministry of Finance. 1969. *Okurasho Hyakunenshi [Ministry of Finance 100-Year History]*. Tokyo: Okura Zaimu Kyokai.
- Ministry of Finance. 2005. *Showa Zaiseishi Showa 49 – 63 Nendo Dai 1 Kan Sousetsu Zaisei Kaikei Seido [History of Fiscal and Monetary Policies in Japan 1974–1989 Volume 1 General Remarks and Fiscal Accounting System]*. Tokyo: Toyo Keizai Inc.
- Ministry of Health and Welfare. 1999. *Annual Reports on Health and Welfare 1998–1999 Social Security and National Life*. Tokyo.
- Organisation for Economic Co-operation and Development (OECD). 2020. OECD Economic Outlook, Interim Report. September. Accessed at: <http://www.oecd.org/economic-outlook/>.
- Ramey, V.A. 2019. Ten Years after the Financial Crisis: What Have We Learned from the Renaissance in Fiscal Research?. *Journal of Economic Perspectives*. 33(2), pp. 89–114.
- Reinhart, C.M. and K.S. Rogoff. 2009. *This Time is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.
- Saito, J. 2011. Debt Sustainability in Japan. Paper presented at Bruegel's Asia Europe Economic Forum Conference. Seoul, Republic of Korea, 9–10 December. Accessed at: https://www.bruegel.org/wp-content/uploads/imported/events/Jun_Saito_PAPER.pdf.
- Zettelmeyer, J. 2020. Pandemic Sovereign Debt Risks. Presentation at the Peterson Institute for International Economics. October. Accessed at: <https://www.piie.com/events/international-architecture-resolving-sovereign-debt-involving-private-sector-creditors-recent>.

3. People's Republic of China: features and recent evolution of corporate debt

Ninghua Zhong and Mi Xie¹

The surge of corporate debt in the People's Republic of China (PRC) has given cause for much concern (Chivakul and Lam 2015; Maliszewski et al. 2016; Lv and Bai 2019). For instance, Standard and Poor's Ratings Services (2014) since 2013 has described the PRC's total corporate debt to be the largest in the world and twice that of the United States (US). International experience suggests that the credit boom in the PRC is on a dangerous trajectory (Chen and Kang 2018) and has increasingly threatened financial and macroeconomic stability (Walter and Howie 2012; Chapter 7). Some reports predict that corporate debt will become less sustainable in the PRC as growth slows, especially with the impact of the COVID-19 pandemic triggering a wave of defaults (Lee 2020).

Following a review of the features and evolution of corporate debt in the PRC in the next two sections, this chapter discusses the impact of structural reforms on corporate debt in section 3 and of COVID-19 in section 4. Section 5 concludes with some policy recommendations.

1. CONTRIBUTING FACTORS TO THE SURGE OF CORPORATE DEBT IN THE PRC

The shocks caused by the global financial crisis and the massive earthquake in 2008 led to a steep decline in economic growth, with unemployment rising substantially and international trade dropping. To minimize the impact on growth, the central government responded with a \$586 billion (12.6 percent of gross domestic product (GDP) in 2008) fiscal stimulus package for 2009 and 2010, most of which was financed by debt, including bank lending, local government bonds, and Treasury bonds.²

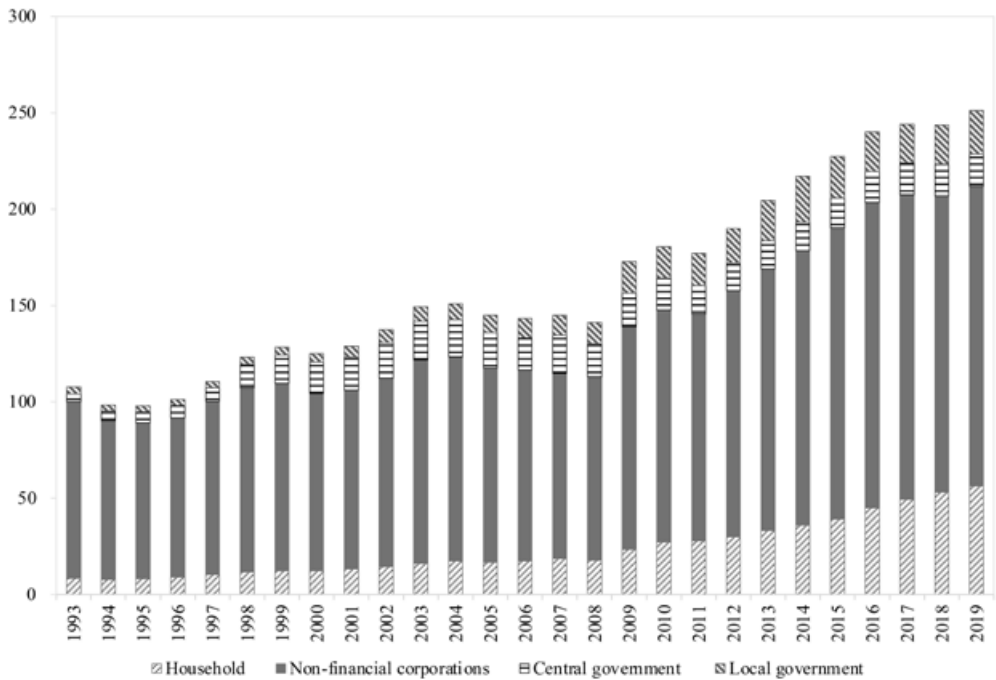
At the same time, the government put in place moderately easy monetary policies to enable banks to increase credit supply to the real economy. Some of these policies involved lower bank reserve requirement ratios and benchmark lending rates, and higher quotas for total loans. These measures accelerated growth in money supply (M2) to 28.5 percent in 2009, higher than the economy's double-digit expansion in 2003–2007.

The stimulus package reversed the downward trend during 2005–2007, causing the total debt-to-GDP ratio to soar from 141 percent in 2008 to 180 percent in 2010—a rise of nearly 40 percentage points as total debt increased by CNY29.4 trillion (\$4.4 trillion at the end of 2010) during the two stimulus years (Figure 3.1).³ By the end of 2019, the PRC's total debt amounted to \$35 trillion or 243 percent of GDP.

The PRC's total debt-to-GDP ratio is comparable to that of the US, the United Kingdom, Italy, and Greece, and is much higher than other emerging market countries and developing

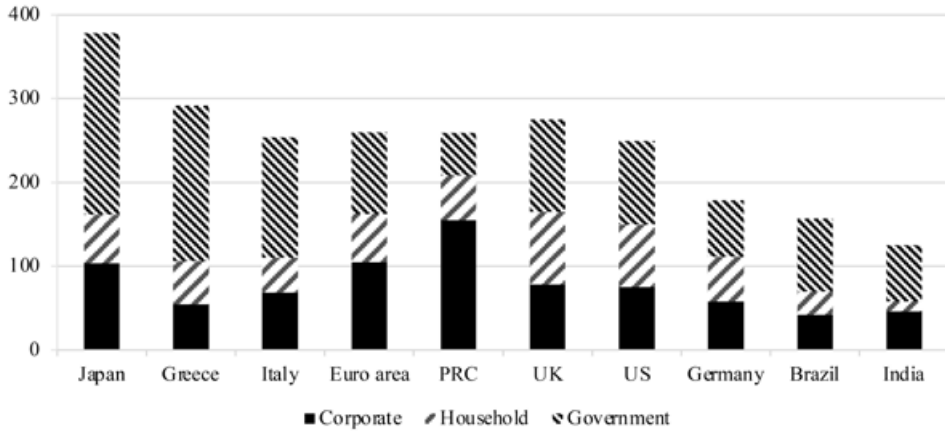
economies such as Brazil and India, whose ratios are below 160 percent (Figure 3.2). In other words, as a developing country, the PRC bears a similar debt burden to that of developed countries, and its debt ratio is still rising rapidly.

We find that household debt, nonfinancial corporate debt, and local government debt have escalated faster than central government debt in the PRC (Figure 3.1). Since 2008, the debt-to-GDP ratio of the household sector has exploded—from 18 percent in 2008 it reached 56 percent in 2019—and the total debt of this sector surged tenfold to \$8 trillion in 12 years. The ratio of central government debt (mainly outstanding Treasury bonds) to GDP has remained relatively stable since 2008, at around 15 percent, with the total central government debt at \$2.4 trillion at the end of 2019. Local government debt (mainly outstanding local government bonds) has also risen rapidly, from 11 percent of GDP in 2008 to 23 percent in 2019, with total debt surging from \$0.5 trillion to \$3.3 trillion. More importantly, a dominant part of total debt in the PRC is nonfinancial corporate debt, which consists mainly of corporate loans and bonds—from \$4.4 trillion in 2008 it surged to \$22.3 trillion in 2019, with its ratio to GDP jumping from 95 percent in 2008 to 156 percent in 2019.⁴



Notes:
GDP = gross domestic product; PRC = People's Republic of China.
Total debt does not include the debt of the financial sector.
Sources: National Bureau of Statistics of China. <http://www.stats.gov.cn/english/> (accessed December 2020); and the PRC's Research Center for National Balance Sheets. <http://114.115.232.154:8080/>.

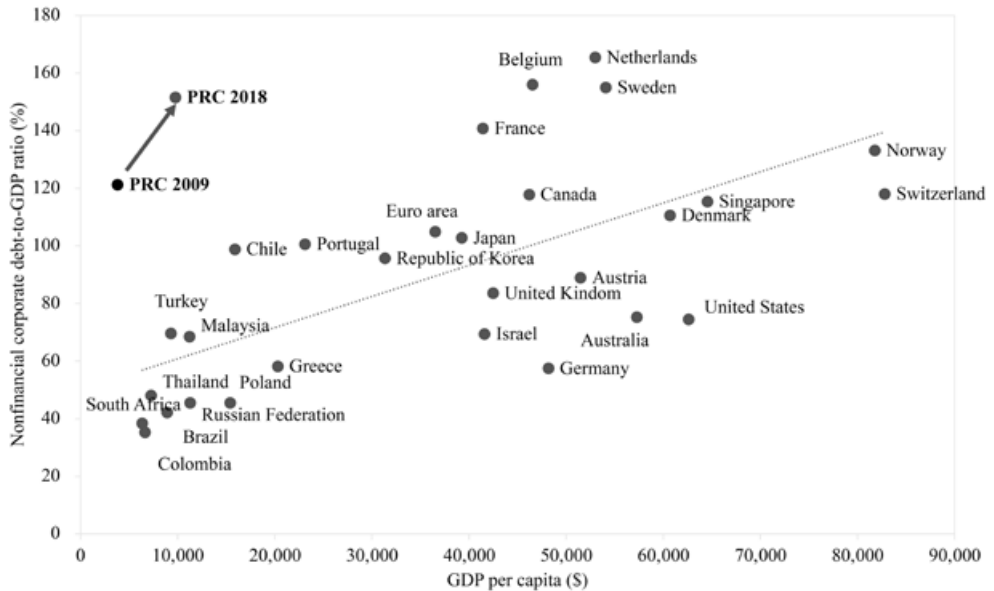
Figure 3.1 Total debt-to-GDP ratio by sector in the PRC (%)



Note: GDP = gross domestic product; PRC = People's Republic of China; UK = United Kingdom; US = United States.

Source: Bank for International Settlements.

Figure 3.2 Total debt-to-GDP ratio (%)—selected economies, Q3 2019

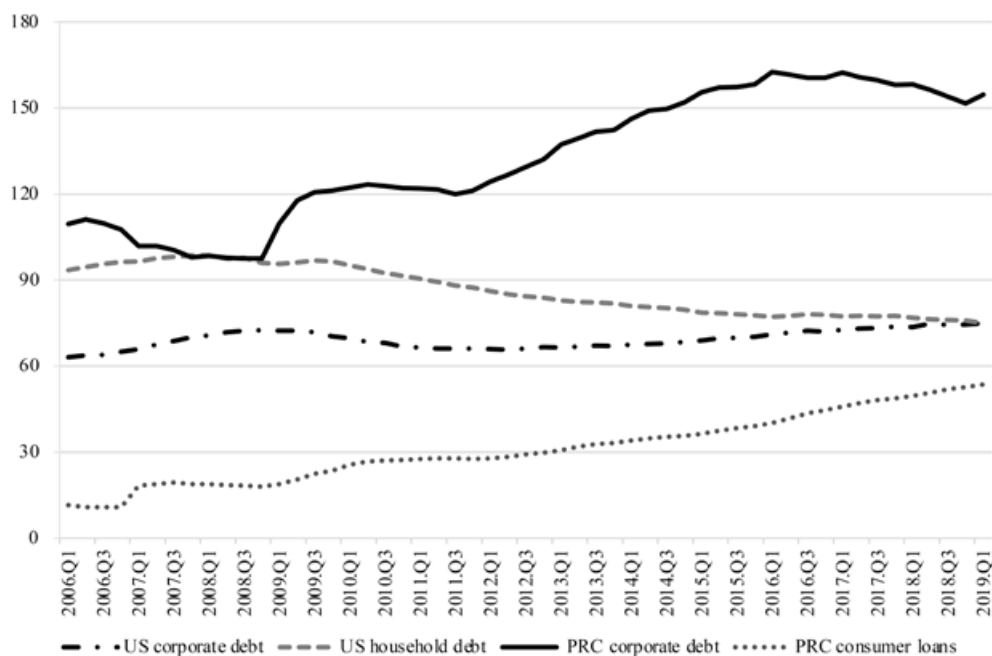


Note: GDP = gross domestic product; PRC = People's Republic of China.

Sources: Bank for International Settlements and International Monetary Fund.

Figure 3.3 Nonfinancial corporate debt-to-GDP ratio—selected economies, 2018

The PRC's nonfinancial corporate debt-to-GDP ratio ranked first among the 15 countries with the highest GDP in the first quarter (Q1) of 2019. In the past decade, its ratio climbed by 45 percentage points.⁵ We plot the debt-to-GDP ratio of the nonfinancial corporate sector versus GDP per capita of selected countries and find a wide gap between the debt ratio of the corporate sector and economic development from 2009 to 2018 (Figure 3.3). As of Q1 2019, the debt-to-GDP ratio of the PRC's nonfinancial corporate sector was double that of the US (Figure 3.4). Also noteworthy is that the concentration of debt in the PRC has been different from that of the US where household borrowing is perhaps the main concern.



Notes:

GDP = gross domestic product; PRC = People's Republic of China; US = United States.

Consumer loans in the PRC do not include mortgage loans.

Sources: CEIC database; People's Bank of China; Thomson Reuters Datastream; and ABN Amro.

Figure 3.4 Total debt-to-GDP ratio (%) by sector—United States and the PRC, 2006–2019

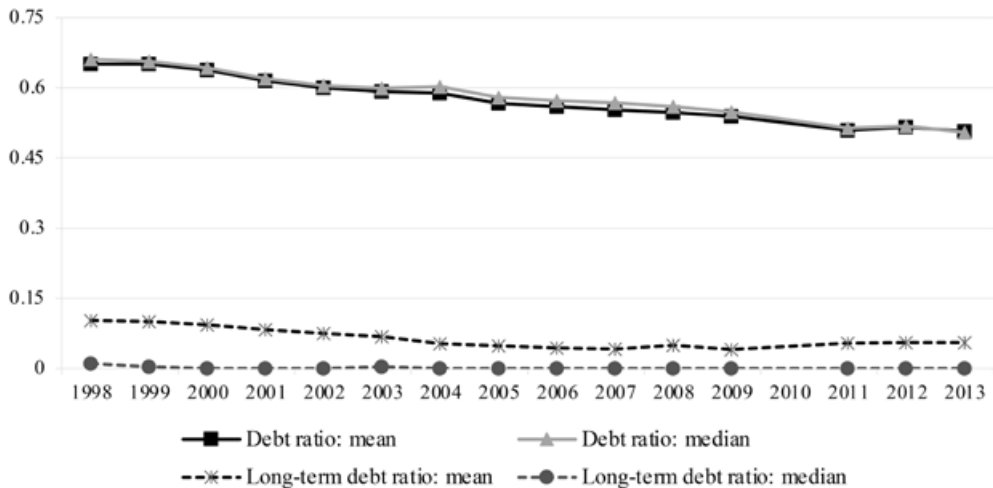
One important reason for the PRC's debt issues, particularly the extraordinarily high debt-to-GDP ratio of the nonfinancial corporate sector, is that the capital market is still dominated by indirect financing, which consists mainly of bank loans. In 2018, indirect financing accounted for 83 percent of the increased total national financing, notably funds provided by commercial banks and trusts, while direct financing consisting mainly of bond and equity finance made up only 17 percent (10 percent corporate bond financing and 7 percent equity-based funds). Also, in 2018, 93 percent of the increased total national financing

of CNY20 trillion (about \$2.9 trillion) consisted of debt-based funds, while in the US, equity finance accounted for about 70 percent.⁶

2. KEY FEATURES OF CORPORATE DEBT RATIO IN THE PRC

Next, we study the key features of and changes in the PRC's corporate debt ratio (that is, total debt/total assets) using micro-level data pertaining to around 4 million observations of non-listed and listed industrial firms. Specifically, we look at the statistics of firms listed in the Annual Survey of Industrial Firms (ASIF), which is maintained by the National Bureau of Statistics of China (NBS) and covers all state-owned enterprises (SOEs) and non-state enterprises above a threshold size from 1998 to 2013.⁷ We exclude 2010 data because of very poor quality. The dataset covers most of the industrial firms in the PRC and is the most comprehensive firm-level panel database available. We applied several criteria to check the sample firms in the raw data and dropped the outliers.⁸

The simple average and median of corporate debt ratios of around 4 million observations in the ASIF dataset decreased from 65 percent in 1998 to 51 percent in 2013, representing a steady decline of 14 percentage points in 16 years and averaging nearly 1 percentage point annually (Figure 3.5). Furthermore, in breaking down total debt into short-term debt (matured within 1 year) and long-term debt, we find that the average long-term debt ratio (total long-term debt/total assets) dropped from 11 percent to 6 percent during the same period. However, the median long-term debt ratio was zero for most of the years, indicating that half of the sample firms had no long-term debt on their account at all.



Note: PRC = People's Republic of China.

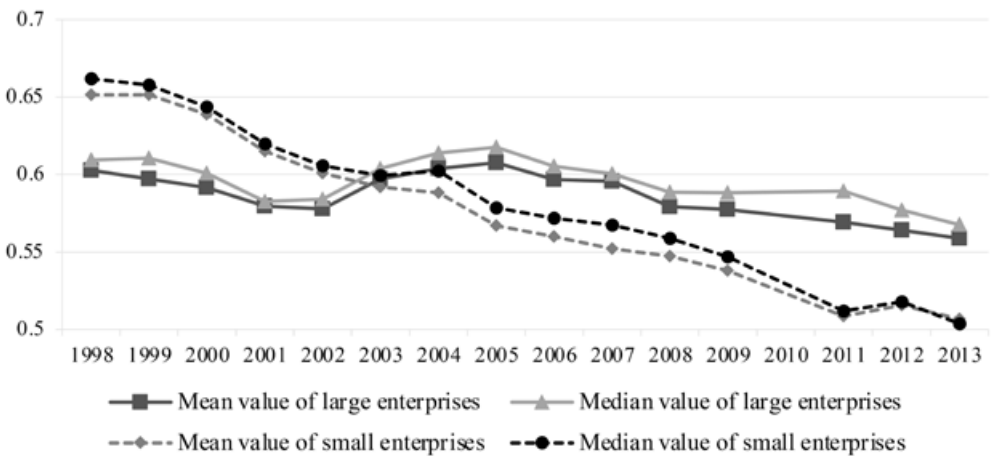
Source: ASIF conducted by the NBS of China.

Figure 3.5 Debt ratio of non-listed industrial enterprises in the PRC (1998–2013)

We then divide the entire sample of firms according to various standards and find that corporate debt is highly “structural”, that is, much of that debt is concentrated in a fraction of firms—mainly large, state-owned, and listed ones—showing a rising trend over the decade, as opposed to the constant downward trend of the debt ratio in most firms. Indeed, while the average debt ratio of large enterprises was relatively stable over the decade, that of the small and medium-sized enterprises (SMEs) dropped sharply from 65 percent in 1998 to 50 percent in 2013, declining 15 percentage points (Figure 3.6).⁹ Since 2003, the average debt ratio of SMEs has grown increasingly lower than that of large enterprises. The existing literature has almost entirely ignored the significant and general “deleveraging” trend of these firms.

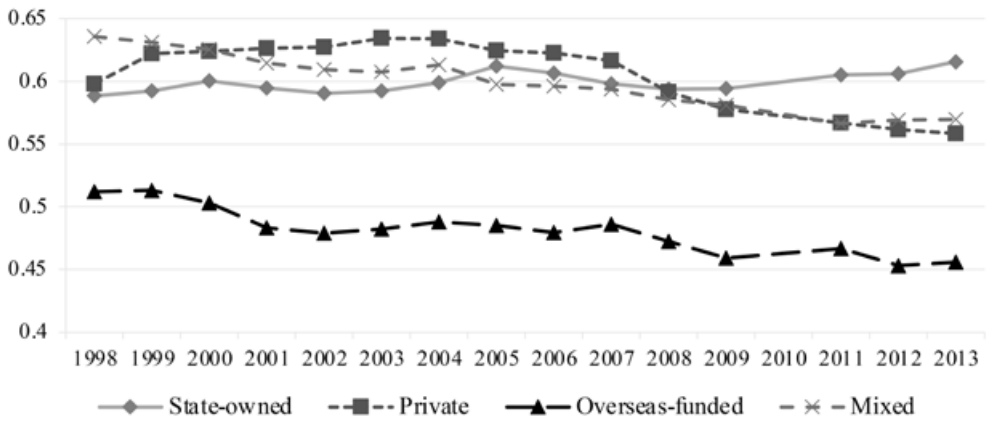
Narrowing the sample down to stable and persistent enterprises that have survived from 1998 to 2013, we find that the debt ratio of these stable SOEs edged up to 62 percent in 2013 from 59 percent in 1998, whereas the debt ratio of other stable firms declined significantly (Figure 3.7). Since 2008, the average debt ratio of SOEs has far outstripped that of the private sector, with the latter’s debt ratio generally higher than foreign firms.¹⁰ Based on statistics released by the State Council, the total debt of SOEs reached \$20 trillion in 2018, accounting for around 77 percent of the total nonfinancial corporate debt, whereas the return on total assets was less than 2 percent, thus posing a relatively high debt risk.¹¹ By contrast, private firms were increasingly having difficulty raising funds.

Early in 1998, the average debt ratio of listed industrial firms was about 40 percent, lagging far behind non-listed industrial firms (Figure 3.8). This is a logical consequence of the ability of listed firms to raise funds through equity financing, which results in a lower proportion of debt financing in their portfolios than non-listed firms. Nevertheless, while the average debt ratio of non-listed industrial firms continuously declined for over 16 years, that of the listed firms steadily climbed by 12 percentage points and has since 2009 exceeded that of non-listed firms.



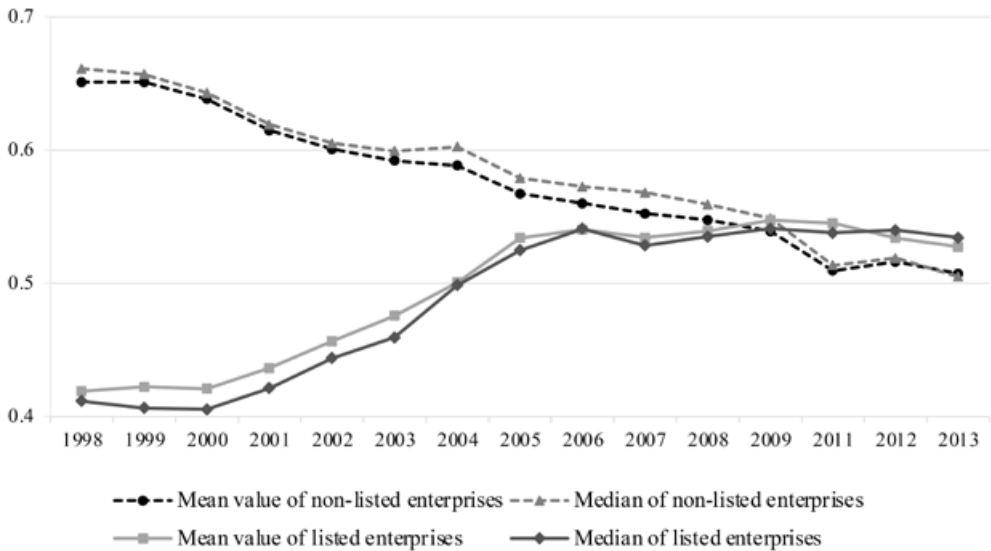
Source: ASIF conducted by the NBS of China.

Figure 3.6 Debt ratio by enterprise size (1998–2013)



Source: ASIF conducted by the NBS of China

Figure 3.7 Debt ratio of stable and persistent enterprises by ownership (1998–2013)



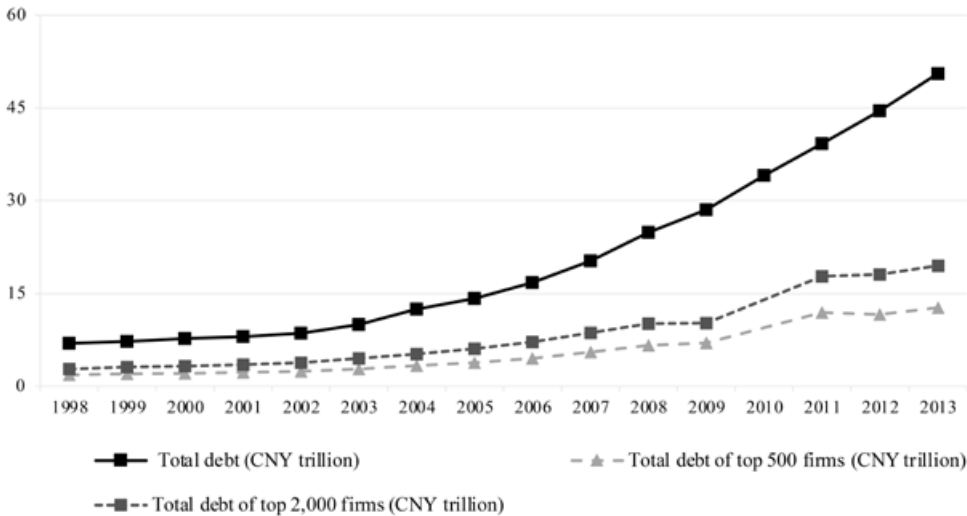
Notes: The data of non-listed industrial enterprises are from the ASIF database. We use listed industrial enterprises traded on the Main Board of the PRC as sample firms since it is the only board of stock market existing before 2004. The statistics on listed enterprises are from the China CSMAR.

Sources: ASIF conducted by the NBS of China; and the CSMAR Database. <https://www.gtadata.com/csmar.html?v=#/index> (accessed December 2020).

Figure 3.8 Debt ratio of listed and non-listed enterprises (1998–2013)

The data also point to the sharp concentration of corporate debt in the PRC (Figure 3.9). In 2013, the ASIF dataset had about 345,000 enterprises, with a total debt of about

CNY49.1 trillion (\$7.4 trillion). Nearly half of that total debt was found in the top 2,000 enterprises (CNY23.5 trillion), while more than a quarter was held by the top 500 enterprises (CNY13.5 trillion).



Note: PRC = People’s Republic of China.
Source: ASIF conducted by the NBS of China.

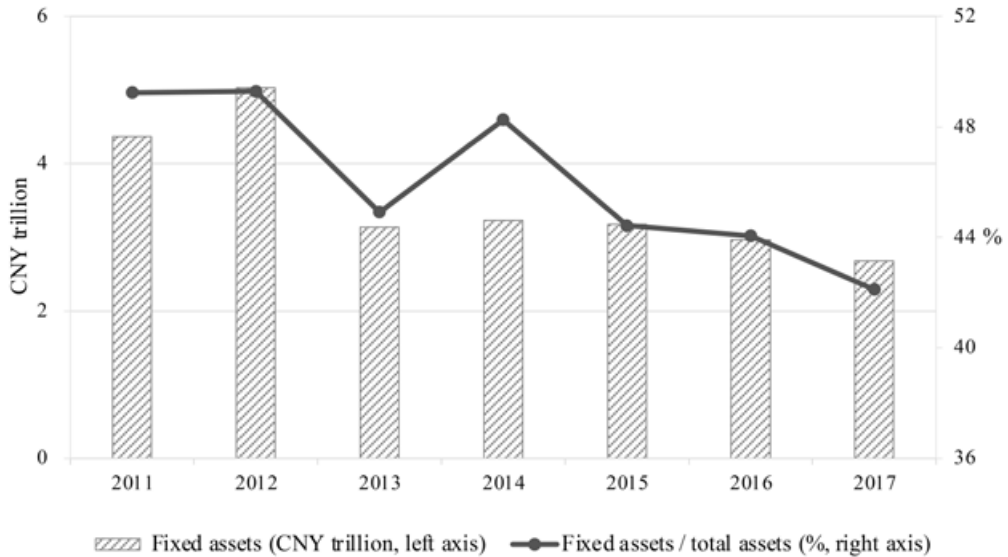
Figure 3.9 Concentration of corporate debt in the PRC (1998–2013)

3. IMPACT OF SUPPLY-SIDE STRUCTURAL REFORM ON CORPORATE DEBT

In response to the rising corporate debt default risk and the downward pressure on economic growth, President Xi Jinping proposed for the first time a “supply-side structural reform” in November 2015 (Xinhuanet 2015). This reform started with the improvement of supply quality and promotion of innovation-driven activities to restructure the economy. The reform identified five priority tasks: cutting overcapacity, destocking, deleveraging, lowering costs, and strengthening areas of weakness. Of the five priority tasks, deleveraging is the most relevant for this chapter.

In October 2016, the State Council proposed seven approaches to reduce the leverage ratio of enterprises.¹² Except for “implementing corporate bankruptcy”, which emphasizes the liquidation of inefficient firms, the other six approaches focus on lowering corporate debt risks by improving the financing environment and the quality of assets and liabilities, and bolstering the performance of firms. Considering the structural nature of corporate debt, the central government adopted successively a series of policies and specific measures aimed at “structural deleveraging”. For instance, several key departments jointly urged that SOEs should lower their average debt ratio by 2 percentage points by 2020 from 2017, after which the SOEs’ debt ratio should remain at the average level of firms of the same scale in the same industry.¹³ It should be noted that the tasks of “cutting overcapacity”, “lowering costs”, and “deleveraging” are intertwined, as they all affect the debt ratio and performance of enterprises. To reduce their

debt-to-asset ratio, firms should not only scale down total indebtedness, optimize their debt structure, and eliminate high-interest debt, but also raise equity capital and enhance profitability, so as to deleverage by lowering the numerator (total debt) and increasing the denominator (total assets).



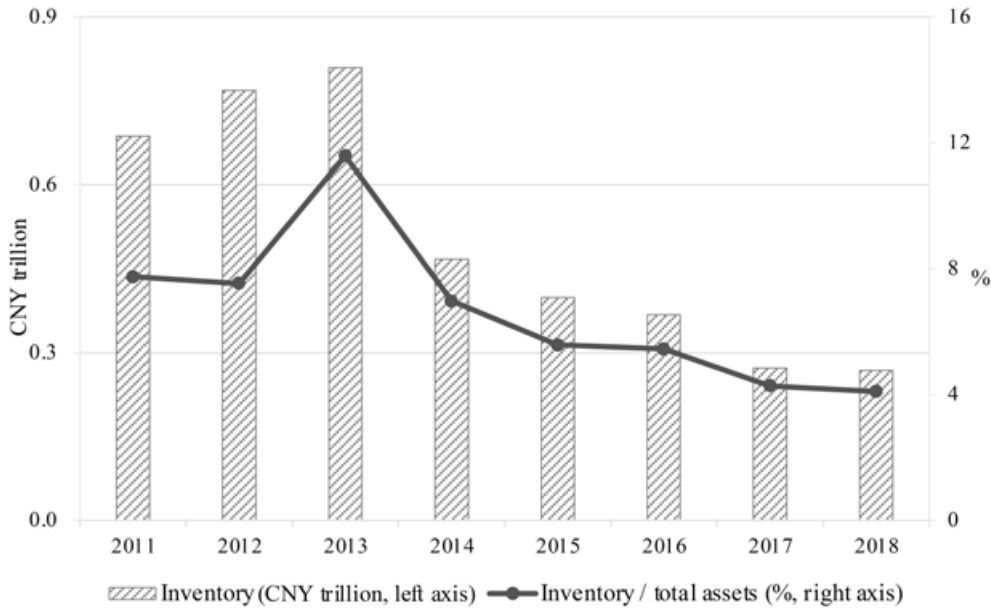
Notes:

ASIF = Annual Survey of Industries Firms; PRC = People's Republic of China; SOE = stated-owned enterprise. The sample firms in Figures 3.10 to 3.14 cover the industrial firms with the same criteria as the ASIF database, and here we use only the statistics on industrial SOEs. The total fixed assets are the national aggregate fixed assets of industrial SOEs. The fixed assets ratio is the aggregate total fixed assets divided by the total assets.

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.10 Capacity reduction and fixed assets of industrial SOEs in the PRC (2011–2017)

Using the aggregate data of industrial SOEs that satisfy the same criteria as the ASIF database, we find that in terms of total assets, the industrial SOEs have made remarkable efforts in reducing capacity after implementing supply-side structural reform.¹⁴ A large number of SOEs are in the upstream portion of the industrial chain, such as steel, coal and mining, which are the major targets of “cutting overcapacity”. We find that the total fixed assets of industrial SOEs—an important indicator of capacity—reached \$0.4 trillion by the end of 2017, down 16 percent from \$0.5 trillion two years earlier (at the beginning of reform). In addition, the proportion of total fixed assets in total assets showed a continual decline from 44 percent in 2015 to 42 percent in 2017 (Figure 3.10). Likewise, inventory pressure on industrial SOEs has eased considerably, with total inventory tumbling almost \$20 billion (33 percent) from 2015 to \$43 billion in 2018, and the ratio of total inventory to total assets falling from 5.6 percent to 4.1 percent during the same period (Figure 3.11).

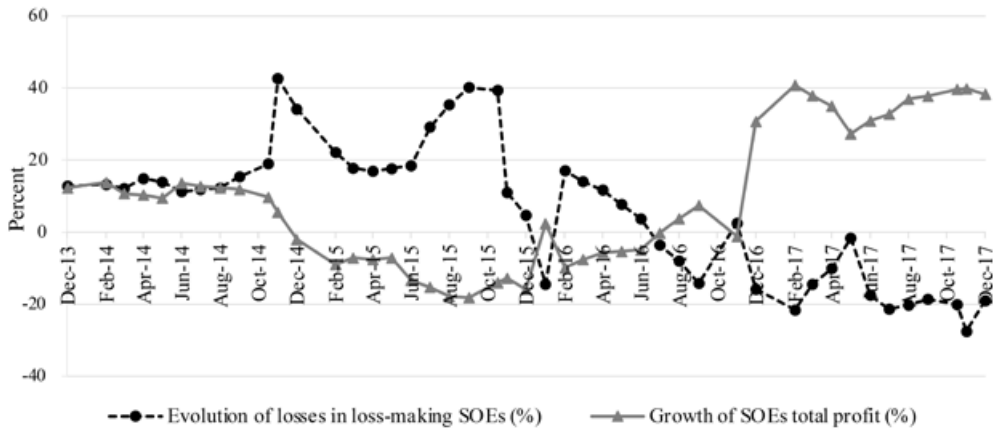


Notes:
PRC = People’s Republic of China; SOE = stated-owned enterprise.
The total inventory is the national aggregate inventory of industrial SOEs, and the inventory ratio is the aggregate total inventory divided by the total assets.
Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.11 Inventory reduction by industrial SOEs in the PRC (2011–2017)

The drastic reduction of excess and outdated capacity, coupled with decreasing inventory pressure, enhanced the profitability of industrial SOEs significantly (Figure 3.12). The supply-side structural reform contributed to a steady increase in the return on sales (total profit over sales income), return on assets (total profit/total assets), and return on equity (total profit/total equity) of these SOEs since 2015, significantly improving profitability (Figure 3.13). These developments have increased the firms’ total equity mainly through retained earnings, thus expanding total assets without increasing debt, and thereby reducing corporate debt ratio.

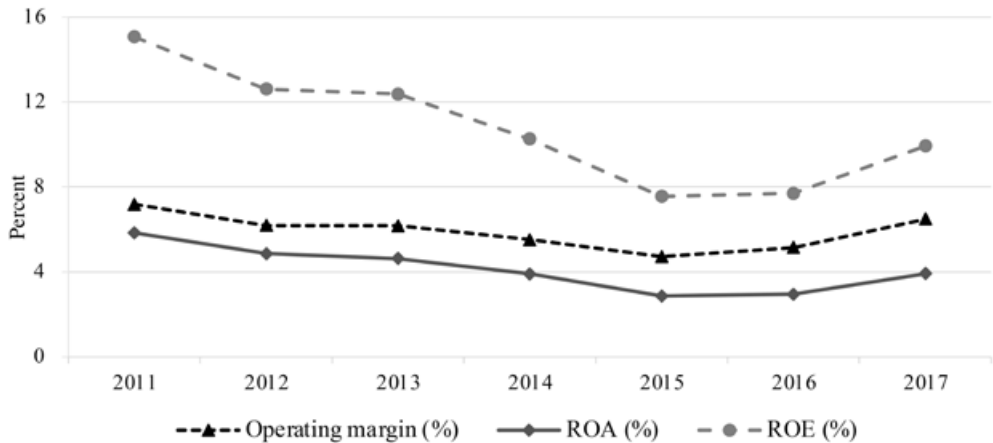
Simultaneously, several measures such as disposal and elimination of “zombie enterprises”, mergers and acquisitions, debt restructuring, and debt-for-equity swap have evidently lightened the debt burden of indebted firms.¹⁵ For instance, the State-Owned Assets Supervision and Administration Commission (SASAC) indicates that from 2015 to 2019, central SOEs have effectively disposed of and liquidated more than 1900 zombie firms and their subsidiaries. Statistics released by the People’s Bank of China, the central bank, indicate that the scale of the market-oriented debt-for-equity swap had exceeded \$0.2 trillion at the end of 2019.¹⁶



Note: PRC = People's Republic of China; SOE = state-owned enterprise.

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.12 Profits and losses of industrial SOEs in the PRC (2011–2017)



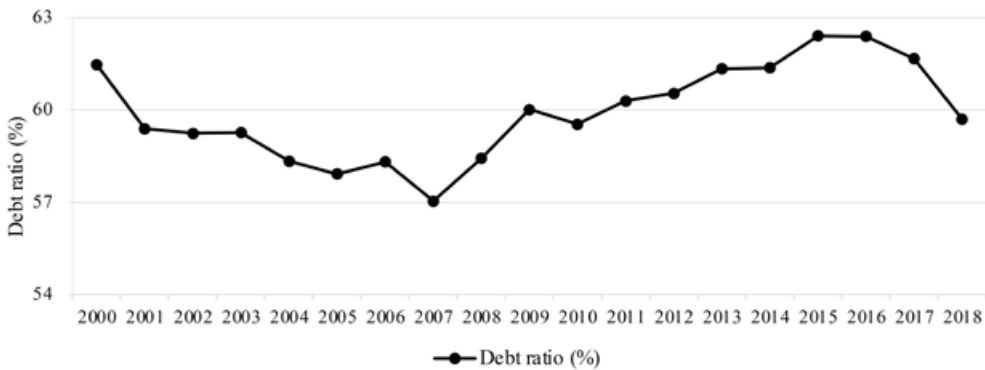
Note: PRC = People's Republic of China; ROA = return on total assets; ROE = return on equity; SOE = state-owned enterprise.

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.13 Profitability of industrial SOEs in the PRC (2011–2017)

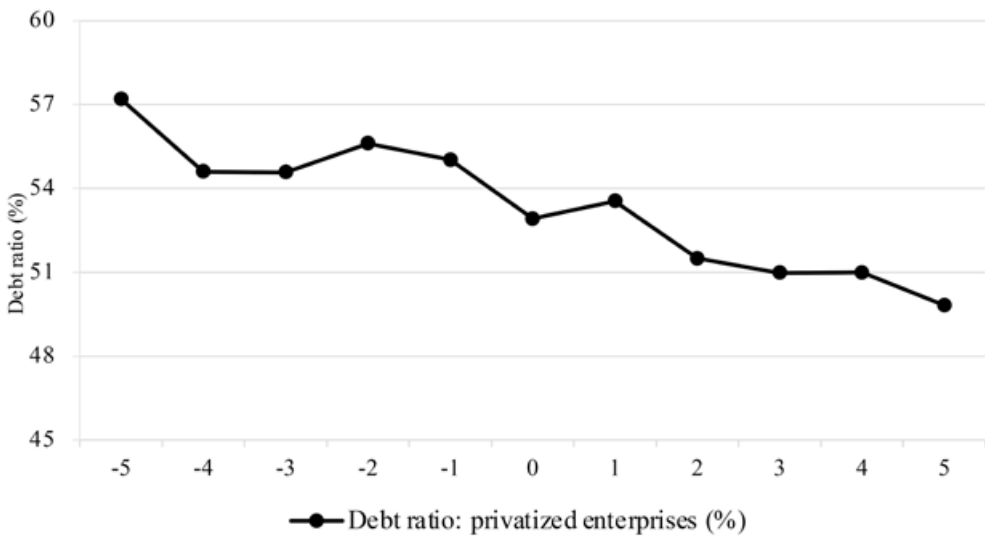
Driven by these measures, the total debt of the sample industrial SOEs fell from \$623 billion in 2015 to \$490 billion in 2017, representing a decline of 21 percent in 2 years. Figure 3.14 shows the dramatic decline in the debt ratio of industrial SOEs. The trend in the debt ratio of SOEs that began rising in 2008 has since 2015 reversed to a rapid decline. Moreover, the average interest coverage ratio (earnings before interest and tax/interest payments) of industrial SOEs has risen steadily after 2015, indicating that the solvency of enterprises has indeed improved,

as the rise in corporate profitability has correspondingly enhanced the ability to service debt and thus mitigate debt risk.



Notes:
PRC = People's Republic of China; SOE = state-owned enterprise.
The debt ratio is the aggregate total debt divided by the total assets.
Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Figure 3.14 Change in debt ratio of industrial SOEs in the PRC (2000–2018)



Note: On the horizontal axis, the current year of restructuring is denoted by 0, negative numbers indicate the number of years before restructuring, and positive numbers indicate the number of years after restructuring.
Source: CSMAR Database. <https://www.gtadata.com/csmar.html?v=#/index> (accessed December 2020).

Figure 3.15 Change in the average debt ratio of listed privatized enterprises

It is noteworthy that, apart from the five priority tasks, SOE reform also plays a vital role in supply-side structural reform and is embedded in these key tasks. Government agencies have emphasized the advancing of mixed-ownership of SOEs as one of the most critical aspects of SOE reform in the PRC and have accelerated its implementation. According to SASAC, from 2013 to 2020, the private sector invested more than \$0.23 trillion in the mixed-ownership reform of central enterprises. In 2018, central firms and their subsidiaries set up 2,880 mixed-ownership enterprises.¹⁷ In 2019, several departments together emphasized that mixed-ownership reforms can be combined with market-oriented debt-to-equity swaps to optimize the equity structure and reduce the debt ratio of SOEs. The sample data indicate that the debt ratio of the firms undergoing mixed-ownership reform have indeed declined (Figure 3.15).

4. IMPACT OF COVID-19 ON LISTED FIRMS IN THE PRC

The outbreak of COVID-19 in early 2020 and its global spread have dealt a heavy blow to the global economy. Although the PRC has made remarkable progress in controlling its spread, the pandemic still poses an enormous challenge for deepening the PRC's structural reform. In the early stage of the COVID-19 outbreak, the closure of production companies and social isolation resulted in a 6.8 percent year-on-year (yoy) drop in GDP in Q1 2020, compared with 6.4 percent growth (yoy) in the same period in 2019. Secondary- and especially tertiary-sector firms were hit hard with a 35.3 percent (yoy) drop in the value-added of hotels and catering services in Q1 2020 (Table 3.1).

Table 3.1 *Quarterly growth rate of value-added by industry (%)*

	Q2 2020	Q1 2020	Q2 2019	Q1 2019
Gross domestic product	3.2	-6.8	6.2	6.4
Primary industry	3.3	-3.2	3.3	2.7
Secondary industry	4.7	-9.6	5.6	6.1
Tertiary industry	1.9	-5.2	7.0	7.0
Agriculture, forestry, animal husbandry, and fishery	3.4	-2.8	3.4	2.9
Manufacturing	4.4	-10.2	5.5	6.5
Construction	7.8	-17.5	5.1	6.2
Wholesale and retail trades	1.2	-17.8	6.0	5.8
Transport, storage and post	1.7	-14.0	7.3	7.3
Hotels and catering services	-18.0	-35.3	6.4	6.0
Financial intermediation	7.2	6.0	7.6	7.1
Real estate	4.1	-6.1	2.5	2.6
Information transmission, software and information technology	15.7	13.2	20.1	21.2
Leasing and business services	-8.0	-9.4	7.5	8.5
Others	-0.9	-1.8	5.7	5.5

Source: NBS of China. <http://www.stats.gov.cn/english/> (accessed December 2020).

Due to data limitations at the time of this study, we use available data of listed nonfinancial firms in the PRC. To assess the impact of COVID-19 on the operation, solvency, debt structure, and financing activities of firms by industry, we study the structural differences of the epidemic's impact and the effects of policy implementation from a micro perspective. We find that the COVID-19 outbreak adversely affected revenue and profitability of most of the sample firms (Table 3.2). Overall, the average revenue of all nonfinancial firms declined by 12 percent (yoy) in Q1 2020, compared with a growth of 16 percent (yoy) in the same quarter of 2019; the average net profit took a nosedive of 31 percent (yoy); and the return on equity of almost all industries declined.¹⁸ The impact varied by industry, with the high export-dependent firms suffering the most.

Table 3.2 Impact of COVID-19 on profitability of firms by industry

Industry	YOY Growth of Operating Revenue		YOY Growth of Net Profit		Gross Margin		Expense Ratio		ROE				
	Q1 2019	Q1 2020	Q1 2019	Q1 2020	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change
Conglomerate	39%	-86%	110%	-68%	8%	10%	2%	7%	17%	9%	1%	1%	0%
Entertainment	27%	-52%	85%	-155%	42%	44%	2%	33%	41%	9%	3%	-2%	-6%
Household appliances	6%	-32%	7%	-56%	24%	25%	1%	17%	17%	0%	4%	2%	-2%
Automobile	-5%	-28%	-26%	-79%	16%	15%	-1%	12%	14%	2%	2%	0%	-2%
Construction materials	28%	-21%	46%	-44%	29%	28%	-2%	13%	18%	5%	3%	1%	-2%
Chemicals	14%	-18%	-22%	-107%	20%	17%	-2%	7%	8%	1%	2%	0%	-2%
Commerce	14%	-15%	22%	-75%	15%	15%	0%	12%	13%	1%	2%	1%	-2%
Media	8%	-13%	-21%	-51%	28%	26%	-2%	18%	22%	4%	2%	1%	-1%
Light manufacturing	1%	-12%	-24%	-30%	22%	22%	-1%	16%	18%	2%	2%	1%	-1%
Textile and apparel	-5%	-10%	-3%	-80%	30%	32%	2%	22%	21%	-1%	2%	1%	-2%
Tele- communication	1%	-10%	575%	-44%	25%	27%	2%	20%	21%	1%	1%	1%	-1%
Electrical equipment	21%	-9%	14%	-2%	22%	22%	-1%	17%	18%	0%	1%	1%	0%
Architectural decoration	14%	-9%	19%	-29%	11%	11%	0%	6%	6%	0%	2%	1%	-1%
Mechanical equipment	11%	-9%	38%	-42%	22%	23%	2%	16%	18%	2%	2%	1%	-1%
Mining	10%	-8%	6%	-73%	23%	23%	-1%	8%	9%	1%	2%	0%	-1%
Computer	18%	-8%	59%	-114%	26%	25%	0%	22%	27%	5%	1%	0%	-1%
Utilities	20%	-8%	30%	-18%	20%	21%	1%	11%	13%	2%	2%	1%	-1%
Health care	22%	-1%	22%	-11%	35%	34%	-1%	24%	24%	-1%	3%	2%	-1%
Real estate	23%	-1%	27%	-30%	31%	32%	1%	12%	13%	1%	2%	1%	-1%

Industry	YOY Growth of Operating Revenue		YOY Growth of Net Profit		Gross Margin		Expense Ratio			ROE			
	Q1 2019	Q1 2020	Q1 2019	Q1 2020	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change
Ferrous metal	5%	0%	-44%	-35%	15%	10%	-4%	6%	7%	1%	2%	1%	-1%
Transportation	0%	3%	26%	-119%	13%	14%	2%	7%	8%	1%	3%	0%	-3%
Food and beverage	16%	3%	24%	1%	50%	51%	1%	18%	17%	0%	7%	6%	-1%
Electronics	100%	5%	13%	-9%	22%	15%	-7%	11%	12%	0%	2%	1%	0%
Agriculture	15%	7%	-36%	249%	17%	14%	-2%	11%	10%	-1%	1%	4%	3%
Nonferrous metal	7%	8%	-34%	-43%	12%	10%	-2%	6%	6%	-1%	1%	1%	-1%
Defense	7%	27%	-12%	246%	14%	14%	0%	13%	13%	0%	0%	1%	1%
Average	16%	-12%	35%	-31%	23%	22%	0%	14%	16%	2%	1%	1%	-1%

Notes:

ROE = return on equity; yoy = year on year.

Gross margin = total gross profit/total operating revenue; expense ratio = the sum of financial, selling, general and administrative expenses/total operating revenue; Industries are listed in ascending order of their operating revenue growth (yoy) in Q1 2020.

Source: CSMAR Database. <https://www.gtadata.com/csmar.html?v=#/index> (accessed December 2020).

The disruption of operations and decline in profitability further affected the solvency of enterprises, making them more vulnerable. The average current ratio (current assets/current debt) of the whole industry in Q1 2020 decreased by 3 percentage points (yoy, Table 3.3). With the dive in net profits, the average interest coverage ratio of the entire industry plummeted to only 3.8, an average decrease of 2.3 percentage points (yoy). The interest coverage ratio of the chemicals and transportation industries fell below 1, which means that the earnings before interest and tax of enterprises were not enough to repay interests.

Cash flow from operating activities, an essential source for debt repayment, shrank significantly in most industries, indicating the weakening ability to generate profit. Cash flow in industries such as chemicals, textile and apparel, and transportation collapsed by more than 200 percent. The coverage of cash flow from operating activities to financial expenses also decreased widely to -4.2 on average for the whole industry. Thus, COVID-19 intensified the risk of higher debt default even in listed firms. However, the debt ratio in most industries trended downward during the pandemic mainly as trade credit declined due to the shrinking operations of most firms, lowering their operating debt (mostly trade credits) and the proportion of operating debt to total debt. Overall, COVID-19 does not appear to have had a major impact on the debt accumulation of listed firms.

To bail out firms, the central government launched policies, including a proactive fiscal policy such as tax and fee reduction measures, and issued \$0.53 trillion of special local government bonds in May 2020. Monetary policy also remained accommodative as the People's Bank of China increased special relending and rediscounting by \$0.14 trillion in April, and announced two special loan programs worth a combined \$114 billion to support key industries, particularly SMEs. These measures improved the operating finances of most industries (Table 3.3).

Table 3.3 *Impact of COVID-19 on solvency, debt ratio, and financing activities of firms by industry*

Industry	Current Ratio			ICR			Operating Cash Flow / Financial Expenses			Debt Ratio			Operating Liabilities / Total Liabilities			YOY Growth of Cash Inflow from Debt Financing		
	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	2019	2020	2020
Health care	1.67	1.67	-0.01	9.58	10.75	1.17	0.03	1.30	1.27	48%	49%	1%	35%	31%	-3%	5%	225%	
Transportation	0.92	0.92	0.00	6.83	0.50	-6.33	3.01	-3.06	-6.07	37%	40%	3%	55%	49%	-6%	23%	83%	
Food and beverage	2.48	2.44	-0.04							56%	56%	0%	48%	44%	-3%	-3%	58%	
Agriculture	1.18	1.27	0.08	4.18	11.01	6.83	3.04	4.39	1.35	54%	53%	-1%	46%	42%	-4%	15%	55%	
Chemicals	1.06	0.98	-0.08	6.59	0.48	-6.12	0.43	-5.93	-6.36	80%	79%	-1%	48%	27%	-21%	22%	50%	
Mining	0.97	0.85	-0.12	5.63	2.74	-2.90	7.78	1.70	-6.08	42%	49%	7%	47%	49%	2%	-3%	27%	
Construction materials	1.39	1.45	0.06	10.58	5.20	-5.38	1.48	-3.81	-5.28	57%	57%	0%	48%	43%	-5%	16%	26%	
Electronics	1.42	1.45	0.03	3.99	4.30	0.30	3.19	3.69	0.50	63%	62%	-1%	18%	16%	-2%	59%	25%	
Architectural decoration	1.15	1.17	0.02	4.51	3.86	-0.66	-20.08	-23.93	-3.85	51%	49%	-2%	62%	49%	-13%	31%	24%	
Mechanical equipment	1.43	1.44	0.01	5.91	3.85	-2.06	-1.81	-5.71	-3.91	52%	53%	2%	36%	30%	-5%	4%	24%	
Textile and apparel	1.83	1.50	-0.34	10.76	3.21	-7.55	1.30	-3.44	-4.74	54%	55%	1%	51%	47%	-4%	-16%	23%	
Nonferrous metal	0.77	0.80	0.03	4.40	3.18	-1.22	3.56	0.42	-3.15	41%	42%	1%	53%	44%	-9%	17%	21%	
Commerce	1.15	1.10	-0.05	5.71	2.22	-3.49	-1.51	-4.69	-3.18	62%	60%	-3%	52%	48%	-4%	46%	17%	
Defense	1.54	1.62	0.08	8.67			-52.40			42%	41%	-2%	43%	40%	-3%	21%	16%	

Industry	Current Ratio			ICR			Operating Cash Flow / Financial Expenses			Debt Ratio			Operating Liabilities / Total Liabilities			YOY Growth of Cash Inflow from Debt Financing		
	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change
	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change	Q1 2019	Q1 2020	YOY Change
Automobile	1.25	1.22	-0.03	8.04	2.88	-5.16	-6.28	-4.92	1.35	76%	75%	-1%	49%	43%	-6%	15%	14%	-1%
Real estate	1.48	1.40	-0.07	5.82	3.83	-1.99	-7.39	-10.37	-2.98	58%	57%	-1%	23%	19%	-4%	16%	13%	-4%
Utilities	0.66	0.71	0.05	2.86	2.38	-0.47	3.25	2.84	-0.41	46%	46%	0%	38%	33%	-6%	13%	11%	-6%
Computer	1.82	1.81	-0.01	9.25	1.22	-8.03	-26.90	-29.72	-2.82	58%	58%	0%	51%	48%	-3%	3%	9%	-3%
Ferrous metal	1.14	1.07	-0.07	2.95	2.13	-0.82	1.49	2.15	0.67	52%	50%	-2%	31%	30%	-1%	13%	8%	-1%
Entertainment	1.60	1.44	-0.16	14.92			11.12	-13.33	-24.45	57%	60%	3%	51%	40%	-11%	40%	5%	-11%
Media	1.84	1.64	-0.19	11.36	6.64	-4.72	-1.33	-0.31	1.02	31%	31%	1%	67%	47%	-20%	17%	4%	-20%
Light manufacturing	1.25	1.33	0.07	3.94	3.21	-0.73	0.51	-0.69	-1.20	49%	47%	-1%	53%	54%	0%	22%	3%	-1%
Electrical equipment	1.44	1.39	-0.05	3.35	4.15	0.80	-4.45	-4.22	0.23	44%	44%	0%	40%	39%	-2%	14%	-7%	0%
Household appliances	1.27	1.33	0.06	20.08			17.68			43%	44%	0%	50%	45%	-5%	21%	-32%	0%
Telecommunication	0.98	1.09	0.11	6.00	4.35	-1.65	5.70	3.42	-2.28	55%	56%	1%	24%	23%	-1%	74%	-39%	1%
Conglomerate	1.37	1.28	-0.09	2.59	2.48	-0.11	-3.29	-1.87	1.42	64%	55%	-9%	30%	32%	2%	50%	-85%	-9%
Average	1.35	1.32	-0.03	7.14	3.84	-2.29	-2.47	-4.18	-3.00	53%	53%	0%	44%	39%	-5%	21%	22%	-5%

Notes:

ICR = interest coverage ratio; yoy = year on year.

Current ratio = current assets/current liabilities; debt ratio = total debt/total assets; operating liabilities include notes payable, accounts payable, advance payment, payroll payable, tax payable, and other payables. Industries are listed in descending order of their cash inflow growth from debt financing activities in Q1 2020.

Source: CSMAR Database. <https://www.gfadata.com/csmar.html?v=#/index> (accessed December 2020).

According to the Ministry of Industry and Information Technology, the recovery rate of SMEs exceeded 70 percent by the end of March 2020.¹⁹ According to the NBS, the added value of most industries had turned positive after April 2020. As of mid-June, the scale-sized industrial enterprises, which satisfy the same criteria as the ASIF database, had fully resumed operations, and the operating profit margin of industrial enterprises surged from 3.4 percent in February to 6.7 percent in June. GDP growth and the growth rate of total retail sales of consumer goods had turned positive, and the export of goods increased by 1.8 percent (yoy).

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

The total debt-to-GDP ratio in the PRC is high and it has been rising sharply since 2008, mainly driven by nonfinancial corporate debt, which is highly structural and concentrated in a small fraction of firms, mostly large, state-owned, and listed. The majority of other firms have been able to deleverage continuously over the decade. The key to reducing the risk of corporate debt in the PRC is to reduce the debt ratio of inefficient but highly indebted firms, most of which are SOEs.

Supply-side structural reforms have noticeably improved the firms' performance, reduced the debt ratio, and alleviated the debt default risks of SOEs. Easing overcapacity, handling overstocked inventory, and cutting costs have improved the operating efficiency and profitability of SOEs; and the disposal of zombie enterprises, debt restructuring, and debt-for-equity swap have lowered corporate debt. Thus, the PRC has gradually realized some slowdown in the debt ratio of its SOEs. Although the COVID-19 outbreak has temporarily slowed the pace of reform and affected the profitability and solvency of firms, the policies to bail out firms have been fruitful and thus, the outbreak has had little impact on corporate debt accumulation.

Despite the PRC's progress, corporate debt ratio has remained high for two reasons: the dominance of indirect financing in the capital market and the massive debt held by many inefficient SOEs. Reducing the debt burden of SOEs will require (1) the deepening of capital market reforms, especially developing a strong equity capital market so that enterprises can rely more on equity financing rather than debt financing to replenish capital; and (2) continued structural reforms to enhance the efficiency of SOEs. Although the pace of SOE reforms has accelerated significantly since the inception of the supply-side structural reform, further measures are needed.

The inefficiency of some SOEs is a consequence mainly of the many functions they perform in support of government policies, such as ensuring employment, stabilizing economic growth, and promoting investment. These functions prevent SOEs from operating as profit-oriented market entities, inhibiting their profitability and vitality. SOEs are also more likely to obtain abundant, low-cost capital, owing to their soft budget constraints, thereby crowding out many private SMEs. State-owned banks in the PRC readily offer SOEs cheap and sufficient funds to expand their production capacity and loans to inefficient SOEs to maintain their survival. This raises the debt ratio of SOEs, and even of many low-efficiency SOEs, well above that of private enterprises. Therefore, to enhance efficiency and reduce their debt burden, the rights and responsibilities of SOEs should be clearly delineated, their government-related operations eliminated, their budget constraint hardened, and the incentive and promotion mechanisms of

government officials and executives in SOEs modified to instead reward productivity. The PRC government should manage SOEs based on market-oriented criteria and, in particular, establish a market-related exit strategy for high-debt and low-efficiency enterprises.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. Local government and nongovernment organizations financed about two-thirds through borrowing from banks or issuing new bonds, and the central government provided the remainder. Refer to PRC National Development and Reform Commission (2009).
3. According to the NBS and the People's Bank of China, as the main part of total debt, the aggregate outstanding loan balance of all financial institutions accounted for 100 percent of GDP in 2010.
4. Here, nonfinancial corporate debt also includes the debt owed by local government financing vehicles. These companies were created to help local governments raise funds and existed before 2008, but their activities were heavily restricted for a long time. With the implementation of the PRC's 2008 stimulus plan, the central government encouraged and facilitated the establishment of local government financing vehicles to give local government access to external financing. See Bai et al. (2016). Besides, there has been renewed interest in the PRC's rapidly growing government debt since the 2008 financial crisis (see Chapter 6).
5. The 15 countries with the highest GDP in the first quarter (Q1) of 2019 worldwide are the US, the PRC, Japan, Germany, India, France, the United Kingdom, Brazil, Italy, Canada, the Republic of Korea, the Russian Federation, Australia, Spain, and Mexico. Data sources: Bank for International Settlements (BIS). <https://www.bis.org/statistics/totcredit.htm>.
6. Data sources: CEIE and the People's Bank of China.
7. The ASIF database includes all SOEs and non-state firms with an annual operating income of CNY5 million (\$73 000) or more in the industry sector, and the threshold has been raised to CNY20 million (about \$3 million) in annual revenues since 2011. This database contains statistics until 2013 only. We also find consistent conclusions using the national aggregate data of firms that satisfy the same criteria in the ASIF database from 1998 to 2018.
8. First, in the 2010 dataset, only 0.3 percent of samples matched the accounting equation, total debt + total equity = total asset, so we excluded these data samples. Second, we follow the procedure by Zhong et al. (2019) to check the sample firms, which resulted in a total of 3,616,716 observations. Third, for registered firms, we follow the procedure by Brandt et al. (2012) and Hsieh and Song (2015) to match firms over time. Fourth, we follow the existing literature to identify SOEs (see Dollar and Wei 2007; and Hsieh and Song 2015). Although the equity structure of listed firms is diversified, we define as SOEs firms in which the state is the actual controller or controlling shareholder.
9. The NBS and other departments define SMEs as firms that have fewer than 2,000 employees, or annual revenues of less than about \$45 million, or total assets of less than \$60 million, and others as large enterprises.
10. Regarding this result, see Li et al. (2009) for a careful discussion based on the dataset from the 2000–2003 Industrial Census.
11. See SASAC (2019a).
12. These approaches were to “encourage business mergers and restructuring, perfect modern corporate systems to strengthen self-discipline, revitalize stock assets, improve corporate debt structure, market-based debt-for-equity swaps with banks, implement corporate bankruptcy, and develop equity financing”. See The State Council of the People's Republic of China (2009, 2016).
13. See The State Council of the People's Republic of China (2018) and General Office of the State Council of the CPC Central Committee (2018).
14. The ASIF database contains statistics on enterprises only until 2013, while data after 2015 are needed here to assess the impact. Thus, we use the aggregate data of industrial SOEs at the national level. It should be noted that this database contains the greatest number of SOEs among the public

- databases. We also analyze the aggregate data of industrial SOEs at the province level, and find that the conclusions are consistent with other results.
15. Kane (1987) first proposed the concept of “zombie enterprises”, referring to insolvent enterprises that are unable to make any profit and which should have been withdrawn from the market, but still survive mainly because of subsidies and bailouts from the government and external financing from banks and other financial institutions.
 16. See “Review the Financial Reform of the Central Bank of the PRC in Key Areas in 2019”, <https://mp.weixin.qq.com/s/pZBNCOBW3n73ZY9qiYH9Wg>.
 17. See SASAC (2019b, 2020).
 18. We use the weighted average method to calculate yoy growth. That is, we first calculate the difference between the sum of the relevant variables of all sample firms in each industry for the current quarter and the sum of the same period of the previous year, and then divide by the number for the same period of the previous year to obtain the overall yoy growth of the industry.
 19. See The State Council Information Office of the People's Republic of China (2020).

REFERENCES

- Bai, C.-E., C.-T. Hsieh and Z.M. Song. 2016. The Long Shadow of a Fiscal Expansion. *National Bureau of Economic Research Working Paper*. No. 22801.
- Brandt, L., J. Van Biesebroeck and Y. Zhang. 2012. Creative Accounting or Creative Destruction? Firm-Level Productivity Growth in Chinese Manufacturing. *Journal of Development Economics*. 97(2), pp. 339–51.
- Central People's Government of the People's Republic of China, National Development and Reform Commission (PRC National Development and Reform Commission). 2009. National Development and Reform Commission: The Necessary Arrangements about the ¥4 Trillion Investment Plan. (in Chinese). Beijing: Central Government Portal. http://www.gov.cn/gzdt/2009-03/09/content_1254645.htm.
- Chen, S. and J.S. Kang. 2018. Credit Booms—Is China Different? *IMF Working Paper*. No. 18/2. IMF, Washington DC.
- Chivakul, M. and R.W. Lam. 2015. Assessing China's Corporate Sector Vulnerabilities. *IMF Working Paper*. No. 15/72. IMF, Washington DC.
- Dollar, D. and S.-J. Wei. 2007. Das (Wasted) Kapital: Firm Ownership and Investment Efficiency in China. *NBER Working Paper*. No. 13103.
- General Office of the State Council of the CPC Central Committee. 2018. Guiding Opinions on Strengthening Asset and Liability Constraints on State-owned Enterprises. State Council Bulletin No. 27. Beijing. http://www.gov.cn/gongbao/content/2018/content_5326351.htm.
- Hsieh, C.-T. and Z.M. Song. 2015. Grasp the Large, Let Go of the Small: The Transformation of the State Sector in China. *NBER Working Paper*. No. 21006.
- Kane, E.J. 1987. Dangers of Capital Forbearance: The Case of the FSLIC and “Zombie” S&Ls. *Contemporary Economic Policy*. 5(1), pp. 197–83.
- Lee, A. 2020. Explainer: China Debt: How Big is it and Who Owns it?. 19 May. <https://www.scmp.com/economy/china-economy/article/3084979/china-debt-how-big-it-who-owns-it-and-what-next>.
- Li, K., H. Yue and L. Zhao. 2009. Ownership, Institutions, and Capital Structure: Evidence from China. *Journal of Comparative Economics*. 37(3), pp. 471–90.
- Lv, M. and M. Bai. 2019. Political Uncertainty and Corporate Debt Financing: Empirical Evidence from China. *Applied Economics*. 51(13), pp. 1433–49.
- Maliszewski, W., S. Arslanalp, J. Caparusso, J. Garrido, S. Guo, J.S. Kan, W.R. Lam et al. 2016. Resolving China's Corporate Debt Problem. *IMF Working Paper*. No. 16/203. IMF, Washington DC.
- Standard and Poor's Ratings Services. 2014. Credit Shift: As Global Corporate Borrowers Seek \$60 Trillion, Asia Pacific Debt Will Overtake U.S. and Europe Combined. *Ratings Direct*. Standard & Poor's Financial Services. <https://www.finyear.com/attachment/498696/>.
- State-owned Assets Supervision and Administration Commission of the State Council (SASAC). 2019a. The Comprehensive Report on the Management of State-Owned Assets in 2018. 24 October. <http://www.sasac.gov.cn/n2588025/n2588119/c12390466/content.html>.

- State-owned Assets Supervision and Administration Commission of the State Council (SASAC). 2019b. Central Enterprises Achieved a “Good Start” in the First Quarter of 2019. 17 April. <http://www.sasac.gov.cn/n2588025/n2588164/n4437287/c11034256/content.html>
- State-owned Assets Supervision and Administration Commission of the State Council (SASAC). 2020. The Private Sector Invested More than CNY1.5 Trillion in the Mixed-Ownership Reform of Central Enterprises. 14 October. <http://www.sasac.gov.cn/n2588025/n2588154/n2588221/c15687629/content.html>.
- The State Council Information Office of the People’s Republic of China. 2009. Notice of the State Council on Doing a Good Job in Employment under the Current Economic Situation. State Development (2009) No. 4. Beijing. http://www.gov.cn/zhengce/content/2009-02/10/content_6626.htm.
- The State Council of the People’s Republic of China. 2016. Opinions of the State Council on Actively and Steadily Lowering the Leverage Ratio of Enterprises. State Council Gazette Issue No. 30, Serial No. 1569. Beijing. http://english.www.gov.cn/archive/state_council_gazette/2016/10/30/content_281475478613066.htm.
- The State Council of the People’s Republic of China. 2018. The General Office of the Central Committee of the CPC and the General Office of the State Council Print and Issue the Guiding Opinions on Strengthening Asset and Liability Constraints on State-owned Enterprises. State Council Gazette Issue No. 27 Serial No. 1638. Beijing. http://english.www.gov.cn/archive/state_council_gazette/2018/09/30/content_281476324620774.htm.
- The State Council of the People’s Republic of China. 2020. The Press Conference on a New Information Technology Helping Epidemic Prevention and Control, Resumption of Work and Production, and Development of SMEs. 25 March. <http://www.scio.gov.cn/m/xwfbh/gbwxfbh/xwfbh/wsb/Document/1676025/1676025.htm>.
- Walter, C. and F. Howie. 2012. *Red Capitalism: The Fragile Financial Foundation of China’s Extraordinary Rise*. Hoboken NJ: John Wiley & Sons.
- Xinhuanet. 2015. The 11th session of the Central Financial and Economic Steering Group. 10 November [in Chinese]. http://www.xinhuanet.com/politics/2015-11/10/c_1117099915.htm.
- Zhong, N., M. Xie and Z. Liu. 2019. Chinese Corporate Debt and Credit Misallocation. *Asian Economic Papers*. 18(1), pp. 1–34.

4. Asia's lower-income countries: concessional public debt, concessional rescues

Nicolas Depetris-Chauvin¹

1. INTRODUCTION

Debt fragility in Asian lower-income countries has over the past decade been increasing.² By the time the coronavirus disease (COVID-19) broke out in 2019, these countries needed help from their creditors. And so, 21 of them qualified for the G20's Debt Service Suspension Initiative (DSSI). This chapter focuses on these 21 countries. In their 2015 International Monetary Fund (IMF) Article IV statements, nine reported a moderate risk of debt distress and six reported a high risk. By 2019, before COVID-19 triggered the beginning of the global crisis, the IMF reassessed the debt distress risk for these 21 countries and put four at moderate risk and 12 at high risk. But in most of the countries with limited access to financial markets to begin with, debt distress risk was low.

Periods of increasing debt fragility are not new and have been associated with different debt waves. Before the COVID-19 pandemic, developing economies had experienced three debt waves in the last 50 years (Kose et al. 2020a). During the 1970s, a combination of low real interest rates and a rapidly growing loan market encouraged governments in Latin America and sub-Saharan Africa to borrow heavily. This debt wave ended with an increase in the interest rate and a series of financial crises in the early 1980s, which led to several debt restructuring and debt relief programs. During the 1990s, the liberalization of financial and capital markets enabled banks and businesses in East Asia and the Pacific to borrow heavily, leading to a series of crises between 1997 and 2001, which required large-scale bailouts of banks and companies. Finally, from 2002 and for five years thereafter, regulatory easing allowed for a rise in private sector borrowing, particularly in Europe and Central Asia. This wave was interrupted by the 2007–2009 financial crisis, which once again required bank bailouts and international assistance.

At the start of the COVID-19-induced global crisis, the world was already experiencing the conclusion of a new debt wave that began in 2010. As in past debt waves, global interest rates were very low, and in this case, this was also due to central bank stimuli following the great recession. As a result, the search for better yields contributed to narrowing spreads for developing economies. At the same time, a rise in regional banks, growing appetite for local currency bonds, and increased demand for developing economies' debt from the expanding nonbank financial sector contributed to an escalation in borrowing (Kose et al. 2020a). A correction in commodity prices in 2014–2015 and a slowdown in the economy amid global

trade disputes reduced growth perspectives and triggered concerns about the capacity of many developing countries to serve and refinance their debt obligations.

The concerns about debt distress in developing countries became a reality when the COVID-19 pandemic hit in early 2020. While the end of the other debt waves was the result of a once-in-a-decade event, the current borrowing cycle is caused by a once-in-a-century global event. Moreover, the level of total indebtedness in the early 2020s was larger than that observed in the beginning of other debt crises. These high levels of indebtedness are combined with a riskier debt profile: shorter-term, higher proportion of non-concessional debt, larger proportion of nonresident investors, and greater proportion of foreign-currency-denominated corporate debt. For developing countries, the current crisis is a perfect storm as the reduction of revenues and the need to increase expenditures to support their economies put them in the difficult position of having to still service their debt and access credit markets.

This chapter revives the question of how to finance governments in developing countries, focusing on the DSSI 21 lower-income countries. The next section provides an overview of their debt and macroeconomic dynamics since 2000 and describes their current situation of potential financial distress. Section 3 reviews the lessons from past debt crises and debt relief initiatives in terms of short- and medium-term solutions. In every new debt and financial crisis, global financial institutions and governments must first work out solutions to resolve the crisis, and then design policies and regulations to prevent a new crisis. Large defaults as a solution to the crisis are always an option but are clearly suboptimal. A better potential solution is to restructure the debt to make it sustainable and compatible with the development plans of the country. This often involves debt reductions, which require lenders to coordinate the allocation of public and private resources and agree on how to distribute losses. In addition, policies and regulations often involve addressing structural problems, including weak fiscal regimes and poor debt management systems.

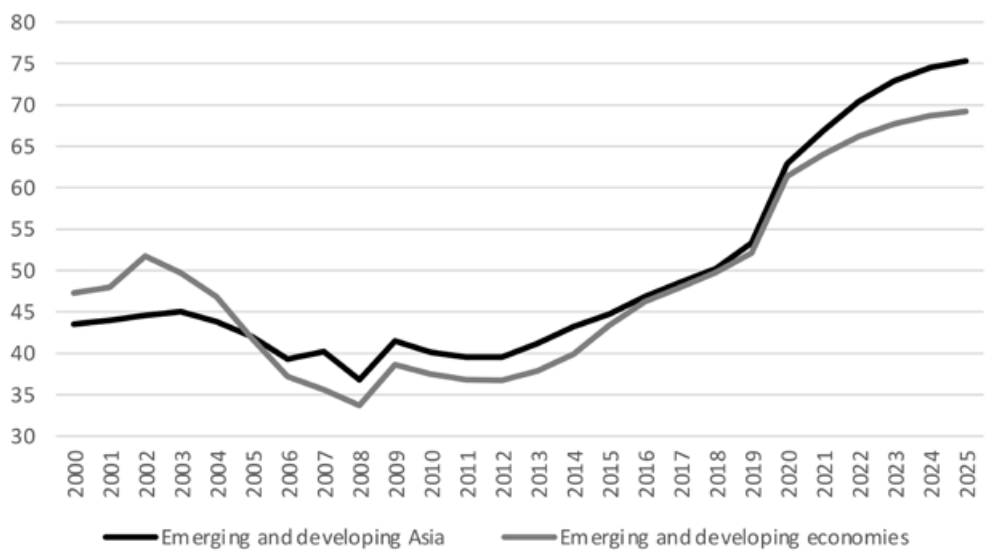
An effective development financing must reconcile the twin objectives of meeting the large needs of developing countries and maintaining their debt at sustainable levels. However, crisis after crisis have shown how difficult it has been for most developing countries to deal with this trade-off in practice. Section 4 revisits this trade-off, considering the current situation in the developing Asian countries as discussed in section 2 and the lessons from past debt crisis and debt relief initiatives presented in section 3. This section will also review the current policy proposals and emphasize that the potential solution will need to be fully integrated into a framework that considers medium- and long-term sustainability issues.

Section 5 concludes the analysis, highlighting the priorities for the policy agenda.

2. DEBT VULNERABILITY IN ASIAN LOWER-INCOME COUNTRIES

Debt vulnerability in the developing world has increased substantially in recent years. Since 2010, median government debt has risen by about 20 percentage points of gross domestic product (GDP) in emerging and developing economies (Figure 4.1). The IMF projections show levels of indebtedness that are expected to increase further during the next five years, and the increase will be greater in emerging and developing Asian economies than in the average developing economies. This type of dynamics should not necessarily be considered a source of concern. Developing countries in general, and Asia in particular, have used debt to finance

their growth. The relevant questions are whether the level of indebtedness is compatible with future growth prospects and how to deal with eventual bumps in that trajectory. Figure 4.1 includes not only developing but also emerging Asian countries, where the People's Republic of China (PRC) plays a major role. While debt levels have increased across many Asian countries, the mechanisms of debt accumulation and potential consequences vary widely; thus, we need to define carefully the target countries we will consider in our analysis.



Notes:
GDP = gross domestic product.
Data for 2020–2025 are estimates as of October 2020.
Source: World Economic Outlook.

Figure 4.1 General Government Gross Debt (% of GDP)

The DSSI is a global effort to help developing economies that are in or at risk of pandemic-driven debt distress. The DSSI countries typically have more severe structural problems and fewer sources of development finance, which makes them more fragile in the event of domestic and external shocks. But they have in the past been able to manage their debt obligations successfully. Myanmar was the last Asian country to default on its sovereign debt in 2002.³

To narrow down the focus of our analysis and provide a more accurate picture, from now on we will work with a sample of the 21 Asian countries that qualified for assistance under the DSSI. In 14 of the 21 DSSI countries, public indebtedness levels have increased significantly (Table 4.1). On average, public debt-to-GDP ratio in 2020 was almost 12 percentage points higher than 10 years ago. However, this average ratio masks a greater degree of heterogeneity. In countries like Bhutan, Maldives, Papua New Guinea (PNG), and Vanuatu, debt-to-GDP ratios have increased significantly, often doubling or tripling in a short time, while they have remained relatively stable in others (such as

Table 4.1 *Indebtedness levels and risk of debt distress for Asian DSSI countries*

Developing Member Country	General Government Gross Debt (% of GDP)			Risk of Debt Distress		
	2010	2015	2020	2015	2019	June 2020
Afghanistan	7.7	9.2	7.8	High	High	High
Bangladesh	35.5	33.7	39.6	Low	Low	Low
Bhutan	61.0	98.6	121.3	Moderate	Moderate	Moderate
Cambodia	28.7	31.2	31.5	Low	Low	Low
Kiribati	8.5	19.9	17.7	High	High	High
Kyrgyz Republic	59.7	67.1	68.1	Moderate	Moderate	Moderate
Lao PDR	49.3	53.1	70.9	Moderate	High	High
Maldives	52.7	53.4	118.3	Moderate	High	High
Marshall Islands	38.6	33.7	27.4	High	High	High
Micronesia, Fed. States of	28.8	25.6	16.5	High	High	High
Myanmar	52.2	36.3	42.4	Low	Low	Low
Nepal	34.0	25.6	39.2	Low	Low	Low
Pakistan	60.7	63.3	87.2	Moderate	High	High
Papua New Guinea	17.3	29.9	46.7	Low	Moderate	High
Samoa	39.7	58.9	55.6	Moderate	High	High
Solomon Islands	22.9	9.0	15.3	Moderate	Moderate	Moderate
Tajikistan	36.6	34.7	47.8	High	High	High
Timor-Leste	0.0	2.8	11.7	Low	Low	Low
Tonga	44.7	51.2	41.9	Moderate	High	High
Tuvalu	27.6	57.6	16.0	High	High	High
Vanuatu	19.4	36.0	47.7	Moderate	Moderate	Moderate

Note: DSSI = Debt Service Suspension Initiative; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic.

Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Sources: Various IMF/World Bank Debt Sustainability Analysis and country reports.

Afghanistan, Bangladesh, and Cambodia) or even decreased (such as the Marshall Islands, Myanmar, and Solomon Islands).⁴ On the other hand, the sample countries share some commonalities. For example, the risk of debt distress has not improved in any of them during the last five years.⁵ In fact, the number of countries where debt distress was considered high has increased from six in 2015 to 12 in June 2020 and is likely to increase further in the context of the current pandemic.

To understand the fragility of these countries' debt position, two indicators are noteworthy: much of their public debt is external (Table 4.2), and almost all of it is denominated in foreign currency. Obviously, claims held internationally can be more volatile. Borrowing in foreign currency removes the incentive to reduce ex post the real value of government debt through unexpected inflation. However, it exposes the domestic currency value of government liabilities to fluctuations in the exchange rate. In 2019, 76 percent of public debt for the developing countries in our sample was external and 79 percent was denominated in foreign currency (US dollars in most cases)—in particular, 15 of them had more than 75 percent as external debt

Table 4.2 *Public external debt as % of total public debt for Asian DSSI countries*

Country	2010	2015	2019
Afghanistan	30	100	100
Bangladesh	57	39	35
Bhutan	97	100	93
Cambodia	90	98	90
Kiribati	91	100	100
Kyrgyz Republic	98	99	86
Lao PDR	95	86	79
Maldives	46	35	29
Marshall Islands	100	100	94
Micronesia, Fed. States of	100	100	100
Myanmar	0	27	23
Nepal	66	73	55
Pakistan	51	32	33
Papua New Guinea	49	28	36
Samoa	100	100	100
Solomon Islands	77	86	79
Tajikistan	98	97	87
Timor-Leste	n/a	100	100
Tonga	n/a	95	94
Tuvalu	100	98	100
Vanuatu	90	81	83

Note: DSSI = Debt Service Suspension Initiative; Lao PDR = Lao People's Democratic Republic.

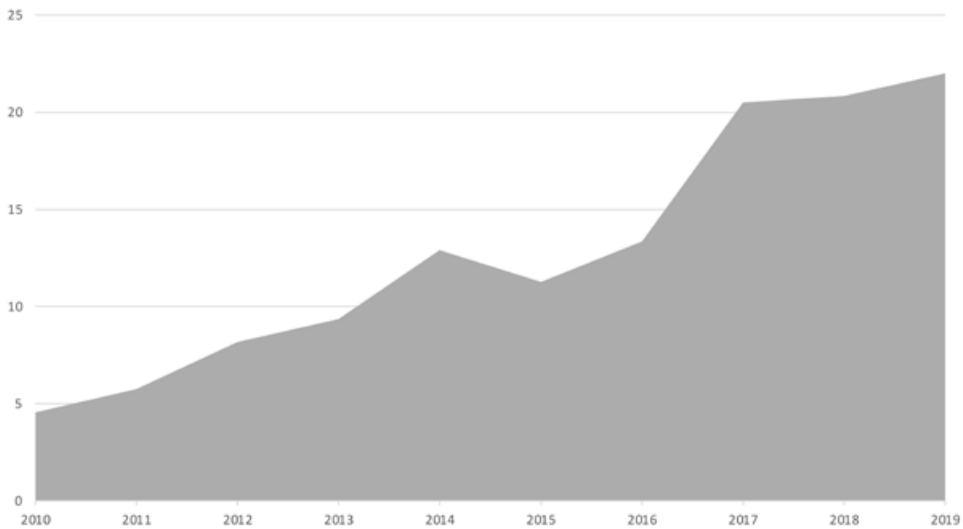
Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Sources: Various IMF/World Bank Debt Sustainability Analysis and country reports.

and denominated in US dollars. This is a stark contrast from most emerging Asian countries that have been able to develop debt markets in domestic currency. Notable exceptions were Bangladesh, Maldives, Myanmar, Nepal, Pakistan, and PNG—of these six countries, three were assessed at low risk of debt distress.

The external debt buildup can be better observed in Figure 4.2. Debt flows into most Asian DSSI countries have been on the rise in the last five years. The total corresponds to 17 of the 21 countries in our sample for which data were available during this period.⁶ During 2015–2019, external debt disbursements in these countries have doubled. However, the total once again hides some important heterogeneity. Flows have decreased for Bhutan, the Kyrgyz Republic, the Lao People's Democratic Republic (Lao PDR), Samoa, Tajikistan, and Vanuatu and increased for all the other countries. In Maldives, Myanmar, and PNG disbursements increased four or five times over 2015. In Bangladesh and Pakistan, the largest economies in our sample, public external debt disbursement increased by over 170 percent and 95 percent, respectively.

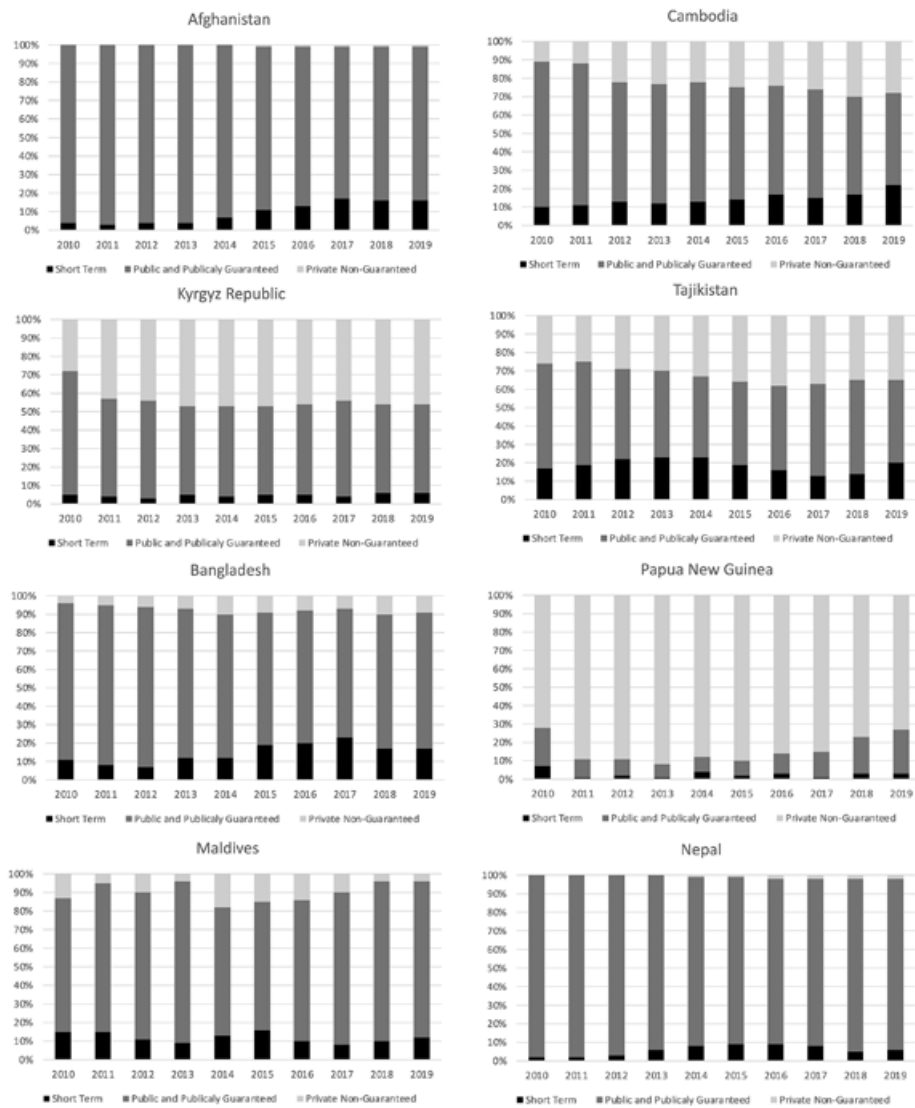
The recent increase in total debt in Asian DSSI countries is only one indicator of potential vulnerability. Past global financial crises have shown that a number of indicators can signal rapidly rising stress and domestic problems. Many of these countries have not only seen changes in their indebtedness levels but also in the composition and risk of their debt portfolio.



Source: World Bank.

Figure 4.2 Disbursements on external debt, general government sector, sample of Asian DSSI countries (current \$ billion)

In particular, non-concessional, non-guaranteed, and private sources of lending have increased, and the percentage of short-term debt in total debt has more than doubled in the last decade. As before, the dynamics is somehow heterogeneous across countries. Figure 4.3 presents the total external debt composition in 2010–2019 for eight of the 21 sample countries using data from the World Bank's Debtor Reporting System. Reporting countries submit detailed reports on the annual status, transactions, and terms of the long-term external debt of public agencies and that of private debt guaranteed by a public agency in the debtor country. In 1973, the World Bank expanded the coverage of the Debtor Reporting System to include private sector non-guaranteed borrowing, but for this debt category, data are provided by borrowers in aggregate rather than loan by loan, making it impossible to assess the maturity of this debt. However, anecdotal evidence shows that this type of debt tends to have a much shorter maturity than public and publicly guaranteed debt. Therefore, when we combine the short-term and the private non-guaranteed debt, we see that, except for Nepal, the Asian DSSI countries for which data are available have a higher share of short-term maturities than 10 years ago, which raises rollover risk, especially in periods of stress and heightened risk aversion. The level of debt concessionality (measured as a percentage of concessional debt over total external debt) has also declined on average for these countries. In 2010, on average, 42.1 percent of the external debt was concessional. In 2019, the share of concessional debt declined to 30.1 percent. Decreases were noted in Cambodia (from 62.3 percent in 2010 to 29.4 percent in 2019), the Kyrgyz Republic (from 42 percent to 20.5 percent), Bangladesh (from 67.8 percent to 47.1 percent), Pakistan (42.3 percent to 20.2 percent), and Bhutan (from 36.8 percent to 17.9 percent). On the other hand, increases were seen in Myanmar



Source: World Bank Debt Reporting System.
Data for Afghanistan were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.

Figure 4.3 Total external debt composition, selected developing Asian countries

(from 22.3 percent in 2010 to 49.8 percent in 2019), and Vanuatu (from 23.5 percent to 43.7 percent). Obviously, ex ante, these reductions in the level of concessionality can be interpreted in two different ways. On the one hand, they may be the result of growth and public sector reforms that have allowed some countries in the region to access other sources of financing,

increasing the envelope of resources to sustain economic and social development. On the other hand, increased reliance on funding in commercial or near-commercial terms raised the exposure to interest rate, exchange rate, and rollover risks. Recent experience also indicates that the increasingly diverse creditor base and types of debt instruments used can complicate and lengthen the process of debt restructuring, whenever such restructuring is needed (IMF 2020b).

The composition of public and publicly guaranteed official debt stock varies across Asian DSSI countries (Table 4.3). In 2015, official multilateral loans comprised most of the debt stocks of Timor-Leste (96 percent), Nepal (91 percent), Solomon Islands (89 percent), and Bangladesh (83 percent). On the other hand, the share of official bilateral loans in total official debt stocks was larger in Myanmar (82 percent), Bhutan (75 percent), the Lao PDR (72 percent), and Cambodia (69 percent). Between 2015 and 2019, the share of multilateral loans declined slightly in favor of bilateral official loans. The table highlights the important role played in the region by the Asian Development Bank (ADB) and bilateral official lenders that do not belong to the Paris Club, in particular the PRC and to some extent India. In 2015, on average, 43.6 percent of all multilateral debt stocks in our sample countries consisted of ADB loans. This share decreased to an average of 41.7 percent in 2019. An important feature of these Asian countries when compared with African and Latin American ones, is the importance of bilateral loans from countries that do not belong to the Paris Club. On average, more than two-thirds of bilateral outstanding debt was with countries like the PRC, India, and the United Arab Emirates. The advantage of groups of major creditors like the Paris Club is, of course, that it reduces uncertainty by establishing rules and practices for sovereign debt relief and provides a coordinated answer among creditors. Historically, coordination issues were fine-tuned through an arrangement in which the largest bilateral creditors worked on a consensus basis through the Paris Club, which in turn coordinated with the IMF and other major multilateral creditors (Gardner et al. 2020). The emergence of the PRC as an international creditor has provided very-much-needed financial resources to Asian countries, but creates a challenge in the resolution of debt restructuring when more than one debtor and creditor are involved. The PRC has restructured its debt on a case-by-case basis (Gardner et al. 2020 gives two examples) involving only the debtor government, while the Paris Club governments, the World Bank, the IMF, and private investors have taken part in coordinated and comparatively well-documented debt relief initiatives (Horn et al. 2020).

The significance of the PRC as a source of financial resources for lower-income Asia and Pacific countries goes beyond the official loan data presented in Table 4.3. The PRC's Belt and Road Initiative hopes to deliver trillions of dollars in infrastructure financing to Asia, Europe, and Africa. This initiative has led some analysts to raise important questions about the risk of debt sustainability problems in less-developed countries (Hurley et al. 2018; and Rajah et al. 2019). That risk could be potentially acute for the small and fragile economies of the Asia and Pacific regions. There is currently no hard evidence to evaluate these potential effects. However, the current debt problems faced by the Lao PDR signal that countries and donors need to monitor the situation carefully, as various Belt and Road Initiative-related projects have made the PRC the Lao PDR's biggest creditor and the latter has faced problems in meeting its obligations. A study published in 2019 by the Sydney-based Lowy Institute estimated the Lao PDR's debt to the PRC at 45 percent of the Lao PDR's GDP (Rajah et al. 2019).

Table 4.3 Composition of public and publicly guaranteed official debt stock of Asian DSSI countries

Country	2015				2019			
	% Multilateral	of which % ADB	% Bilateral	of which % Non Paris Club	% Multilateral	of which % ADB	% Bilateral	of which % Non Paris Club
Afghanistan	58%	46%	42%	12%	55%	47%	45%	12%
Bangladesh	83%	35%	17%	38%	67%	35%	33%	36%
Bhutan	25%	52%	75%	94%	25%	50%	75%	97%
Cambodia	31%	59%	69%	78%	29%	63%	71%	75%
Kiribati	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Kyrgyz Republic	44%	35%	56%	69%	43%	33%	57%	85%
Lao PDR	28%	53%	72%	90%	21%	50%	79%	93%
Maldives	44%	35%	56%	88%	27%	20%	73%	97%
Marshall Islands	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Micronesia, Fed. States of	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Myanmar	18%	30%	82%	61%	23%	24%	77%	46%
Nepal	91%	42%	9%	61%	87%	38%	13%	62%
Pakistan	63%	31%	37%	39%	54%	32%	46%	67%
Papua New Guinea	75%	63%	25%	73%	61%	67%	39%	65%
Samoa	56%	44%	44%	86%	56%	37%	44%	82%
Solomon Islands	89%	35%	11%	n/a	93%	45%	7%	n/a
Tajikistan	50%	25%	50%	98%	48%	24%	52%	98%
Timor-Leste	96%	62%	4%	0%	88%	70%	12%	0.0
Tonga	36%	41%	64%	100%	46%	34%	54%	100%
Tuvalu	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Vanuatu	43%	41%	57%	89%	46%	30%	54%	65%
Average	54.8%	42.8%	45.2%	67.3%	51.1%	41.2%	48.9%	67.5%
Median	49.8%	41.1%	50.2%	75.2%	48.2%	37.4%	51.8%	71.0%

Note: ADB = Asian Development Bank; DSSI = Debt Service Suspension Initiative; Lao PDR = Lao People's Democratic Republic; n/a = not available.

Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Source: World Bank Debtor Reporting System.

The fragile debt position observed in most of the Asian DSSI countries in 2019 was coupled with deteriorating macroeconomic performance. While these economies enjoyed high growth for most of the last 10 years, critical imbalances accumulated during the same period. Most economies fueled growth with large fiscal and current account imbalances (Table 4.4).

Table 4.4 Macroeconomic performance for Asian DSSI countries

Country	Real GDP Growth				General Government Net Lending/Borrowing (% of GDP)				Current Account Balance (% of GDP)			
	2010	2015	2019	2020	2010	2015	2019	2020	2010	2015	2019	2020
Afghanistan	8.4	1.0	3.9	-5.0	0.9	-1.4	-1.1	-2.8	29.4	3.8	11.7	9.5
Bangladesh	5.6	6.6	8.2	3.8	-2.7	-4.0	-5.4	-6.8	2.8	1.8	-1.7	-1.5
Bhutan	9.5	6.2	3.8	0.6	7.9	-0.2	-1.1	-5.5	-22.8	-27.9	-22.5	-21.4
Cambodia	6.0	7.0	7.0	-2.8	-3.8	-0.6	3.2	-2.4	-8.8	-8.7	-15.8	-25.4
Kiribati	-0.9	10.4	2.3	-1.1	-8.3	47.4	15.0	-13.2	0.1	32.8	32.0	-1.6
Kyrgyz Republic	-0.5	3.9	4.5	-12.0	-5.9	-2.5	-0.1	-7.3	-6.6	-15.9	-5.6	-13.4
Lao PDR	8.0	7.3	5.2	0.2	-1.5	-5.6	-5.0	-6.4	-16.5	-22.4	-6.4	-8.7
Maldives	7.3	2.9	5.7	-18.6	-13.5	-6.8	-6.4	-21.9	-7.3	-7.5	-26.0	-31.8
Marshall Islands	7.6	1.6	5.3	-4.5	3.5	2.8	0.3	-3.5	-14.8	17.2	8.0	1.6
Micronesia, Fed. States of	2.3	4.6	1.2	-3.8	0.5	10.3	16.4	-1.7	-17.5	4.5	16.0	1.6
Myanmar	5.2	7.5	6.5	2.0	-0.8	-2.8	-3.9	-6.0	4.7	-3.5	-2.6	-3.5
Nepal	4.8	3.3	7.1	0.0	-0.8	0.7	-4.6	-7.9	-2.4	5.0	-7.7	-2.5
Pakistan	2.6	4.1	1.9	-0.4	-6.0	-5.3	-9.0	-8.0	-2.2	-1.0	-4.9	-1.1
Papua New Guinea	10.1	9.5	4.9	-3.3	3.1	-4.5	-5.0	-6.3	-19.7	25.6	22.2	14.7
Samoa	2.6	4.3	3.5	-5.0	-5.6	-4.0	2.7	-7.3	-6.4	-2.8	2.3	-7.1
Solomon Islands	8.6	1.4	1.2	-5.0	5.0	0.0	-1.7	-5.6	-26.4	-2.7	-9.6	-11.3
Tajikistan	6.5	6.0	7.5	1.0	-3.0	-2.0	-2.1	-6.0	-10.3	-6.1	-2.3	-7.1
Timor-Leste	9.5	3.1	3.1	-6.8	-19.8	-33.1	-32.1	-17.5	180.2	12.8	8.2	-13.7
Tonga	0.8	1.2	0.7	-2.5	-1.2	-2.8	3.2	5.1	-23.8	-10.1	-4.8	-4.6
Tuvalu	-3.3	9.2	6.0	-0.5	-24.1	15.3	-8.6	-12.3	-12.1	-53.5	12.4	17.0
Vanuatu	1.6	0.2	3.3	-8.3	-2.5	-9.3	4.6	-7.6	-5.9	-1.6	13.1	-0.3
Average	4.9	4.8	4.4	-3.4	-3.7	-0.4	-1.9	-7.2	0.7	-2.9	0.8	-5.3
Median	5.6	4.3	4.5	-2.8	-2.5	-2.5	-1.7	-6.4	-7.3	-2.7	-2.3	-3.5

Note: ADB = Asian Development Bank; DSSI = Debt Service Suspension Initiative; Lao PDR = Lao People's Democratic Republic.

Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Source: World Economic Outlook, data for 2020 are estimates as of October 2020.

Rising debt servicing costs, now at multiyear highs, were diminishing the already constricted fiscal space of some of these countries. Chapter 1 in this book shows that economic growth and fiscal balances are expected to deteriorate relative to historical trends in several DSSI countries during 2021–2024.

The external debt-to-export ratio, which is typically considered an indicator of debt repayment capacity, was in the Asian DSSI countries above the average of the developing world in recent years. Bhutan's present value of external debt-to-export ratio at 247 percent in 2019

was one of the highest in the world. Also, during 2019, this ratio was 119.5 percent in the Lao PDR, 113.9 percent in Nepal, 104.4 percent in Afghanistan, and 103.3 percent in the Kyrgyz Republic.⁷ Growing debt-to-export ratios have in fact become a trend for many developing Asian countries in recent times.

Weakening trade and global financial conditions, high levels of external debt, lack of fiscal space, and undiversified exports had all indicated that a correction was likely to happen in these countries. And then, the COVID-19 pandemic caught these economies by surprise, almost overnight disrupting many economic activities, sharply decreasing trade and growth, reducing government revenues, and increasing unemployment and poverty. Governments found it necessary urgently to increase expenditures to sustain economic activities and provide a social safety net in the course of increasing external debt service and addressing very limited access to debt markets.

This perfect storm created once again the need for a coordinated response by international financial institutions, private creditors, and governments.

3. LESSONS FROM PAST DEBT CRISES AND DEBT RELIEF INITIATIVES

Periods of debt accumulation followed by crises and macroeconomic adjustments seem to be a recurrent feature of the global economy. Kose et al. (2020a) identified four waves of debt accumulation during the last 50 years. The first wave of debt came in the form of low interest rates and a rapidly growing market for syndicated loans, which encouraged Latin American and African governments to borrow heavily, culminating in a series of debt crises that started in the 1980s. The second wave started around 1990 when financial and capital markets liberalization enabled banks and businesses in East Asia and the Pacific to borrow heavily in foreign currency. This period of expansive credit came to an end with the 1997 Asian financial crisis. The third wave started around 2002, once again bringing a period of low interest rates, this time triggered by a sharp increase in private sector borrowing from emerging and developing economies particularly in Europe and Central Asia. The source of these funds was mostly banks headquartered in the United States (US) and the European Union (EU). The global financial crisis of 2008 and the global recession of 2009 brought the third wave to an end. The fourth and current wave of debt accumulation began in 2010, once again prompted by low interest rates and important changes in financial markets. Even if we exclude the PRC from the analysis, the current wave has seen the fastest and largest accumulation of debt in emerging and developing countries, albeit in a more resilient global financial system.

These debt waves had some points in common, such as that (1) real interest rates were low; (2) financial innovations and investors' appetite for higher yields promoted lending; and (3) they all ended abruptly, triggered by shocks that increased risks premium or borrowing costs, which led to sudden stops of capital inflows. In all cases, the widespread financial crises coincided with global recessions or downturns (Kose et al. 2020a).

The waves were also distinctive in the financial instruments used for borrowing, the economic agents involved, how the international financial architecture reacted, and the reforms that followed to strengthen policy frameworks. Each of these crises provided useful lessons to consider in the current debate on how to deal with increasing debt distress in lower-income economies, including those in Asia. For this reason, we briefly summarize the particularities of each debt wave.

3.1 1980s Debt Crisis and the Adverse Economic Consequences of Delaying External Debt Reduction

The first wave in the 1970s and 1980s saw rapid debt accumulation of sovereign debt in Latin American and sub-Saharan African countries. The sharp increases in interest rates in the early 1980s made the debt dynamics of these countries unsustainable, leading to suspension of payments and requests for IMF support.

The most salient feature of this crisis is that output losses were particularly large and protracted. Its consequences lasted until the early 1990s in Latin America and until the 2000s in sub-Saharan Africa. Many authors, including Eichengreen (2020) and Stiglitz and Rashid (2020), have noted that the 1980s debt crisis highlighted the adverse economic consequences of delaying external debt reductions, a lesson that needs to be seriously considered in the current situation. This delay can be partially attributed to the complexity of the negotiation process. As noted by Truman (2020, pp. 2–3) “four groups were centrally involved in managing the crisis: the borrowing countries, their foreign bank creditors, the authorities of the countries in which those banks were chartered, and the international financial institutions”. Within those four groups there was a lot of heterogeneity in terms of opinions on how the crisis should be solved.

In the case of Latin America, the process evolved over different phases which did not include the possibility of debt relief in terms of write-offs. This was due in part to concerns about the potential disruptive impact on the global financial system but also on the expectation that borrowing countries could soon return to financial markets. It took almost a decade of disappointing growth performance for countries to switch focus to debt reduction and produce a coordinated solution among the main actors. This was possible because of leadership in Mexico and the US and followed later by several Latin American governments that decided to sign the Brady Plan. Brady bonds allowed the commercial banks holding developing countries debt to swap it into tradable instruments, reducing their balance sheets' exposure to sovereign debt. The main innovation of the plan was to provide a “menu” of options to restructure, which allow heterogeneous creditors to tailor the debt restructuring to their preferences. The menu approach also favored debtors as they were able to reduce the cost of debt restructuring. Finally, this flexible approach significantly reduced the risk that creditors would refuse to participate in a debt restructuring, the so-called holdout problem.

The debt situation in sub-Saharan Africa shared some characteristics with the dynamic observed in Latin America. The African government first relied on IMF macroeconomic adjustment programs to resolve macroeconomic disequilibrium with the hope to regain access to international financial markets. Once again, debt relief was not considered initially as an option as it could damage the prospect of future borrowing. However, for low-income countries, ad hoc partial solutions in the form of perennial macroeconomic adjustment programs perpetuated the problem and created bad equilibria.

As was the case in Latin America, the solution in sub-Saharan Africa required coordination among all parts involved and the leadership of key individuals, which led to the Heavily Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI). These initiatives primarily aimed to cancel debt down to the level necessary to restore debt sustainability in a number of low-income countries. The debt reduction would eliminate the so-called “debt overhang”, where a high debt burden depresses investment, reform willing-

ness, and hence, future economic growth. Furthermore, debt relief, if additional to official development assistance (ODA) flows, would increase resource availability in the recipient country (the so-called “fiscal space”) to increase poverty reduction-targeted spending (health and education). In theory, appropriate donor conditionality attached to receiving the debt relief should have in principle strengthened the probability of reaching the desired goals (Cassimon et al. 2017).

What were the effects of these initiatives in practice? In terms of economic growth, the evidence shows that it is not possible to prove that debt relief has increased growth in recipient countries. Much of the growth following debt relief was concentrated in commodity producers and lower middle-income countries. There is only weak evidence of increased expenditure in health and education as conditionality was weakly enforced (Depetris-Chauvin and Kraay 2005). There is some evidence of positive impact on the total domestic revenue and public investment. Another issue often discussed, which is relevant for some of the DSSI Asian countries, is whether debt relief was additional to ODA. The evidence shows some crowding out of ODA but probably not to the extent predicted by some analysts. In any case, additionality is hard to measure as the relevant comparison is between the present value of debt services versus the present value of ODA flows, which is not measurable without assuming how ODA would behave in the future.

Overall, the main effect of these initiatives was to reduce debt. Debt relief under the HIPC Initiative and the MDRI helped to reduce public debt among lower-income countries from a median debt-to-GDP ratio of close to 100 percent in the early 2000s to a median of just over 30 percent in 2013. However, since 2013, deficits and the increased borrowing allowed by space created by debt relief have increased indebtedness among debt relief recipient countries. Clearly, the initiatives did not solve the countries’ dependence on foreign debt, as a significant share of their new funding came from nontraditional creditors and commercial loans. While some countries used this new debt to finance productive investments, many others used it to finance current consumption. Even before the COVID-19 crisis, many African countries were already in debt distress by 2019, which highlights their ability to carry debt sustainably. According to Leo (2009, p. 1) “taken together, these findings suggest that donor countries should reexamine the issue of debt sustainability in lower-income countries and the system for determining the appropriate grant/loan mix”.

3.2 The 1997 Asian Crisis: Financial Imbalances and Liquidity Shortfalls Can Lead to Insolvency

While the first wave saw rapid debt accumulation by government, the second wave was mostly about borrowing by the private sector (although during the Asian crisis many companies were closely related to the state). This financial crisis was largely unanticipated by market participants, but there were a few warning signs such as growing balance-of-payment deficits, a seemingly unsustainable rise in domestic asset prices, and rapid growth in credit from the banking system (Crockett 2007). In the buildup of external financial fragility, overinvestment in manufacturing, speculative investment in real estate, and excessive short-term borrowing in foreign currencies played a crucial role (Akyüz 2017). These vulnerabilities had arisen as a result of several policy failings, including inadequate prudential regulation and supervision of banks, implicit government guarantees for foreign borrowing (including pegged exchange

rates), and structural changes in global financial markets. These developments made these countries increasingly vulnerable to sudden stops (Corsetti et al. 1998; World Bank 1998).

As documented by Akyüz (2017), the crisis broke out in Thailand when its reserves dropped rapidly as net capital inflows fell short of the funds needed to meet the widening current account deficits. Other economies in the region with better balance-of-payment fundamentals suffered primarily from contagion through the exchange rate. As exchange rates came under pressure, markets soon became aware of the similarities in financial vulnerability and inadequacy of reserves. Foreign speculators selling domestic currencies were joined by domestic financial and nonfinancial firms seeking to escape the squeeze on their balance sheets caused by rising domestic cash needs to service foreign debt and falling cash flows to meet them. As a result of this dynamic, the East Asian economies experienced simultaneous sharp falls in asset prices and currency values (Chowdhry and Goyal 2000).

How the Asian crisis was resolved has been the subject of much study. In late 1997, the IMF committed more than \$110 billion in short-term loans to Thailand, Indonesia, and the Republic of Korea to help stabilize their economies. Some \$35 billion of IMF financial support was provided for adjustment and reform programs, and some \$85 billion of financing was committed from other multilateral and bilateral sources, although not all of this financing actually materialized. In exchange for the funding, the IMF required countries to adhere to strict conditions, including higher taxes, reduced public spending, privatization of state-owned businesses, and higher interest rates, designed to cool the overheated economies. Some other measures required countries to close illiquid financial institutions, recapitalize potentially viable financial institutions often with government assistance, close central bank supervision of weak financial institutions, and strengthen financial supervision and regulation, all to prevent a recurrence of the fragilities that led to the crisis (IMF 2000).

The Asian crisis reflected two phenomena. First, the unstable financial equilibrium depended on agents' expectations. As long as economic agents were confident, the pre-crisis exchange rate could be sustained with little or no official intervention. However, once confidence vanished, a vicious cycle took hold—selling provoked declines in value, which in turn led to more selling. As a result, leveraged companies saw their values plummet and their access to additional credit dry up. Second, the foreign exchange regime was closely linked to the health of the financial sector. Each downward movement in the currency exacerbated the banks' liquidity and solvency problems. In addition, the growing weakness of the domestic financial sector contributed, in turn, to further pressures on the currency (Crockett 2007).

The Asian crisis also showcased that when capital inflows surge, vulnerabilities can emerge in at least four areas: (1) currency and maturity mismatches in private balance sheets; (2) domestic credit, asset and spending bubbles; (3) unsustainable currency appreciations and external deficits; and (4) reliance on IMF assistance and policy advice rather than self-insurance against sudden stops and reversals of capital flows (Akyüz 2017). To avoid these potential vulnerabilities, countries need to strengthen their domestic financial systems and introduce macroeconomic prudential policies, including exchange rate and reserve management policies.

3.3 The Coordinated Responses in 2008–2012 Made the Crisis Short-Lived

After the second wave, global borrowing resumed at a faster pace. This coincided with a period of rapid expansion of US- and EU-headquartered banks following financial deregulation (Arteta and Kasyanenko 2019). In the US, barriers between commercial and investment banking were removed, which opened the way for the formation of “mega-banks” and encouraged the rapid growth of corporate bond markets (Kroszner and Strahan 2014; Sherman 2009). In Europe, the Financial Services Action Plan in 1999 encouraged cross-border connections between banks and their rapid expansion (Goddard et al. 2015).

External debt rose sharply in Europe and Central Asia between 2000 and 2007, matched by rapid rates of GDP growth and aided by many countries’ growing ties with the EU. When the crisis hit, the deterioration in financial conditions resulted in sharp recessions in Europe and Central Asia. The deterioration in the real economy resulted in rising nonperforming loans, primarily attributable to households, rather than corporates as in the Asian crisis (Kose et al. 2020a).

The crisis in Europe and Central Asia was short-lived, thanks partly to the G20’s coordinated response to the global financial crisis and the unprecedented monetary and fiscal stimulus in 2009 and 2010 (Kose et al. 2020a). Due in part to the European Bank Coordination Initiative (Vienna Initiative) in 2009, major foreign banking groups maintained support for their subsidiaries in Europe and Central Asia, which also helped to contain the financial crisis and limit its damage to the region (Berglöf et al. 2009; Pistor 2011). According to Kose et al. (2020b, p. 41), “in many economies, better policy frameworks after the first two debt waves helped mitigate the damage of the global financial crisis that marked the end of the third wave”.

An important lesson from this crisis is that interdependent financial systems require coordinated governance regimes. As presented in Pistor (2011, p. 7), “governing interdependent financial markets requires mechanisms for managing last-resort public and private financial responsibility during a crisis as well as principles for regulating and supervising financial markets *ex ante* in a manner that is consistent with the expected *ex post* allocation of costs associated with a financial crisis”. The Vienna Initiative played this role and helped to solve the collective action problems of the different stakeholders involved in the resolution of the crisis.

The analysis of the different debt waves provides several useful lessons for Asian DSSI countries. The first set of lessons relates to minimizing the likelihood of this type of crisis:

- Sound macroeconomic policies, particularly in response to exogenous shocks, are crucial in limiting the financing needs of the public sector. Fiscal consolidation imperatives, however, have proven challenging for several developing countries. These policies should be extended also to the regulation of the financial sector, as half of the debt crisis was associated with the financial crisis. Inadequate regulatory and supervisory regimes can encourage excessive risky lending and debt buildups (Claessens 2015).
- Debt should be used efficiently. Borrowing for low-return spending at real interest rates that exceed longer-term economic growth, with repayments that spike in a given time period, is poor economic management and has led several economies to insolvency and liquidity crises as market sentiment turns against them. Conversely, borrowing at low cost to finance high-return growth-enhancing investments in physical and human capital is sound macroeconomics.

- Debt should be accumulated with care. As countries borrow, they need the capacity and analytical tools to design strategies to manage sovereign debt and contain its risks. In particular, careful choice of projects and increasing absorptive capacity and investment efficiency are critical. To minimize the risk of imprudent lending, various analytical tools have been developed to inform borrowing decisions, and policy frameworks introduced to promote fiscal discipline and prevent a buildup of debt and contingent liabilities.
- Potential sources of external shocks should be monitored, particularly in a country with substantial domestic vulnerabilities, including reliance on external and short-term debt in conjunction with a fixed exchange rate and low levels of reserves (Bordo et al. 2010; Claessens et al. 1999; Mishkin 1999). The evidence shows that countries with higher international reserve levels are significantly more resilient to these types of shocks (Gourinchas and Obstfeld 2012).
- Most defaults and restructuring episodes are triggered by one or more of the following factors: a worsening of the terms of trade; an increase in international borrowing costs; consistently poor macroeconomic policies, leading to a buildup of vulnerabilities; or a crisis in a systemically important country that causes contagion across goods and financial markets. Additional factors include macroeconomic volatility, banking crises and related contingent liabilities, and political and institutional factors.

The second set of lessons pertains to the resolution of the debt crises and the final outcome:

- Default is a costly solution. Policy makers avoid, as much as possible, declarations of default and debt restructuring. Defaults are costly especially in political terms, and even more so if the exposure of the domestic banking system is significant. Incentives to gamble for resurrection are high and the costs are typically even higher for all involved when the bet eventually does not pay off (UN DESA 2013). In the case of default, the economic costs in terms of GDP are exacerbated by prolonged uncertainty. A framework for sovereign debt restructuring could provide incentives to avoid these additional costs. Once default is declared, protracted debt renegotiations can erode confidence even more. Even in cases where negotiations facilitated voluntary debt exchanges, the associated economic and social costs have been high.
- A mechanism for sovereign debt restructuring could help improve coordination and provide fair representation of the debtor and all dispersed creditors; establish priority rules for the whole range of official and private creditors; provide an early response to debt distress, allowing time to find a solution and protect from litigation; and provide space and establish procedures for dispute resolution.
- We note several stylized facts from the last 20 years of debt restructuring. Since 1998, sovereign bond restructuring in emerging markets has been implemented relatively quickly. The extent of creditor losses (haircuts) shows a large variation, ranging from an estimated 5 percent (the Dominican Republic in 2005) to a nearly 90 percent (Iraq in 2006) reduction in net present value. The number of debt restructuring episodes with face value reduction (nominal debt write-downs) has increased notably since the late 1980s. Post-default restructuring cases on average show a higher net present value haircut than preemptive restructuring cases. The restructuring cases varied in complexity (Claessens et al. 1999).
- The negotiation process and the basic restructuring mechanics are very similar between domestic debt restructuring and external debt restructuring (Sturzenegger and Zettelmeyer

2006). However, a significant difference is that domestic debt is adjudicated domestically, often leaving litigation in domestic courts as the only recourse available to investors. Another difference is that investors in domestic instruments are often mostly residents, in which case a restructuring of domestic debt instruments will directly affect the balance sheets of domestic financial institutions and can affect the country's overall financial stability. Finally, exchange rate considerations and currency mismatches play a smaller role in domestic debt than in external debt restructurings (Claessens et al. 1999).

- The problem of creditor holdouts and litigation is widely seen as the main reason for delayed and inefficient debt restructuring. This type of free-riding behavior and other forms of creditor coordination failures are seen increasingly as critical stumbling blocks, mainly due to the shift from bank to bond financing (Das et al. 2012). However, as shown above, bond restructuring since the 1990s has been implemented more quickly than the bank debt exchanges of the 1980s.

4. HOW BEST SHOULD ASIAN DSSI COUNTRIES BE FINANCED?

Many developed and emerging Asian countries have borrowed extensively to support the development of their economies. It is therefore natural for lower-income Asian countries to follow the same strategy. In practice, however, the relationship between debt, development, and growth is rarely smooth. To be effective, financing for development must reconcile the objective of meeting the large needs of developing countries with that of maintaining their debt at sustainable levels. This often requires a trade-off, and the choice of financial instruments is not neutral: while grants reduce the likelihood of future debt problems, loans provide more upfront financing.

This trade-off needs to be revisited in light of three new developments. First, the analysis of the trade-off is even more relevant in light of the COVID-19 crisis, which will require measures to be adopted at an unprecedented scale. The different policy proposals currently being considered to deal with this crisis must be evaluated in terms of the scale, conditions and efficient use of financial resources and different financial instruments. Second, new financial instruments to finance developing countries have emerged in recent years. The so-called family of “innovative finance” instruments emphasizes the achievement of outcomes and often includes the participation of the private sector both as a source and user of funds. Third, over the last decade, debt has increased substantially in most low-income countries and its composition has changed. As Asian countries develop, they will require new financing sources and financing instruments but also policies and debt management systems that reduce the likelihood of disruptive debt crises.

How best then should governments of Asian DSSI countries be financed? Our answer looks at two different horizons. We first assess the immediate impact of the COVID-19 crisis and the current debt relief proposals. We then discuss how these countries should balance the increased need for development financing while maintaining long-term debt sustainability.

4.1 Debt of Asian DSSI Countries and the COVID-19 Crisis

Several Asian DSSI countries were already at a high risk of debt distress even before the first case of COVID-19 was diagnosed in late 2019 (see section 2 for details). The pandemic has

exponentially increased the problems of these countries to serve their debt. Drastic reductions in growth, trade, and fiscal revenue, coupled with massive and unplanned expenditures to support the health system and the livelihood of millions of individuals and companies, made an already complex starting point even more challenging. Some vulnerable countries are also facing higher financing costs or have very limited access to external financing. As a result, both solvency and liquidity indicators have deteriorated.

A number of proposals and initiatives from the international financial community have been launched or are being considered to mitigate these problems. In general, these proposals aim to provide liquidity, reduce likelihood of default, make available the needed resources to key sectors (such as health, social protection, and economic activity), and delay macroeconomic adjustment that would lead to a bad equilibrium.

On 15 April 2020, the G20 announced the DSSI, which is an eight-month official bilateral sovereign debt payment suspension if requested by International Development Association (IDA) member countries and least-developed countries that are current on their IMF and World Bank obligations. The DSSI allowed 76 IDA countries and Angola to suspend principal or interest payments on their debts to G20 members from 1 May 2020 through the end of 2020. The eligible countries include the 21 ADB developing member countries in our sample. For these countries, the potential DSSI savings as a percentage of 2019 GDP range from 0 percent in Timor-Leste up to 5.8 percent in Bhutan. In most cases, the savings are less than 1 percent of GDP.

After the moratorium period (the initial eight months have now been extended until June 2021), countries will have to pay the deferred principal and interest over the three years following a one-year grace period. This deferral is net present value neutral and therefore does not reduce the total payment debtors will make to participating creditors (Nye and Rhee 2020). Bilateral official creditors under the Paris Club have endorsed the DSSI. Though not a formal member of the Paris Club, the PRC is implementing the DSSI based on the same term sheet as its members. This is crucial as the PRC is the most important bilateral creditor for Asian DSSI countries. One question about the PRC's implementation of the program is whether the China Development Bank should participate. The G20 does not define the scope of "bilateral official creditors". The China Development Bank considers itself a "commercial lender"- its operational model is similar to that of the World Bank, relying heavily on funding from the financial market and acting very conservatively. This is an issue to solve as the G20 has also urged private sector creditors to participate in this initiative on comparable terms. However, an agreement has yet to be reached.

While welcome, the DSSI has several shortcomings. First, the DSSI has difficulty extending participation to other creditors. The negotiations with private creditors are likely conducted on a case-by-case basis, and the possibility of holdouts may complicate any restructuring plan. Enforcing a blanket standstill on the other hand could cause credit rating downgrades, shutting these countries out of international capital markets (Nye and Rhee 2020). Second, this proposal will not provide the fiscal space these countries will need to deal with the consequences of the pandemic. Finally, most of these countries already have important debt service commitments from 2022 onward to which they will need to add to these the debt service that was due in 2020–2021. Some of the alternative or complementary policy proposals highlight these shortcomings. The United Nations makes a number of policy recommendations to expand the DSSI, crucially to cover all highly indebted countries that request debt relief including

middle-income countries, and to encourage the participation of multilateral and commercial creditors. The United Nations Conference on Trade and Development (UNCTAD) (2020) proposed “comprehensive and automatic temporary standstills on debt repayments, including all external creditors and with possible annual renewals based on debt sustainability assessments”. In addition, UNCTAD called for an immediate stay on all creditor enforcement actions, and for jurisdictions that govern sovereign bond documentation for most emerging markets to deter lawsuits against debtor countries. UNCTAD proposed the creation of an International Developing Country Debt Authority to oversee the implementation of debt standstills and debt sustainability assessments in the longer term. Our assessment is that this ambitious proposal is very unlikely to find support in the current political and economic environment.

The uncertain nature of the COVID-19 crisis means that it is difficult to determine whether the countries' current sovereign debts are sustainable. Ultimately, the extent of debt distress will depend on how deep and prolonged the impact of the pandemic will be, which will vary from country to country depending on the importance of commodity and oil exports, tourism, and remittances. Countries with higher debt burdens will face an even more difficult trade-off between scaling up much-needed health and social safety net spending and public investment to meet ambitious development objectives while containing debt vulnerabilities.

The extent of debt distress will also depend on the extent of international support to countries through debt service relief, concessional financing, and when needed, support for debt restructuring. Although the IMF and the World Bank, as well as ADB and other regional development banks and concessional lenders have helped countries through such temporary crises, they do not have enough resources to deal with the problem alone. The real question then is what to expect beyond the life of the DSSI. Obviously, default would be a possibility for some of the lower-income countries. But history shows that this is a suboptimal solution and efforts should be made to avoid it. The extent of the problem will be better understood after the end of the pandemic. What is the level of indebtedness and how fast can Asian DSSI countries recover post-COVID-19 will be good indicators for the potential depth of any debt restructuring needed.

The capacity of the international financial system to resolve this issue would also depend on the extent of the problem. Will the need for restructuring and potential debt relief be limited to lower-income countries or should it also apply to emerging economies? The magnitude of the problem clearly would be very different. We know that in the case of lower-income countries, the level of resources needed is within the scope of what the international community deems possible, although the situation is different from in the early 2000s as donors' budgets are tighter and domestic demands are higher. The geopolitics is also different due to the rise of the PRC as the largest bilateral creditor. Debt portfolios are different, too; any solution now will require participation of nontraditional and commercial lenders. For most of the lower-income Asian countries, the implicit level of bailout of private creditors would be relatively small compared with emerging Asian countries but the available data are a bit opaque to provide an accurate assessment. In all likelihood, concessional financing will need to be increased for lower-income Asian countries in its many forms, and a blend of concessional finance and investments will need to be provided to avoid drastic reductions in economic growth.

While we still do not know the extent of debt restructuring and debt write-offs that will be needed, international expert groups are working on designing a mechanism to run multiple sovereign debt workouts simultaneously. In November 2020, the G20 approved the Common

Framework for Debt Treatments beyond the DSSI, which is available to the same set of countries that are eligible for the DSSI and involves the same group of 39 official creditors from the G20 and the Paris Club. In its current stage, the common framework provides a set of loose parameters, using a modified version of the Paris Club's classic debt treatment (Evian terms) for how the negotiations could be carried out. The document states that the negotiations would be done on a country-by-country basis and all countries would receive similar treatment. This could imply lengthy and costly negotiations if a standard mechanism is not properly developed. It also suggests that low-income countries will not be provided special treatment on standardized terms similar to those of the HIPC Initiative. We know from our review of previous debt crises that political commitment is paramount to reach a successful debt restructuring agreement. In the context of Asia, for debt relief to be effective, it must be closely coordinated with the PRC because of its increasing importance as a lender in the region. The recent historical evidence on the PRC's debt relief shows that the country has successfully restructured or refinanced approximately \$15 billion of African debt in the last 20 years (Acker et al. 2020). In none of these episodes was there evidence of asset seizures, the use of courts to enforce payments, or the application of penalty interest rates.

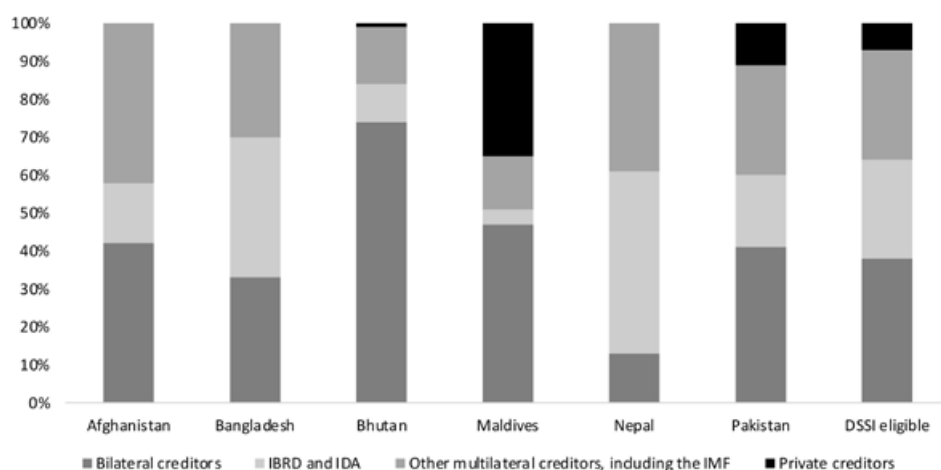
The creation of the Common Framework for Debt Treatments beyond the DSSI is in itself good news—the international community recognizes the fact that post-COVID-19, temporary debt service relief would not be enough. Maturity extensions should be prioritized, while haircuts are reserved for exceptional cases, according to the document. Our analysis indicates that the need for haircuts may become more the norm for several DSSI Asian countries. The common framework explicitly requires debtor countries to seek comparable treatment from other external creditors, including the private sector. However, this problem is not simple to resolve. Many lower-income countries have a poor debt management system and the official level of debts may underestimate the problem faced by Asian DSSI countries.⁸ Hidden debts distort policy surveillance, risk pricing, and debt sustainability analyses. The need for transparency is at a premium, as governments and private creditors demand assurance that the debt relief will be channeled to confront the COVID-19 pandemic and not to repay preexisting debts to other creditors (Horn et al. 2020).

In this context, the main issue remains unsolved: how to distribute the losses between creditors and debtors and among creditors—especially the private ones. The diversification of the creditor base and the type of debt instruments used have only increased the complexity of these processes. The IMF has suggested two mechanisms to solve this problem: an agreement on a common approach to debt restructuring between the Paris Club and others, and the use of debt sustainability assessment risk ratings to limit eligibility for debt relief. Besides the fact that it would be hard to get private creditors to agree to that, the approach poses two problems in practice. First, available information on public debt is often incomplete and inconsistent, making it difficult to gain a comprehensive understanding of creditor composition. Therefore, it is almost impossible to do a fair distribution of losses among creditors. Second, if debt treatments are considered on a case-by-case basis, countries with a similar debt burden may end up with different debt relief deals depending on the creditors' interest. Even if Paris Club members are able to enforce comparable treatment, private creditors will refuse to agree to debt write-offs unless commercial creditors from nonmember countries participate on similar terms, further complicating the process. This could be a serious problem if other lenders prefer

to address restructuring on a bilateral basis, tailoring programs to each situation and often on a loan-by-loan basis rather than for the entire portfolio.

These debates need to be put in the context of the debt stock composition of Asian DSSI countries. If the focus is only on public external debt, the problem of (registered) private creditors should not be overestimated. Because of the nature of these countries, much of the external debt of these governments is with official creditors. Figure 4.4 shows external debt composition for selected Asian DSSI countries. Except for Maldives (31 percent) and Pakistan (11 percent), the incidence of private creditors is very low in most countries (7 percent on average for DSSI eligible countries).

In the absence of a game-changing event that helps to align the incentives of the different creditors or of an innovative market-based mechanism to improve debt restructuring as in the case with the Plan Brady,⁹ a political and economic agreement may be lengthy and costly for developing countries. This needs to be avoided to prevent a repeat of the costly mistakes of the past. Ongoing discussions of potential debt relief mechanisms are considering different options to include private creditors—from legal and legislative strategies to more market-friendly mechanisms such as the creation of a voluntary credit facility, buy backs, and debt swaps. A successful coordination with non-Paris Club official creditors remains one of the main challenges in designing an effective debt relief initiative.



Note: DSSI = Debt Service Suspension Initiative; IBRD = International Bank for Reconstruction and Development; IDA = International Development Association; IMF = International Monetary Fund.

Data for Afghanistan were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.

Source: World Bank Debtor Reporting System.

Figure 4.4 External public debt composition for selected countries (end of 2019)

4.2 Debt Sustainability and Development: Beyond COVID-19

Debt crises in developing countries recur, with each crisis eventually ending up with a more or less efficient resolution and the promise of implementing policy measures to avoid a new crisis. To build a more robust system, short-term debt distress solutions must be linked to medium- and long-term debt sustainability to avoid the pitfalls from the previous debt crises, while providing predictable sources of financing for sustainable development. However, developing countries and creditors have so far failed to achieve this in most cases. From the HIPC and MDRI debt relief initiatives, we learn that solutions should be integral, otherwise they would not be sustainable in the long run. Urgency and limited capacity to negotiate may work against an integrated approach, which may later open the door to accumulating new debt.

Despite earlier efforts, improving debt transparency and strengthening debt management practices remain a challenge for many developing countries. Figure 4.5 shows debt reporting heat maps for our 21 Asian countries as of June 2020. Prepared by the World Bank, the heat map presents an assessment based on the availability, completeness and timelessness of public debt statistics and debt management documents posted on the websites of national authorities. Unsurprisingly, most countries in our sample fail in all or most of the categories. On average, the countries at high risk of debt distress perform worse in the heat map than those with low- and medium-debt distress risks.

Country	Data Accessibility	Instrument Coverage	Sectorial Coverage	Info on Last Loans Contracted	Periodicity	Time Lag	Debt Management Strategy	Annual Borrowing Plan	Contingent Liabilities
Afghanistan									
Bangladesh									
Bhutan									
Cambodia									
Kiribati									
Kyrgyz Republic									
Lao PDR									
Maldives									
Marshall Islands									
Micronesia, Fed. States of									
Myanmar									
Nepal									
Pakistan									
Papua New Guinea									
Samoa									
Solomon Islands									
Tajikistan									
Timor-Leste									
Tonga									
Tuvalu									
Vanuatu									
	N/A	Limited			Partial		Full		

Note: DSSI = Debt Service Suspension Initiative; Lao PDR = Lao People's Democratic Republic; N/A = not applicable.

Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Source: World Bank.

Figure 4.5 Debt reporting heat map for selected Asian DSSI countries (June 2020)

It is impossible not to overemphasize the importance of a debt management system and an active debt management strategy. Strengthening debt management is critical because it can free up resources for investment and also reduce the risk of debt crises. Debtors and creditors cannot make informed decisions without a full picture of a government's outstanding debt and

contingent liabilities. In such a situation, it is not possible to ensure that debt remains sustainable, and the lack of public information on public debt weakens accountability. Clearly, debt transparency is not easy to fix and depends on a multitude of factors, such as a country's institutional capacity, legal framework, governance, and civil service organizations more broadly. Investment in developing debt management and reporting capabilities must be pursued in parallel with complementarity policies to strengthen fiscal frameworks, improve the efficiency of public expenditures and public investment management, and develop domestic financial systems. ADB can play a key role in this area by providing technical assistance to its developing member countries as well as by issuing the right incentives through its lending policies.

A well-functioning debt management system plays two other important roles. First, in debt restructuring negotiations, transparent debt data facilitates agreements by providing clear information about who the creditors are. This helps prevent free-riding behavior that could delay agreements. Second, debt management systems help to reconcile the objective of meeting the large needs of developing countries with that of maintaining their debt at sustainable levels. Without these systems, most low-income countries are constrained to rely only on grants and highly concessional finance. A transparent system and good debt management practice would allow them to borrow from other sources without having to pay much higher costs, if the borrowing is done responsibly.

There is an extensive body of literature on the sources of development financing for low-income countries. Most of this literature focuses on two aspects: domestic resource mobilization (DRM) versus external financing and the form external financing should take.

The case for DRM is clear: in the long run, countries should raise and spend their own funds to finance most of the domestic investment and social programs that are essential for economic development. DRM is founded mainly on the development of the tax system through improvements in tax administration and tax policy. Following the pandemic, increased public- and private financing from the developed to the developing world would probably be hard to achieve. In this context, developing Asian countries will face pressure to progress on DRM. However, DRM is a process with often modest year-to-year improvements, while drastic tax reforms fail in many cases because of political and economic constraints. The immediate post-pandemic scenario does not seem conducive to such reforms. There is a role here for multilateral development banks like ADB. They can intensify the work they do with their members and establish a common understanding of what constitutes "good" DRM, identify the structural and political constraints, and determine the effectivity of policy advice, financial support, and technical assistance. This is also an area ripe for innovative solutions. For example, Lee (2018) pointed out that with this type of reform, paying for outcomes makes a lot of sense. A multilateral bank could use concessional lending to match half of a one percentage point actual increase in the tax revenue-to-GDP ratio. The additional concessional lending would strengthen instead of weaken a country's long-term debt sustainability. (A key issue would be to provide the right incentives for countries not to rely exclusively on indirect taxes, which are easier to administer but will put the poor at risk of becoming net payers if redistributive tax and spending policies are not in place.)

The development of domestic debt markets is also emphasized as a potential tool for using domestic resources to finance development. As in the case of DRM through higher tax revenue, the development of domestic debt markets should not be considered a short-term solution, but a continuous process with a long-term goal. In the case of low-income countries, there is no

trade-off between issuing safer and cheaper debt, as external debt tends to have concessional rates and longer maturity. Therefore, even if external borrowing carries a potential currency mismatch, it tends to be cheaper than domestic borrowing. Given the limited domestic savings, however, there is potential for direct crowding out as governments and corporate bonds would compete in the portfolio of local institutional investors. The role of domestic debt markets in financing governments in lower-income countries in Asia may remain modest in the years to come.

Official multilateral and bilateral grants and loans will remain the main source of development financing for Asian DSSI countries in the short- and medium term. A central question in this context is what form financial aid should take. The debate has rightly centered in the choice between pure grants or concessional loans. There is a clear trade-off between the two: for a given cost to donors, loans provide more upfront financing while grants avoid the risk of future debt problems. In the case of low-income countries, the debate has settled more in favor of grants than loans, because of the history of pervasive “lend-and-forgive” cycles. However, this historical evidence is highly biased because of the negative experience of low-income countries in Africa and, to a lesser extent, in Latin America. There is no systematic evidence, at least until now, that this has been the case for low-income countries in Asia. On the other hand, as noted earlier, many of these countries were already at high risk of debt distress even before the COVID-19 pandemic. Was this due to excessive lending, particularly from new sources of financing, or the result of unexpected worsening of global economic conditions? While the answer to this question would require a country-by-country analysis, we note that most of these countries have poor debt management systems. Improving them should be a condition to have access to conditional lending, instead of being limited to using only grants.

Another potential problem of using loans to finance low-income countries is the need to produce tradable goods and services (the transfer problem) to be able to repay a loan. Many projects, particularly in the social area, may not have an immediate tradable output, making them unsuitable candidates for loans. While funds are fungible up to some point, multilateral banks could use a mixed grant-and-concessional loan strategy to finance governments in low-income countries, but rebalancing the mix according to the likelihood that the funds would create the resources to repay the loan. Even then, for the lending part of that mix, it would be advisable to emphasize the use of the so-called “innovative finance” instruments that focus more on outcomes than on inputs. This family of instruments include (1) development impact bonds and social impact bonds; (2) blended impact investment funds; and (3) outcome-based funds.

5. CONCLUSIONS

This chapter analyzed the current sovereign debt problems of several developing Asian countries, focusing in particular on the countries that qualified for the DSSI, the debt relief mechanism put in place by the G20 in the wake of the pandemic. It explored short-term solutions to those problems and determined the key elements of a strategy to provide sustainable development financing for these governments.

We find that debt distress risk has been increasing for most of the Asian DSSI countries in the last decade, even before the pandemic, due to a number of domestic and international factors. Most of these countries have seen an increase in the level and risk profile of their debts. In

most cases, debt is external and denominated in foreign currency, short-term commercial debt has increased, and countries' fiscal and current account positions have deteriorated. Following the global shock created by the pandemic, most of these indicators have deteriorated further. Because of reduced revenues and the need to increase expenditures to support their economies, these countries have difficulty servicing their debt and accessing credit markets.

In this context, many of them, including the Asian countries, face a greater possibility of being in debt distress. Based on historic evidence, we draw the following lessons that should be useful in case a debt workout proves necessary:

- Policy makers should avoid, as much as possible, declarations of default and debt restructuring that end up increasing cost. A framework for sovereign debt restructuring could provide incentives to avoid these additional costs.
- A mechanism for sovereign debt restructuring could help, by improving coordination and providing fair representation of the debtor and all dispersed creditors, establishing priority rules among the whole range of official and private creditors, responding early to debt distress, allowing time to find a solution and protect from litigation, and creating space and establishing dispute resolution procedures.
- Creditor holdouts and litigation are widely seen as the main reasons for delayed and inefficient debt restructuring.

Acting on these lessons, the international community is actively seeking to provide immediate temporary debt relief and to develop a framework to deal with the potential debt restructuring in several countries. In April 2020 the G20 introduced the DSSI, which provides short-term relief by suspending payments on official bilateral sovereign debt for a number of developing countries. No doubt, for a few DSSI countries, long-term debt sustainability is not a major concern and the payment suspensions will serve their short-term purpose. But for the majority of DSSI countries, some degree of debt forgiveness from creditors will probably need to be on the table. For that reason, in November 2020, this initiative was upgraded to include a framework for debt negotiations based on a modified version of the Paris Club's classic debt treatment. However, there are several problems with this initiative, including the difficulty of making private creditors agree to participate. Our analysis shows instances in the past where multicountry debt relief initiatives have been possible. However, the evidence shows that the debt restructuring process is often complex and time-consuming, typically taking years to resolve and at great cost to all parties. Moreover, there is little evidence of how such negotiations would work in a context like the one created by the pandemic. A quick and efficient solution to debt restructuring will depend on a political deal and the development of flexible and innovative instruments that can accommodate the preferences of the different actors involved.

Once a solution is reached, it is essential to ensure that it avoids the pitfalls of other major debt relief initiatives. In this sense, in many developing Asian countries ensuring debt transparency and strengthening debt management practices remain a challenge. Addressing these challenges should be a priority for both creditors and debtors not only to reduce the likelihood of future crises but also to allow for better resolution if they happen. Without a proper debt management system, many countries would only be able to attract grants and a limited amount of concessional lending.

Multilateral and regional development lenders should keep working with their member countries to strengthen domestic resource mobilization and develop domestic debt markets.

However, for most governments in Asian DSSI countries, official multilateral and bilateral grants and loans will remain the main source of funding in the short- and medium-term. International financial institutions should emphasize the use of the so-called “innovative finance” instruments that tie financing to measurable results.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. For a recent overview of the evolution of public vulnerabilities in lower-income countries see IMF (2020a). The appendix of this report provides a useful classification of lower-income countries.
3. In this chapter, data for Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.
4. Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the countries.
5. IMF (2020b) provides information on how risk of debt distress is estimated. A country is considered to be in debt distress if it is experiencing difficulties in servicing its debt, as evidenced, for example, by the existence of arrears, ongoing or impending debt restructuring, or if there are indications that a future debt distress event is probable.
6. Afghanistan, Bangladesh, Bhutan, Cambodia, the Kyrgyz Republic, the Lao PDR, Maldives, Myanmar, Nepal, Pakistan, PNG, Samoa, Solomon Islands, Tajikistan, Timor-Leste, Tonga, and Vanuatu.
7. Data for Afghanistan were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.
8. There are indications that reporting on state-owned enterprise debt in the World Bank's International Debt Statistics database is likely to be incomplete (IMF 2020b). This raises significant concerns of hidden direct and contingent liabilities which may further exacerbate the debt position of Asian DSSI countries.
9. Willems (2020) proposed the use of an auction-based mechanism to deal with sovereign debt restructurings.

REFERENCES

- Acker, K., D. Brautigam and Y. Huang. 2020. Debt Relief with Chinese Characteristics. *CARI Working Paper Series*. No. 2020/39. Washington, DC: China Africa Research Initiative, School of Advanced International Studies, Johns Hopkins University.
- Akyüz, Y. 2017. *The Asian Financial Crisis: Lessons Learned and Unlearned*. Mimeo.
- Arteta, C. and S. Kasyanenko. 2019. Financial Market Developments. In M.A. Kose and F. Ohnsorge (eds), *A Decade After the Global Recession: Lessons and Challenges for Emerging and Developing Economies*. Washington, DC: World Bank, pp. 165–208.
- Berglöf, E., Y. Korniyenko, A. Plekhanov and J. Zettelmeyer. 2009. Understanding the Crisis in Emerging Europe. *EBRD Working Paper*. 109. London: European Bank for Reconstruction and Development.
- Bordo, M., C. Meissner and D. Stuckler. 2010. Foreign Currency Debt, Financial Crises and Economic Growth: A Long-Run View. *Journal of International Money and Finance*. 29(4), pp. 642–65.
- Cassimon, D., M. Ferry, M. Raffonot and B. Van Campenhout. 2017. Dynamic Fiscal Impact of the Debt Relief Initiatives on African Heavily Indebted Poor Countries (HIPC). Working Paper. HAL.
- Chowdhry, B. and A. Goyal. 2000. Understanding the Financial Crisis in Asia. *Pacific-Basin Finance Journal*. 8(2), pp. 135–52.
- Claessens, S. 2015. An Overview of Macroprudential Policy Tools. *Annual Review of Financial Economics*. 7(December), pp. 397–422.
- Claessens, S., S. Djankov and D. Klingebiel. 1999. Financial Restructuring in East Asia: Halfway There? Financial Sector Discussion Paper 3. Washington, DC: World Bank.

- Corsetti, G., P. Pesenti and N. Roubini. 1998. What Caused the Asian Financial Crisis? Part I: A Macroeconomic Overview. *NBER Working Paper* 6833. Cambridge, MA: National Bureau of Economic Research.
- Crockett, A. 2007. Lessons from the Asian Crisis. Paper presented at *The Asian Financial Crisis Revisited: Challenges Over the Next Decade*. San Francisco. 6 September. Accessed at: <https://www.frbsf.org/economic-research/files/crockett.pdf>.
- Das, U., M. Papaioannou and C. Trebesch. 2012. Sovereign Debt Restructurings 1950–2010: Literature Survey, Data, and Stylized Facts. *IMF Working Paper*. No. 12/203. Washington, DC: IMF.
- Depetris-Chauvin, N. and A. Kraay. 2005. What Has 100 Billion Dollars Worth of Debt Relief Done for Low-Income Countries? Mimeo World Bank. Accessed at: <https://econwpa.ub.uni-muenchen.de/econ-wp/if/papers/0510/0510001.pdf>.
- Eichengreen, B. 2020. Resolving the Coming Global Debt Crisis. *Project Syndicate*. Accessed at: <https://www.project-syndicate.org/commentary/managing-coming-global-debt-crisis-by-barry-eichengreen-2020-05>.
- Gardner, A., J. Lin, S. Morris and B. Parks. 2020. Bargaining with Beijing: A Tale of Two Borrowers. Center for Global Development Notes. Accessed at: <https://www.cgdev.org/publication/bargaining-beijing-tale-two-borrowers>.
- Goddard, J., P. Molyneux, and J.O.S. Wilson. 2015. Banking in the European Union: Deregulation, Crisis and Renewal. In A.N. Berger, P. Molyneux, and J.O.S. Wilson (eds), *Oxford Handbook of Banking*. Oxford: Oxford University Press.
- Gourinchas, P.-O. and M. Obstfeld. 2012. Stories of the Twentieth Century for the Twenty-First. *American Economic Journal: Macroeconomics*. 4(1), pp. 226–65.
- Horn, S., C. Reinhart and C. Trebesch. 2020. China's Overseas Lending. *National Bureau of Economic Research Working Paper Series*. No. 26050.
- Hurley, J., S. Morris and G. Portelance. 2018. Examining the Debt Implications of the Belt and Road Initiative from a Policy Perspective. Center for Global Development Policy Paper. 121. Washington, DC: Center for Global Development. <https://www.cgdev.org/publication/examining-debt-implications-belt-and-roadinitiative-policy-perspective>.
- International Monetary Fund (IMF). 2000. Recovery from the Asian Crisis and the Role of the IMF. Washington, DC. Accessed at: <https://www.imf.org/external/np/exr/ib/2000/062300.htm>.
- International Monetary Fund (IMF). 2020a. The Evolution of Public Debt Vulnerabilities in Lower Income Economies. Policy Paper No. 20/03. Washington, DC.
- International Monetary Fund (IMF). 2020b. Joint World Bank–IMF Debt Sustainability Framework for Low-Income Countries. Fact Sheet. Washington, DC. Accessed at: <https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/16/39/Debt-Sustainability-Framework-for-Low-Income-Countries>.
- Kose, M.A., P. Nagle, F. Ohnsorge and N. Sugawara. 2020a. *Global Waves of Debt: Causes and Consequences*. Washington, DC: World Bank.
- Kose, M.A., F. Ohnsorge, P. Nagle, and N. Sugawara. 2020b. Caught by a Cresting Debt Wave. *Finance & Development*. 57(2). Washington, DC: IMF.
- Kroszner, R.S. and P.E. Strahan. 2014. Regulation and Deregulation of the U.S. Banking Industry: Causes, Consequences, and Implications for the Future. In N.L. Rose (ed.), *Economic Regulation and its Reform: What Have We Learned?*. Chicago, IL: University of Chicago Press, pp. 485–453.
- Lee, N. 2018. Domestic Resource Mobilization in Low-Income Countries: Proposal for a Surge in Multilateral Support. *Center for Global Development*. Accessed at: https://www.cgdev.org/sites/default/files/Lee_DRM-in-LICs.pdf.
- Leo, B. 2009. Will World Bank IMF Lending Lead to HIPC IV? Debt Déjà-Vu All Over Again. *Center for Global Development*. Working Paper. No. 193. <http://dx.doi.org/10.2139/ssrn.1517964>, pp.1156–1184.
- Mishkin, F. 1999. Global Financial Instability: Framework, Events, Issues. *Journal of Economic Perspectives*. 13(4), pp. 3–20.
- Nye, A. and J. Rhee. 2020. The Limits of the G20's Debt Service Suspension Initiative. Yale School of Management.
- Pistor, K. 2011. Governing Interdependent Financial Systems: Lessons from the Vienna Initiative. *Columbia Law and Economics Working Paper*. 396. New York: Columbia University.

- Rajah, R., A. Dayant and J. Pryke. 2019. *Ocean of Debt? Belt and Road and Debt Diplomacy in the Pacific*. Sydney: Lowy Institute.
- Sherman, M. 2009. *A Short History of Financial Deregulation in the United States*. Washington, DC: Center for Economic and Policy Research.
- Stiglitz, J. and H. Rashid. 2020. A Global Debt Crisis is Looming: How Can We Prevent it? *Project Syndicate*. Accessed at: <https://www.projectsyndicate.org/commentary/how-to-prevent-looming-debt-crisis-developing-countries-byjoseph-e-stiglitz-and-hamid-rashid-2020-07>.
- Sturzenegger, F. and J. Zettelmeyer. 2006. *Debt Defaults and Lessons from a Decade of Crises*. Cambridge, MA: MIT Press.
- Truman, E. 2020. Lessons from the 1980s: Sovereign Debt in the Global Pandemic. D-DebtCon Conference. Accessed at: https://www.graduateinstitute.ch/sites/internet/files/2020-10/Truman_Lessons%20from%20the%201980s_D-DebtCon-Paper.pdf.
- United Nations Conference on Trade and Development (UNCTAD). 2020. *From the Great Lockdown to the Great Meltdown: Developing Country Debt in the Time of COVID-19*. Geneva. Accessed at: https://unctad.org/system/files/official-document/gdsinf2020d3_en.pdf.
- United Nations Department of Economic and Social Affairs (UN DESA). 2013. Lessons Learned from Debt Crises and Ongoing Work on Sovereign Debt. Statement by Ms. Shamshad Akhtar Assistant Secretary-General for Economic Affairs Department of Economic and Social Affairs. New York.
- Willems, T. 2020. A Proposal for an Auction-Based Sovereign Debt Restructuring Mechanism. VOXeu. Accessed at: <https://voxeu.org/article/proposal-auction-based-sovereign-debt-restructuring-mechanism>.
- World Bank. 1998. *Global Economic Prospects and the Developing Countries: Beyond Financial Crisis*. Washington, DC: World Bank.

5. Pacific Islands' debt: financing post-COVID-19 recovery amid precarious sustainability

Roland Rajah and Alexandre Dayant¹

1. INTRODUCTION

The small island states of the Pacific region face uniquely difficult financing challenges, even during normal times. The region's extreme geography poses intrinsic barriers to economic growth and development while subjecting the Pacific to large and frequent negative shocks. Debt sustainability is consequently a perennial concern and most Pacific countries are heavily reliant on official development partners to meet their financing needs in a sustainable way.

Today, the most pressing challenge for the Pacific and its development partners is responding to the economic crisis unleashed by the COVID-19 pandemic. With growth collapsing and debt levels already elevated, there is widespread concern that the developing world writ large faces a looming debt crisis (Bulow et al. 2020). Much international attention is consequently focused on the need for coordinating substantial debt relief. In the Pacific, most economies were already at an elevated risk of debt distress prior to the pandemic, according to the International Monetary Fund (IMF) and the World Bank. This raises important questions for the Pacific and its development partners. Does the Pacific face an impending debt crisis? What should the financing priorities be for enabling the region's recovery? And how can the scale of external support needed realistically be mobilized given the Pacific's development partners are also dealing with economic crises at home? We take up these key questions in this chapter.

The spread of the novel coronavirus which began in the Chinese city of Wuhan in late 2019 has led to the worst global economic downturn since at the least the Great Depression. At the time of writing, most Pacific economies have avoided major outbreaks of the disease itself. The major exception is Papua New Guinea (PNG)—the largest country in the region—which after initial success in suppressing the virus experienced a surge in new infections starting in early 2021. The health outlook in PNG remains uncertain. Yet, even though the rest of the Pacific has fared among the best in the world in limiting the spread of the virus, the grim reality is that the economic devastation is still likely to be among the most severe—especially for several Pacific economies that are heavily dependent on international tourism.

In response to the COVID-19 shock, there is an important need in all countries for large-scale fiscal expansion aimed at keeping economies, and societies, afloat through the depths of the crisis and providing enough stimulus to enable the economic recovery thereafter. Yet most Pacific countries have little ability to finance such economic largesse—being aid-dependent,

having little to no access to global capital markets, and with their balance of payments also under pressure as key external income sources (tourism, remittances, commodities) have fallen off, if not collapsed. Official development partners have responded with various assistance measures. However, this has largely been sufficient only to plug the immediate fiscal and balance of payments financing gaps caused by drops in government revenue and external income, rather than enabling the large-scale countercyclical stimulus needed. As a result, the economic damage from the crisis for many Pacific economies is likely to be deep and long-lasting. With the risks of debt distress generally considered elevated before the pandemic, this raises critical questions about the future of debt sustainability in the Pacific. With this context in mind, this chapter seeks to make three main contributions.

First, we provide a preliminary analysis of the potential debt sustainability implications of the COVID-19 crisis in the Pacific. We review recent debt sustainability analyses produced by the IMF and provide our own quantitative analysis focused on the outlook for public sector solvency in the Pacific. We focus particularly on four countries—Fiji, PNG, Samoa, and Tonga—which arguably face the most uncertain debt outlooks as a result of the pandemic.

Next, we consider what it will take for the Pacific to recover from the pandemic. We argue that given the scale of the shock, a well-designed, large-scale recovery package financed by development partners, focused on public investment and implemented over several years would be likely to have large economic benefits. We use fiscal multipliers to estimate that the Pacific will require a “recovery package” of \$2.3 billion–\$3.5 billion (constant 2019 US dollars) in additional external financing over the coming years in order to recover fully from the pandemic.

Finally, a key question is how this can be financed. In an unconstrained world, a dramatic increase in grant aid would be the most beneficial form of financing, especially in response to what is a once-in-a-century exogenous shock for which concerns about moral hazard are largely irrelevant. Yet, signs of a major increase in external aid in response to the pandemic are yet to materialize, with key bilateral partners focusing their resources on combating recessions at home. We therefore consider the debt sustainability implications if the recovery were to be financed with semi-concessional loans from development partners. Our analysis suggests that this is a viable option.

2. COVID-19 AND THE PACIFIC

The small island states of the Pacific are some of the most remote countries in the world. Remoteness is generally seen as a major economic impediment for the region. But during the current crisis the Pacific was able to take advantage of its physical isolation to avoid major outbreaks of the COVID-19 disease—notably through early border closures, with several governments imposing travel restrictions as early as January 2020.

Overall, the region has been among the most successful in the world in containing the domestic spread of COVID-19. At the time of writing, most Pacific countries had not had a single case of the virus. PNG, the largest economy in the region by far, is the major exception. After initial success in suppressing the virus, PNG experienced a surge in new cases starting in early 2021 and, at the time of writing, was in the midst of severe outbreak and facing a highly uncertain outlook.

Health systems in the Pacific are generally weak, with significant gaps in access and high burdens of noncommunicable diseases. According to the World Health Organization (WHO), most Pacific island countries annually spend \$500 or less per capita on health—around half the global average.² Similarly, half of Pacific island countries do not meet the WHO target of having 4.5 health workers for every 1000 persons. The success of most Pacific countries in avoiding large domestic outbreaks of the virus has therefore been fortunate, commendable, and critical, while the health situation in PNG could prove devastating. PNG has around 4000 nurses and 500 doctors servicing a nation of just under 9 million.

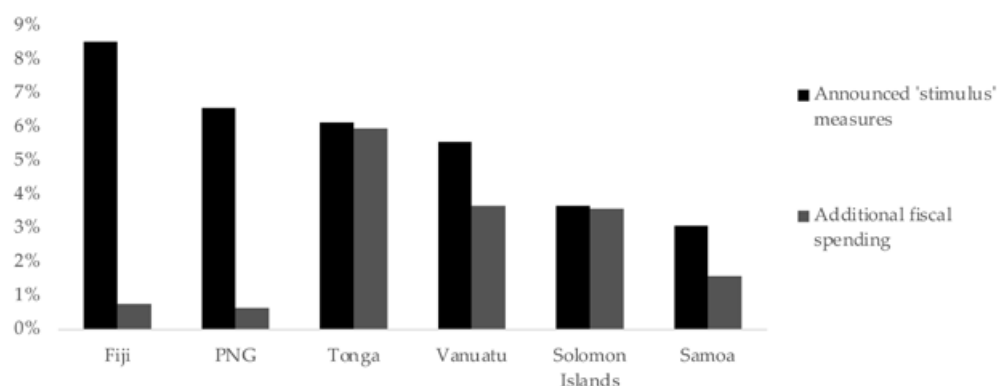
Despite most of the Pacific being among the most successful in the world on the health front, the grim reality is that the economic devastation associated with the pandemic is likely to be among the most severe. According to Asian Development Bank (ADB) forecasts, the Pacific region is expected to see an economic contraction of 6.1 percent in 2020 and negligible recovery of 1.3 percent in 2021 (ADB 2020). The most recent IMF forecasts contain a similar outlook, with the Pacific contracting by 8 percent in 2020 and only recovering by 3 percent in 2021. Those economies most heavily reliant on international tourism are being especially hard hit. Fiji is expected to contract by around 20 percent while Palau and Vanuatu are both expected to contract by close to 10 percent.

Beyond tourism, the Pacific is also being negatively impacted by several other factors: first, via reduced global demand for key commodity exports, particularly that emanating from the People's Republic of China (PRC) for energy (PNG) and forestry (Solomon Islands) exports. Second, recessionary conditions in key countries with significant Pacific migrant populations (notably Australia, New Zealand, and the United States) are expected to cause a drop in remittances to the region of around 20 percent (IMF 2020a). Remittances average about 10 percent of GDP in the Pacific islands (excluding PNG), exceeding 40 percent of GDP in Tonga, and at about 15 percent of gross domestic product (GDP) in Samoa and the Marshall Islands. Finally, disruptions to international travel and supply chains are hampering domestic economic activity and stalling the implementation of major public infrastructure projects which are an important short-run driver of growth in many of the smaller Pacific island economies. For example, a major new port in Nauru has been disrupted due to its reliance on imported construction materials and foreign workers.

Like elsewhere in the world, Pacific governments have sought to respond to the economic impact of the pandemic with stimulus packages aimed at keeping their economies and societies afloat through the depths of the crisis. Fiji, PNG, Tonga, and Vanuatu for example have announced packages equal to 8.5 percent, 6.6 percent, 6.1 percent, and 5.6 percent of GDP, respectively, while Samoa's announced package only accounts for 3.1 percent of GDP.³ The composition and structure of those packages vary, but in general they comprise a mix of *government, banking, pension, and monetary easing measures*. Some governments have subsidized the salaries of laid-off workers (e.g., Vanuatu's Employment Stabilization Payment scheme), removed school fees, and are providing tax relief to businesses and workers. Many are also allowing workers to access superannuation savings. Those Pacific economies with their own currencies have also eased monetary policy, although the presence of shallow and underdeveloped credit markets means this can only provide a modest amount of additional support.

Fiscal expansion is the key to responding effectively to the current economic crisis. Despite reasonably large headline numbers attached to announced stimulus packages, the degree of

actual fiscal expansion is often much more limited (Figure 5.1). Fiscal expansion has been especially constrained in the larger economies of Fiji and PNG. In Fiji, the government has ramped up borrowing dramatically but largely in response to collapsing revenue. In PNG, the government has strived to keep the budget deficit contained. Both PNG and Fiji have been forced to make substantial expenditure savings in other areas of the budget on the order of several percentage points of GDP. Vanuatu has been able to self-finance a larger fiscal expansion by drawing upon cash reserves built up over the past several years. Tonga and Solomon Islands have been able to engage in the greatest degree of fiscal expansion, in large part due to sizable budget support from development partners.



Note: GDP = gross domestic product; PNG = Papua New Guinea.

Source: Australian National University, Development Policy Centre. Pacific Covid Economic Database. Accessed at: <https://devpolicy.crawford.anu.edu.au/pacific-research-program/pacific-covid-economic-database>.

Figure 5.1 Big “stimulus” packages but constrained fiscal expansion (% of GDP)

The Pacific’s official development partners are providing substantial support in response to the pandemic via a combination of new, redirected and frontloaded financing. To date, we estimate that the Pacific’s development partners have announced around \$1.9 billion (about 5 percent of regional GDP) in prospective COVID-19-related financial assistance, including the G20 debt service standstill, redirected and frontloaded financing from the multilateral development banks (MDBs), expanded IMF rapid financing windows, and reprioritized and increased development assistance from Australia.

This is providing crucial support to the Pacific but with substantial limitations. First, it is difficult to determine how much of the assistance is truly additional, since large amounts of MDB and bilateral funding have simply been redirected from other priorities or brought forward in time (therefore reducing the funds available in future years). Second, only some countries have so far made use of the IMF rapid financing amounts made available, and only in the case of PNG will this be used to help finance the budget deficit, as opposed to simply being added to foreign exchange reserves as balance of payments support.

The fundamental limitation is one of scale, with the international support made available largely only enough to plug the immediate financing gaps caused by drops in government revenue and external income, rather than enabling the kind of large-scale fiscal expansion

needed to limit the economic damage from the pandemic. Overall, the degree of fiscal expansion in the Pacific has been much lower than that seen in advanced economies, which are typically deploying over 10 percent of GDP to combat the virus in 2020 alone. While larger fiscal responses in advanced economies are perhaps to be expected, this suggests that the economic damage from the crisis in the Pacific is likely to be much deeper and longer-lasting. For instance, the latest IMF forecasts suggest real income per person would not recover to its 2019 level even by 2025.

3. A LOOMING PACIFIC DEBT CRISIS?

Prior to the pandemic, most Pacific economies were already considered to be at an elevated risk of debt distress according to the IMF and the World Bank. Collapsing growth and acute fiscal pressures amid the current crisis therefore suggest that Pacific debt sustainability could now be under considerable threat. Globally there is widespread concern of a looming debt crisis in many parts of the developing world, and international attention is focused on the need to coordinate substantial debt relief. Prior to the pandemic, many developing countries took advantage of easy global liquidity conditions to borrow heavily from private creditors. The PRC also emerged to become the largest official creditor to the developing world. These new sources of debt generally came on less favorable terms than those provided by the MDBs or Paris Club lenders. By the end of 2019, half of all lower-income countries were already considered by the IMF to be at high risk of, or already in, debt distress—up from about a quarter in 2013.

The key question is to what extent the Pacific shares this dire general prognosis.

3.1 Reasons to Be Concerned: Structural Vulnerability

Debt sustainability is a perennial concern in the Pacific. The defining developmental characteristic of the Pacific is its extreme geography. The economics of this situation give rise to some of the highest development financing needs in the world while simultaneously greatly reducing the ability of Pacific economies to sustainably carry large amounts of public debt. As a result, there is a structural tension between financing development and safeguarding debt sustainability—a tension now under intense pressure amid the pandemic.

The Pacific's extreme geography is on another order of magnitude compared with any other part of the world (World Bank 2011). These conditions include: an incredibly small size by most key measures (e.g., population, land, and GDP); remoteness from major international economic centers; internal dispersion within countries (both in rural areas and between different islands); dependence on a narrow set of uncertain income sources (notably tourism, remittances, commodities and aid); and high vulnerability to major disasters and the effects of climate change. Nine Pacific countries are for instance among the smallest 25 countries in the world (World Bank 2011). Tonga, Samoa, and Vanuatu—mid-sized Pacific countries—have populations of only 100,000–300,000 (ADB 2018a). PNG is the only exception in terms of size, with a population of almost 9 million. In terms of remoteness, the average Pacific country lies 11,500 kilometers away from the rest of the world weighted by economic size, a 40 percent greater distance than that for the Caribbean islands (Gibson and Nero 2007). In terms of risks to disasters triggered by natural hazards, Vanuatu is considered to be facing the highest risks in the world (Rhur Universitat Bochum 2018). Tonga is considered second. Three other Pacific countries are in the top 10, including PNG.

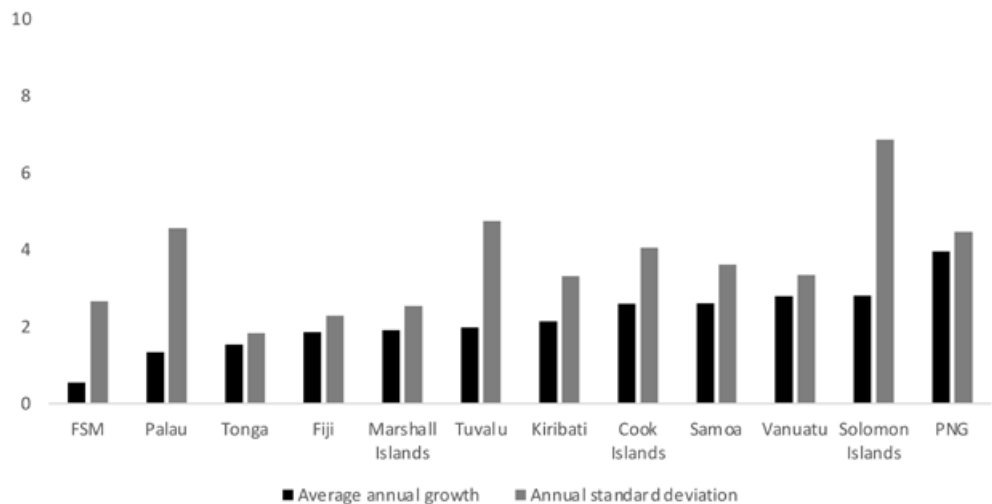
Extreme geography translates into high development financing needs. The Pacific is, by some margin, the most aid-dependent region in the world. The Pacific receives aid equal to around 9 percent of its GDP compared with a figure of 3 percent in sub-Saharan Africa.⁴ Australia, New Zealand, the United States, the PRC, and the MDBs are among the region's major development partners. Despite high levels of aid, the Pacific still faces one of the largest estimated financing gaps of any region. For instance, ADB estimates an infrastructure financing gap of 6.2 percent of GDP every year, the highest such gap of any subregion in Asia and the Pacific (ADB 2017). The World Bank estimates a broader financing gap for infrastructure and human development of around 10 percent of GDP a year (ADB 2018b). It also estimates climate change adaptation needs (e.g., for coastal protection) in the order of 20 percent of GDP for Kiribati and the Marshall Islands and in the range of 5–10 percent of GDP for other Pacific countries (ADB 2018b). In addition, there is the cost of rebuilding following major disasters triggered by natural hazards. For instance, ADB estimates that disasters since 2000 have caused damage equal to 7 percent of regional GDP, with smaller economies worse affected—Vanuatu for instance was hit by a cyclone in 2015 causing estimated damage of over 60 percent of its GDP (ADB 2019).

These same factors work to greatly reduce the ability of most Pacific economies to sustainably carry levels of public debt that in other contexts might be considered less problematic. Public debt sustainability is generally considered as the ability of the government to fully service its debt obligations without the need for unrealistic fiscal adjustment or the compromising of long-term development objectives. The Pacific faces acute structural challenges across many of the core factors in assessing public debt sustainability (IMF 2020b):

- High financing needs to meet economic and social development objectives create pressures toward elevated government spending and budget deficits, especially in the aftermath of major disasters triggered by natural hazards.
- Weak institutional capacity can make undertaking major fiscal adjustments particularly difficult, for instance due to a limited ability to raise additional revenue, achieve spending efficiencies, or effectively manage the distributional impacts on society.
- Relatively weak institutions and the region's economic geography combine to greatly hamper prospects for economic growth, making it difficult to grow out of any debt overhang. Economic growth in the Pacific is more volatile than it is fast (Figure 5.2).
- High exposure to frequent natural hazards and other large negative economic shocks (given generally narrow income sources) creates an ever-present risk of pushing countries from a sustainable debt situation into unsustainable territory. The need to leave room to absorb such shocks means that the “safe” level of public debt at any given time is much lower than otherwise.

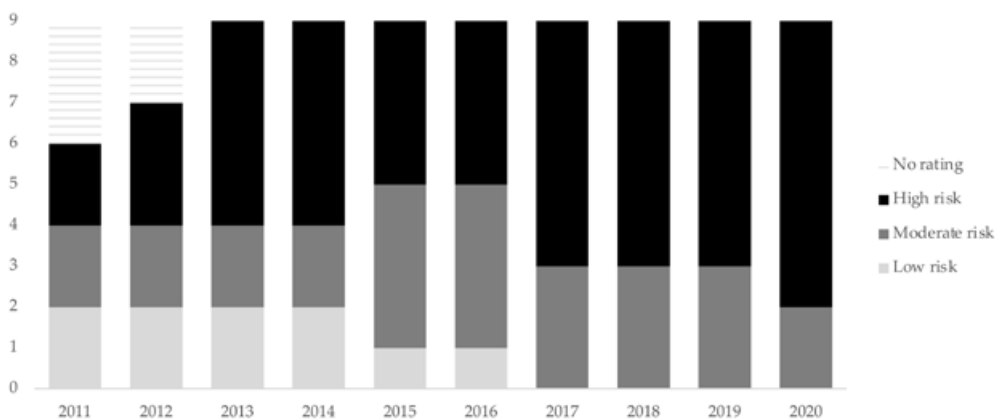
Debt sustainability risks as assessed by the IMF have also been rising in the Pacific over the past decade.⁵ Figure 5.3 shows the distribution of IMF debt distress risk ratings across Pacific countries and how this has evolved. Seven of the nine Pacific countries which receive a debt risk rating from the IMF are currently assessed as being at high risk of debt distress, though the IMF still considers debt in these countries to be sustainable. To some extent, the deterioration in these ratings reflects methodological changes by the IMF to better incorporate the impact of frequent natural hazards. Nonetheless, the trend remains that debt sustainability in the Pacific has been moving in a negative direction overall, particularly following a series of

large negative economic shocks in several countries, including tropical cyclones causing estimated damages of 30–60 percent of output in Samoa, Tonga, and Vanuatu (World Bank 2013; Government of Tonga 2018; Government of Vanuatu 2015).



Note: FSM = Federated States of Micronesia; GDP = gross domestic product; PNG = Papua New Guinea.
Source: Authors' calculations based on IMF.

Figure 5.2 Pacific economic growth is more volatile than fast (% change in real GDP, 2000–2017)



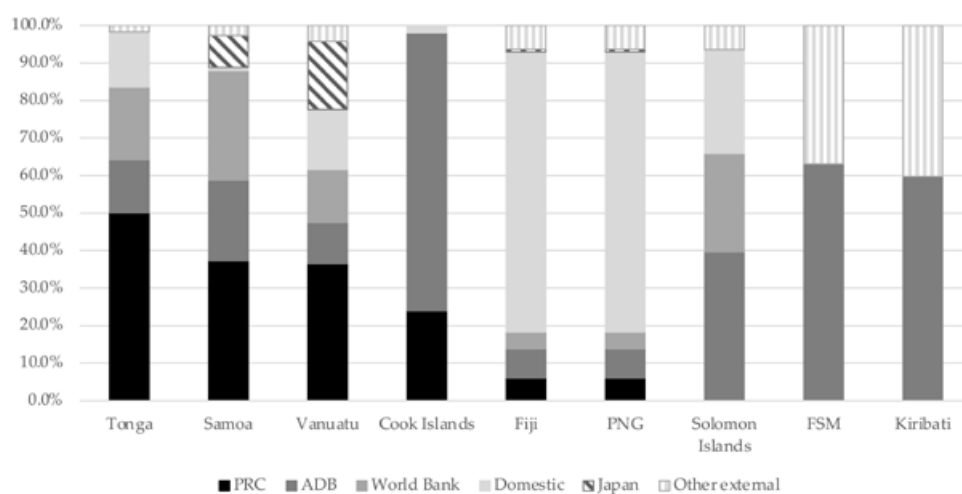
Note: IMF = International Monetary Fund.
Sources: IMF; World Bank.

Figure 5.3 Worsening debt sustainability risks in the Pacific (most recent IMF risk rating by number of countries)

3.2 Reasons to be Less Concerned: The Role of Development Partners

Unlike many other parts of the developing world, the Pacific did not engage in substantial borrowing from international private creditors prior to the crisis. It therefore largely does not face the same rollover problems or complications in negotiating debt relief. The PRC has become a major source of external loans in the region. Again, however, the Pacific does not appear to have followed the pattern seen elsewhere, with bilateral loans from the PRC mostly provided on semi-concessional terms. Public debt servicing costs in the Pacific have therefore remained much lower than elsewhere, providing much more favorable debt dynamics. Finally, some caution is needed in interpreting the IMF debt sustainability analyses for many of the more aid-dependent Pacific economies, which for technical reasons explained below tend substantially to overstate the risk of debt distress in these economies.

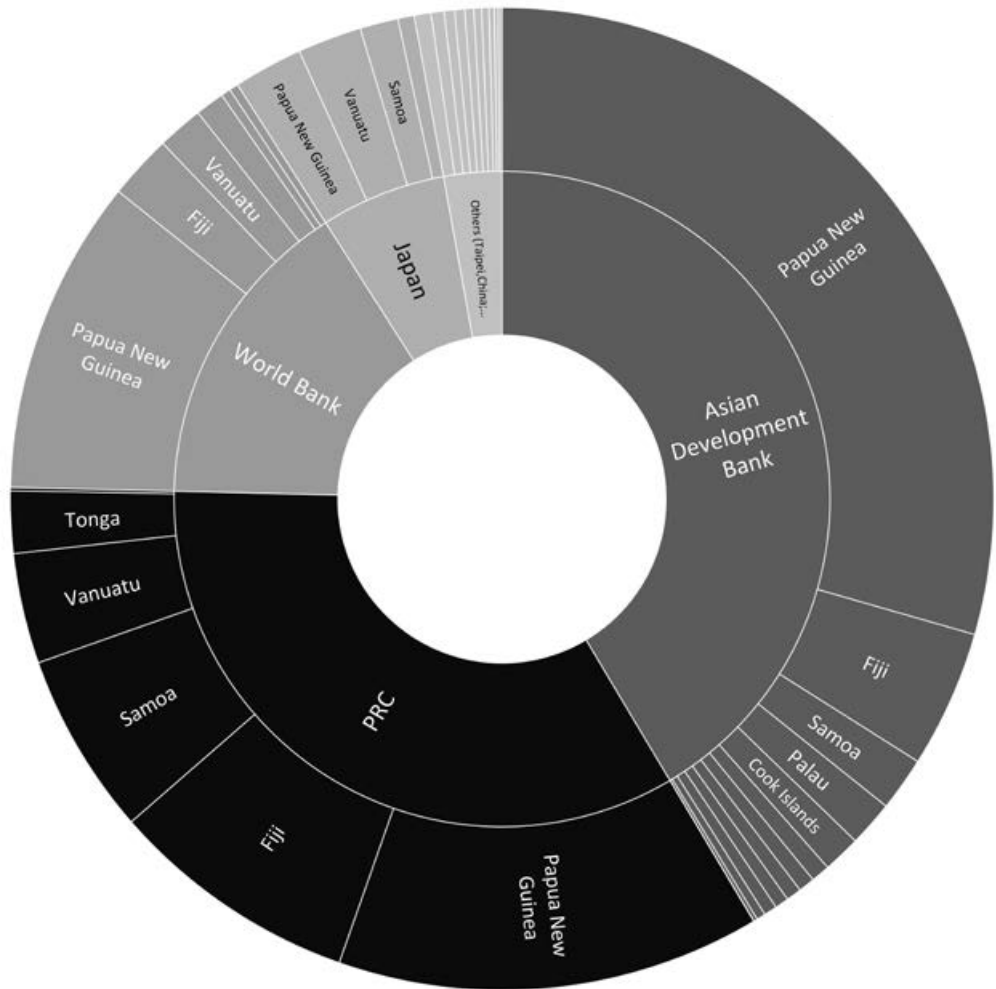
A major favorable factor for Pacific debt sustainability is the region's heavy reliance on official development partners when it comes to public sector borrowing. For most Pacific developing economies, debt owed to development partners constitutes the vast majority of their external debt obligations (Figure 5.4). Only PNG and Fiji have some limited access to borrow from international private creditors, outside of crisis times. PNG and Fiji are also the only countries that borrow domestically to a large extent, with this constituting around three-quarters of total public debt in Fiji and around 40 percent in PNG. However, both still borrow predominantly from development partners when it comes to contracting external debt.



Note: FSM = Federated States of Micronesia; PRC = People's Republic of China; PNG = Papua New Guinea.

Sources: Authors' calculations; government budget documents; and IMF.

Figure 5.4 Pacific development partners constitute most of debt obligations (share of debt stock by creditor type)



Note: PRC = People's Republic of China.
Source: Authors based on Lowy Institute Pacific Aid Map.

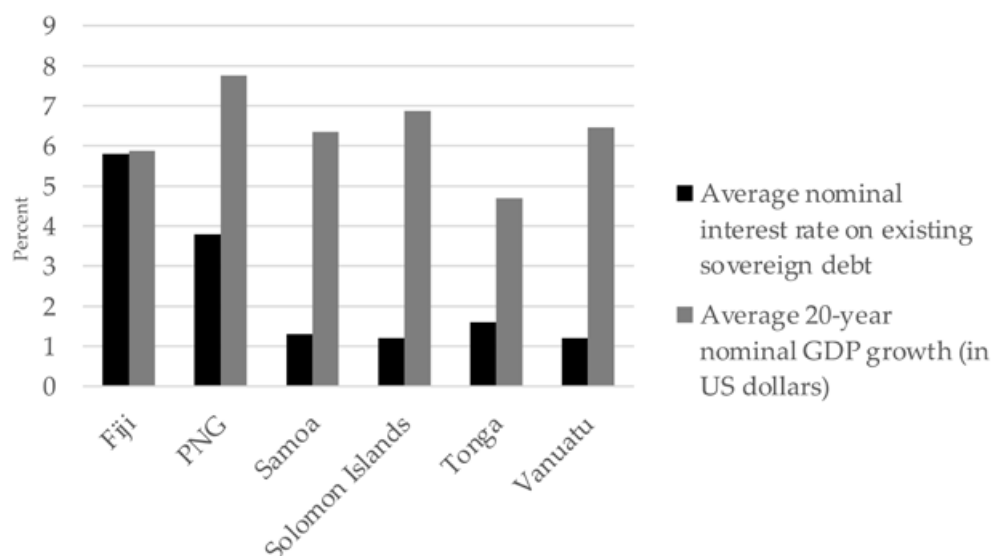
Figure 5.5 Cumulative loan flows by creditor–borrower disbursements, 2010–2018

ADB is the largest single external lender in the Pacific. Together with the World Bank, which operates at a considerably smaller level, the two multilateral development banks account for almost 60 percent of all new loans to the region in recent years (Figure 5.5). The PRC has become a major source of new loans over the past decade or so, being the second largest single creditor in the Pacific and the largest bilateral lender. Much further down the scale, Japan and Taipei, China are also important lenders while Australia has recently begun providing bilateral

loans to the Pacific, though prior to COVID-19 it had only extended a single “bridging” loan to PNG.

The large role of official creditors in the Pacific means that government borrowing terms tend to be quite favorable. Debt transparency is limited. However, most public debt in the Pacific appears to be contracted on a concessional or semi-concessional basis. Here we use the criteria for concessional loans employed by the IMF and multilateral development banks (IMF 2015). Alternative, less-stringent criteria are used by the OECD-DAC. Here, we will refer to loans that meet the OECD-DAC criteria, but not the more stringent IMF criteria, such as “semi-concessional”, recognizing that such loans remain far less expensive than those available from the market.⁶

Most Pacific countries are eligible for grants and concessional loans from ADB and the World Bank. Fiji, PNG, and the Cook Islands have access to ordinary loans from the MDBs (although it should be noted that these still meet our definition as “semi-concessional”). The PRC’s lending terms are less transparent than other official creditors. Independent research efforts suggest that, at the global level, most Chinese official lending is provided on a non-concessional or commercial basis.⁷ However, in the Pacific there appears to be a different pattern, with the vast majority of Chinese official lending taking the form of “concessional loans” from the EXIM Bank of China (Rajah et al. 2019). These have tended to carry an interest rate of 2 percent, 5–7 years grace period, and 15–20 years’ maturity—qualifying as semi-concessional loans by our standard.

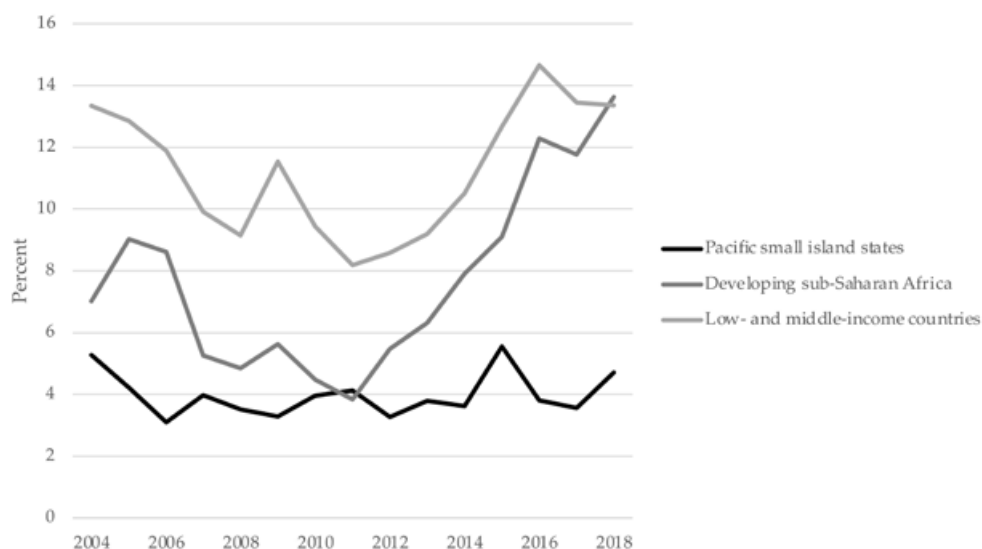


Note: GDP = gross domestic product; PNG = Papua New Guinea; US = United States.

Sources: Authors’ calculations; IMF World Economic Outlook database; and IMF country debt sustainability analyses (various years).

Figure 5.6 *Sovereign borrowing costs in the Pacific are low and contribute to favorable debt dynamics*

The upshot is that sovereign borrowing costs in the Pacific are low enough to generate quite favorable debt dynamics, even when compared with the region's generally weak historical growth experience (Figure 5.6). The major role of official development partners in the region's debt profile means that the average interest rate on existing public debt tends to be less than 2 percent for most Pacific countries, though it is considerably higher for PNG and Fiji, which also borrow from private external creditors and domestic sources. With the exception of Fiji, average borrowing costs are well below historical rates of nominal output growth measured in US dollars—implying interest–growth differentials have generally been quite favorable, or at least neutral in the case of Fiji, even after accounting for movements in the exchange rate. The overwhelmingly dominant role of concessional financing also means that, prior to the COVID-19 pandemic, the Pacific had not followed the global trend toward increasingly worrisome external debt servicing requirements (Figure 5.7).



Sources: Authors' calculations; World Bank. World Development Indicators.

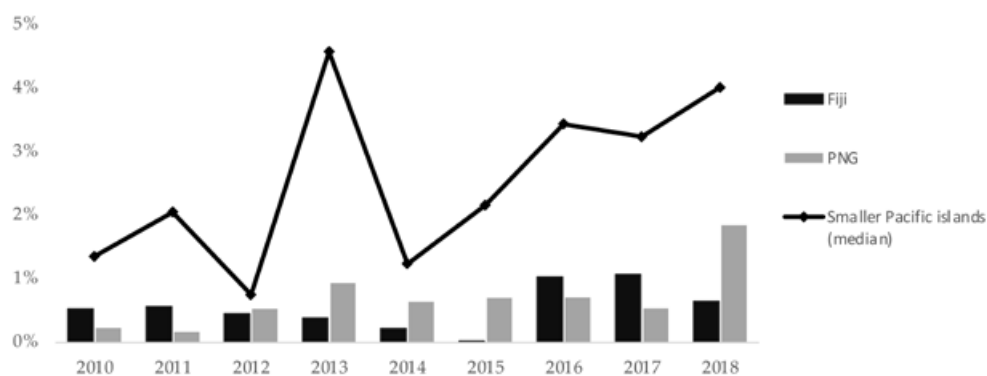
Figure 5.7 External debt service requirements in the Pacific are much lower than elsewhere in the developing world heading into COVID-19 (ratio of external debt service to goods and services exports + primary income)

Finally, it is worth scrutinizing the debt sustainability analysis produced by the IMF. This is taken up in more detail in the next section for our four key case study countries. However, there is an important general point of caution when it comes to interpreting the IMF debt risk ratings for many of the smaller and more aid-dependent Pacific economies, as these assessments tend to overstate the risk of debt distress by design.

The key issue is that these heavily aid-dependent economies have access to the most concessional financing windows from the MDBs, which in turn follow specific rules that adjust to the prevailing risk of debt distress, as encapsulated by the IMF ratings. Countries that are rated as

low risk receive their country allocations in concessional loans while those at high risk receive outright grants. Countries at moderate risk receive 50:50 in grants and concessional loans. This potentially creates a loop of logic, whereby the IMF could rate a country as being at low risk of debt distress only for that country to receive large MDB loans that pushed them to a high risk. To avoid this perverse result, the standard IMF approach is to assume that all financing from the MDBs is provided entirely on credit, rather than grant, terms.⁸ The problem is that doing so artificially inflates the projected size of future primary budget deficits, since it ignores MDB grants as a likely source of future government income and treats this as a debt-creating flow instead. This is less of a problem for near-term forecasts in the IMF analyses, as the IMF includes MDB grants that have already been committed. But it can have an important impact on medium-to-long-term debt projections.

The implications are potentially quite significant given the scale of MDB financing in the Pacific. For the smaller, more aid-dependent Pacific economies, MDB financing typically accounts for around 4 percent of GDP and the banks have been scaling up their Pacific operations in recent years (Figure 5.8). As noted earlier, seven of nine Pacific countries eligible for concessional MDB financing are already rated as being at high risk of debt distress and therefore are receiving entirely grant financing from the MDBs while the other two countries are at moderate risk and receiving 50:50 loans and grants. It is difficult to ascertain precisely how large an effect this has on the IMF's analysis. However, our case studies of Samoa and Tonga in the next section suggest that the impact is significant and substantially worsens the assessed debt outlook for these countries. The upshot is that, while serving as a useful decision-making tool for the MDBs, the IMF debt sustainability risk ratings for many countries are no longer based on what is most likely to happen, reducing their usefulness as an early warning indicator and overstating the true risk of debt distress.



Note: GDP = gross domestic product; MDB = multilateral development bank; PNG = Papua New Guinea.

Sources: Authors' calculations; Lowy Institute Pacific Aid Map; and World Bank. World Development Indicators.

Figure 5.8 *Concessional MDB funding is large for the smaller Pacific economies (total annual disbursements as an average share of GDP)*

4. A MORE DETAILED LOOK AT FOUR CASE STUDIES

We now take a closer look at debt sustainability in Fiji, PNG, Samoa, and Tonga—as the countries arguably facing the most uncertain debt prospects due to COVID-19. In each case, we consider the findings of the most recent IMF debt analyses and construct our own scenario projections for these countries to further scrutinize the outlook for longer-term public debt sustainability or “solvency”.

Our scenario projections follow the same approach as the IMF in terms of both the overall framework and the specific assumptions for most key variables—only varying these to the extent necessary for the purposes of our analysis. We focus on the debt-to-GDP ratio as the key summary measure of the overall burden of servicing public debt. Following the standard IMF approach for low-income countries (which is used for most Pacific countries), we focus on the present value (PV) of debt—that is, adjusting for the degree of concessionality inherent in any loans—and compare the resultant PV debt-to-GDP ratio with the warning thresholds used by the IMF. These warning thresholds are in turn determined by whether the IMF assesses the country to have a strong, medium, or weak debt-carrying capacity. In addition to a baseline scenario, we define several alternative scenarios, including a prolonged recession due to the pandemic, the full realization of any contingent liabilities, or severe natural hazards in the near future. Longer-term risks from major disasters triggered by natural hazards in Samoa and Tonga are incorporated into the long-term assumptions for growth and the primary fiscal balance, following the same approach used by the IMF.

A perpetually rising or “explosive” debt ratio is a telltale sign that the trajectory of public debt is unsustainable. Conversely, a declining debt ratio generally indicates the opposite. Following the standard IMF guidelines, if the debt ratio rises above the warning threshold in the baseline scenario by a substantial margin or on a sustained basis, this can be taken as a major warning sign. Marginal or temporary breaches are less concerning. Breaches only in the stress test scenarios indicate a moderate risk.

Perhaps the most critical variable in all of this is the future fiscal effort of government, as captured by the primary budget balance (i.e., excluding interest payments). The trajectory of public debt depends critically on the scale of expected future government borrowing and the ability or willingness of governments (and societies) to rein this in where needed. Rather than relying on promises of future fiscal prudence or assumptions about continued fiscal profligacy, we consider a more objective approach to be whether the required primary surpluses needed to stabilize or bring down the debt-to-GDP ratio over the medium-to-long term is within the range of a country’s historical performance. If this is the case, then it seems reasonable to conclude that the level of public debt can be sustainable with a realistic amount of fiscal effort. To operationalize this in what follows, we take as our baseline for each country the latest IMF projections for 2020–2025 and the average primary balance over the last 20 years for the longer-term outlook.

The rest of this section focuses on each of the country case studies. The appendix summarizes the basis of our key assumptions and projections for each country in the baseline scenario.

4.1 Debt Sustainability in Fiji

Fiji appears the most vulnerable in the Pacific. Prior to the pandemic, the government had intended to pursue a medium-term strategy of fiscal consolidation aimed at bringing down debt-to-GDP to more manageable levels. Now, with both its tourism-dependent economy and revenue collapsing, the government is expecting a budget deficit of around 20 percent of GDP in FY2021 (fiscal year ending on 31 July 2021).

The IMF is yet to prepare an updated debt sustainability analysis for Fiji. In an assessment letter dated June 2020, the IMF states that Fiji's public debt was sustainable but vulnerable (Republic of Fiji 2020). Large bullet payments to international bondholders are being refinanced with new loans from the MDBs, which should reduce the contribution of external debt to Fiji's balance of payments pressures. Fiji's other external debt service payments are less than 1 percent of GDP in FY2021.⁹ However, this early IMF assessment appears to have been overtaken by the ongoing crisis, with the Government of Fiji since announcing a much larger budget deficit in 2021 than assumed by the IMF.¹⁰ Fiji's public debt prior to the pandemic was already among the highest in the Pacific at around 50 percent of GDP. It is now expected to reach 84 percent in FY2021 (ADB 2020).

How much is too much? Although Fiji is considered a market access country by the IMF for the purposes of assessing debt sustainability, it is informative to employ the techniques used by the IMF for assessing debt sustainability in low-income countries. This makes some sense given that semi-concessional loans account for three-quarters of Fiji's external debt. The first step is to correct for the concessionality of Fiji's debt profile by focusing on the present value of public debt, rather than its face value, relative to GDP. This can then be compared against the standard IMF warning thresholds used for low-income countries. Given that this framework is intended for countries with generally weaker institutions and more fragile economies, we use the benchmark for those with a strong debt-carrying capacity and treat this as a conservative warning indicator for Fiji.

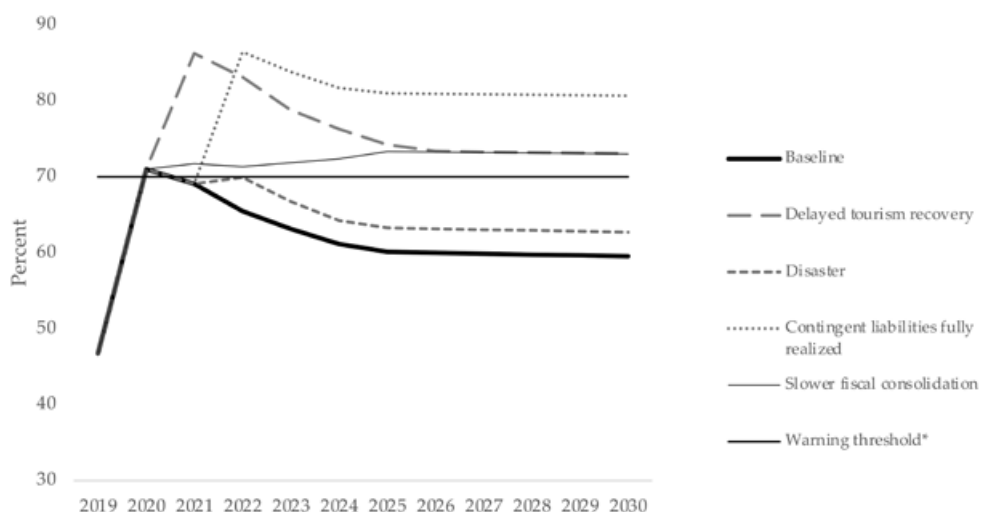
The debt outlook in Fiji depends crucially on when and to what extent Fiji's tourism industry can recover and how this interacts with the primary budget balance. For our baseline we draw upon the latest forecasts from the IMF. The IMF expects Fiji's economy to contract by 21 percent in FY2021 before rebounding 11.5 percent in FY2022 and settling into a more gradual recovery thereafter, only returning to its FY2019 level of real output in FY2023. This would be consistent with a slow and partial recovery in tourism beginning in FY2022 and with the industry remaining well below its pre-COVID trajectory. For the primary balance, the IMF projects that Fiji would bring down its primary deficit rapidly, from 13 percent of GDP in FY2021 to just 4 percent of GDP the following year and moving into modest surpluses over the following years.

Using the latest IMF projections to inform our baseline scenario suggests that Fiji's debt outlook is precarious but still within the range of sustainable (Figure 5.9). Fiji's debt ratio spikes higher in FY2021 to reach the warning threshold but eases back down below this thereafter as economic recovery gradually takes hold and fiscal consolidation is pursued. However, Fiji's debt situation is also very precarious and highly sensitive to how the crisis plays out. Figure 5.9 shows several alternative scenarios that highlight the key risks:

- First, a more drawn-out economic crisis—particularly via a slower recovery in international tourism—could have severe implications. In our “delayed tourism recovery”

scenario, we assume the recovery is pushed back by a full year, with growth at zero and the budget deficit remaining at 20 percent of GDP in FY2022. The debt ratio jumps to 92 percent.

- Second, a delayed tourism recovery would also make it more likely that the government could be forced to realize sizable contingent liabilities, estimated to total over 20 percent of GDP. Most notably, in response to the crisis the government has extended large guarantees to state-owned airline, Fiji Airways. If contingent liabilities were fully realized, this alone would push debt to almost 100 percent of GDP.
- Third, it is worth noting that the IMF is currently projecting quite significant fiscal consolidation to occur over the coming years, despite the fact that Fiji's economy would still be operating well below any reasonable notion of potential during this period. The risk is that this proves overly optimistic. We therefore also consider a "slower fiscal consolidation" scenario, with the primary budget balance remaining in deficit for longer and only slowly converging to a small surplus of 0.3 percent of GDP by FY2027 (in line with Fiji's 20-year historical average). In that case, Fiji's debt ratio would rise further above the warning threshold, remaining there for the foreseeable future.



Note: GDP = gross domestic product.

* Based on IMF methodology for low-income countries with strong debt-carrying capacity.

Sources: Authors; IMF; Government of Fiji budget documents.

Figure 5.9 Fiji's public debt sustainability is extremely precarious and requires strong fiscal effort to bring to a more sustainable position (ratio of present value of public debt-to-GDP under different scenarios)

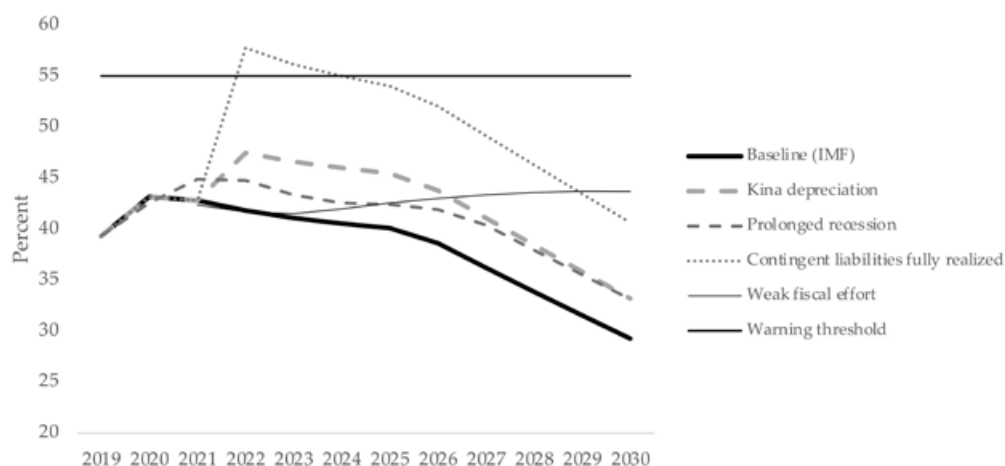
One consolation is that Fiji's problems are primarily about domestic rather than external debt. Fiji's external public debt burden is relatively low and will likely hover at 10–15 percent of GDP in present value terms over the coming decade—far below the 55 percent warning threshold for low-income countries. Having the majority of public debt denominated in Fiji dollars

and held by domestic residents avoids the risks normally associated with external borrowing. It also gives the government somewhat more room to maneuver without necessarily triggering an acute debt crisis—for example, through financial repression or *de jure* default via higher inflation.

4.2 Debt Sustainability in PNG

The COVID-19 crisis hit PNG at an inopportune time. After years of sluggish growth, persistent budget deficits and rising debt, the government had only just embarked on a new reform drive, in cooperation with the IMF and other development partners, aimed at reinvigorating the economy, strengthening governance, and bringing down public debt over the medium term to within the legally mandated range of 30–35 percent of GDP.

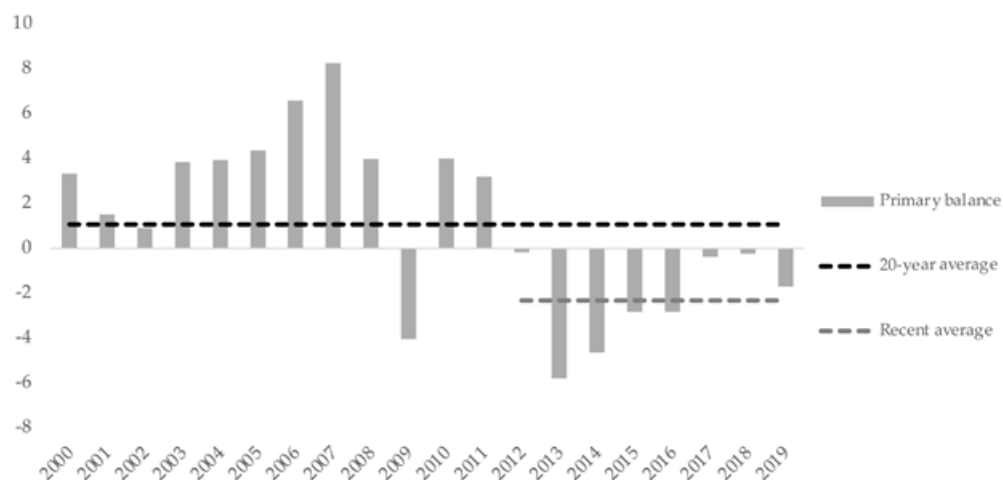
The IMF updated its assessment of PNG debt sustainability in June 2020. According to the IMF, public debt in PNG remains sustainable, although the IMF increased the risk of debt distress to “high” compared with a “moderate” rating prior to the pandemic. However, it is worth noting that the specific drivers behind this downgrade essentially relate to short-term liquidity problems, rather than major changes in the IMF’s assessment of longer-term solvency. In terms of external debt, the main concern is elevated external debt service payments in 2020, which have already been refinanced with concessional loans.¹¹ In terms of domestic debt, the main issue relates to rollover risks associated with PNG’s reliance on short-maturity debt securities. Otherwise, the IMF’s baseline projections for key debt sustainability indicators are well below the warning thresholds.¹² In sum, the IMF analysis suggests that the risks to PNG’s debt outlook are almost entirely about short-term liquidity whereas public sector solvency does not appear to be under immediate threat.



Note: GDP = gross domestic product; IMF = International Monetary Fund; PNG = Papua New Guinea.

Sources: Authors; IMF; Government of PNG budget documents.

Figure 5.10 PNG public sector solvency has some room to maneuver (ratio of present value of public debt to GDP under different scenarios)



Note: GDP = gross domestic product; PNG = Papua New Guinea.

Source: Authors based on IMF World Economic Outlook October 2020 database.

Figure 5.11 PNG's variable fiscal performance (primary balance, % of GDP)

To test this judgment, we replicate and expand on the IMF analysis to consider a few alternative scenarios of particular interest. This is presented in Figure 5.10. Our analysis confirms this relatively benign picture for PNG public sector solvency:

- The biggest risk is if sizable contingent liabilities—mostly related to disputed sovereign guarantees of state-owned enterprises and unfunded pension liabilities—were fully realized. Although this results in a sharp jump in the debt-to-GDP ratio above the warning threshold, the breach is short-lived and therefore not a major signal of potentially unsustainable debt (our scenario is the same here as that used by the IMF).
- Another point of concern is that the PNG exchange rate is widely seen as overvalued and could depreciate, inflating the size of external public debt. The IMF estimates that the kina is overvalued by 11–18 percent. We take the high end of this range for our “kina depreciation” scenario. However, the impact is relatively contained. Although external debt is about 60 percent of overall public debt, most of this is on semi-concessional terms and therefore represents a smaller debt burden when measured in present value terms.
- Next, we consider the impact of a prolonged recession—which could result for instance if the early 2021 surge in virus cases is not brought quickly under control or if the global downturn affecting PNG's commodity exports proves more drawn out than expected. The “prolonged recession” scenario assumes that economic recovery is pushed back by a full year, with growth at zero in 2021 and the primary deficit remaining at 3.4 percent of GDP. As the figure shows, this result would not substantially alter PNG's long-term debt trajectory.
- Finally, a major reason behind PNG's relatively benign long-term debt outlook (including in the above scenarios) is the combination of relatively low real borrowing costs and the IMF assumption that PNG will stick to a prudent fiscal policy going forward. How

sensitive is the debt outlook to this assumption? In our “weak fiscal effort” scenario, we assume that PNG immediately returns to the primary deficits seen during most of the past decade of around 2.3 percent of GDP (Figure 5.11). This shifts the trajectory of public debt substantially. Even then, however, the debt-to-GDP ratio remains well below the warning threshold through the rest of this decade and would not breach the threshold by 2040.

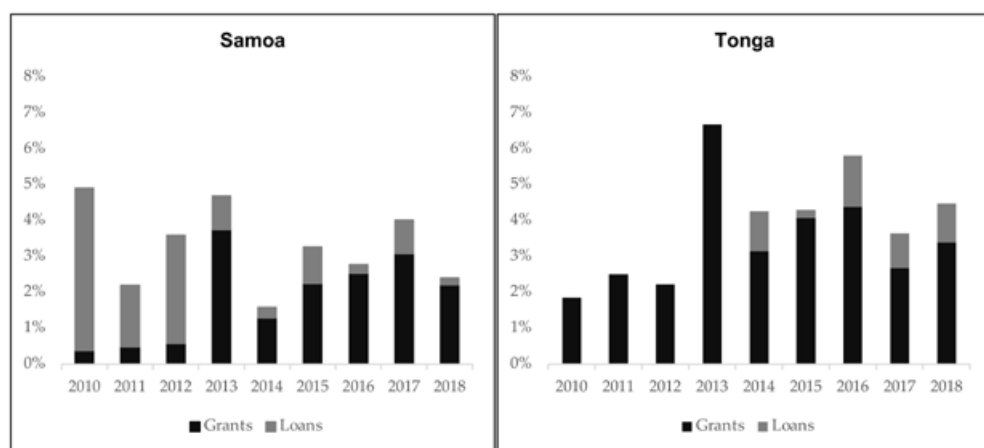
What can we conclude? PNG’s debt situation has certainly been worsened by the pandemic. But the most recent IMF assessment that the trajectory of public debt is sustainable seems well justified, even when we consider the scope to absorb more negative scenarios such as a prolonged recession or weaker fiscal effort. Public sector solvency in PNG does not appear under serious immediate threat.

4.3 Debt Sustainability in Samoa and Tonga

Samoa and Tonga both entered the current crisis with their economies and public finances in significantly weakened condition. Samoa experienced a severe measles outbreak in late 2019 which substantially damaged its tourism industry even before the pandemic hit. Tonga meanwhile had not yet fully recovered from Tropical Cyclone Gita in 2018, which had dealt estimated damage worth around 40 percent of GDP, as well as being hit by three more cyclones since. Public debt in Samoa and Tonga was already considered to be at high risk of debt distress by the IMF, reflecting elevated debt levels in both countries and their high exposure to severe natural hazards. Both countries are also among those that have taken on large semi-concessional bilateral loans from the PRC in recent years, despite being at high risk of debt distress. Tonga in particular faces large impending debt repayments related to these loans, starting in FY2024.

The IMF has completed a full update of its analysis for Samoa since the pandemic, maintaining its high-risk rating but also its overall conclusion that Samoa’s debt outlook remains sustainable. The IMF is yet to release an updated assessment for Tonga. But in an April 2020 assessment letter, the IMF stated that Tonga continued to be at high risk of debt distress, with the PV debt-to-GDP ratio expected to eventually breach the warning threshold and fiscal and foreign exchange reserve buffers run down to unsafe levels.

As noted in the previous section, however, care must be taken in interpreting the IMF ratings for Samoa and Tonga. Both are eligible for concessional funding from the MDBs and, given that both are rated as being at high risk of debt distress, this will very likely be provided on 100 percent grant terms for the foreseeable future. Yet the standard IMF approach is to assume that this will be provided on full credit terms. It is difficult to ascertain precisely how large an impact this has on the IMF’s analysis—with near-term projections affected by an unclear amount of already committed MDB grant funding while longer-term projections depend on unknown assumptions about the scale of future MDB financing. But the impact is likely to be very substantial in terms of the medium-to-long-run debt trajectory. First, as Figure 5.12 shows, the MDBs are a significant source of financing for both Samoa and Tonga, generally amounting to between 2 percent and 5 percent of GDP in any given year. Second, there is a large gap between both countries’ historical fiscal performance and IMF projections of the future primary balance—probably related to the IMF assumption that future MDB financing will take the form of loans rather than grants.



Source: Authors' calculations based on Lowy Institute Pacific Aid Map and World Bank World Development Indicators.

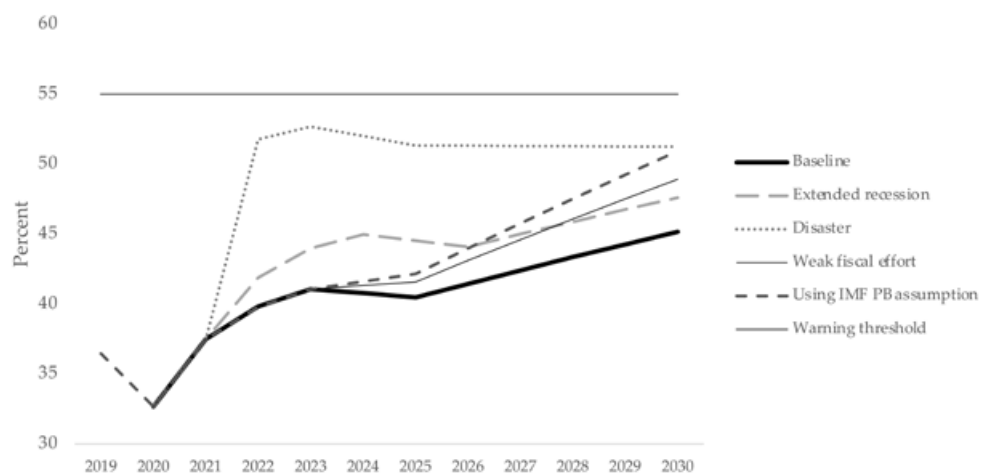
Figure 5.12 Concessional MDB financing is significant in Samoa and Tonga (MDB disbursements as % of recipient GDP)

For Samoa, the IMF analysis assumes the primary deficit will average 5.2 percent of GDP over the long term, including an allowance of 1.5 percentage points of GDP for the average annual cost of disasters triggered by natural hazards.¹³ By comparison, over the past two decades Samoa recorded a budget deficit averaging 2.0 percent of GDP. This already includes the historical impact of past disasters triggered by natural hazards. But even if an extra 1.5 percentage points of GDP in further disaster costs were added, this would still leave the average deficit at 3.5 percent of GDP. Focusing only on the last decade, the respective numbers would be a deficit of 3.1 percent of GDP or 4.6 percent with the added disaster costs. The gap between Samoa's historical budget performance and the IMF long-term assumption is therefore 0.6–1.7 percentage points each year, implying a large difference in assumed borrowing over the 15-year forecast horizon it applies to. Either the IMF is far more pessimistic about Samoa's fiscal performance than this historical approach would suggest, or the difference must largely reflect the (unrealistic) assumption of future MDB loan financing rather than grants.

Using its historical fiscal record as a guide suggests that Samoa's public sector solvency is less concerning than that suggested by the IMF analysis. Figure 5.13 shows our projections for the PV public external debt-to-GDP ratio. We focus on external debt as most public sector borrowing is from external sources, and Samoa is much closer to breaching the external debt warning threshold. In our baseline, we assume that Samoa's primary balance converges to an average deficit of 3.5 percent of GDP—that is, the 20-year historical average less an additional 1.5 percentage points of GDP in extra disaster costs. Our weak fiscal effort scenario uses the 10-year average performance instead, with the long-term deficit of 4.6 percent of GDP.

Samoa's debt ratio remains well below the warning level until at least 2030, even with an extended recession or weaker fiscal effort (Figure 5.13). Samoa would also remain below the threshold in the case of a severe disaster triggered by natural hazards. We also show the debt

ratio if the IMF primary balance assumption is applied, which results in a sharply rising debt ratio by later in the decade which would eventually reach the warning threshold in the early 2030s (which is the basis on which the IMF judges Samoa to be at high risk of debt distress). By contrast, our baseline debt ratio would still be slightly below the warning level even in 2040. Using the weak fiscal effort scenario, the debt ratio would reach the threshold in 2035.

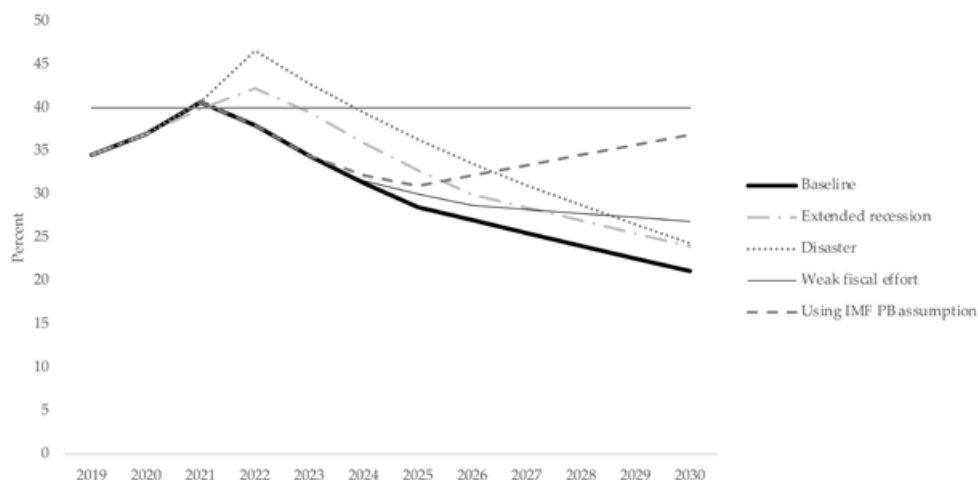


Note: GDP = gross domestic product; IMF PB = International Monetary Fund primary balance.

Sources: Authors; IMF; Government of Samoa budget documents.

Figure 5.13 Samoa's public sector solvency is less worrying than it seems (ratio of external public debt-to-GDP under different scenarios)

Repeating a similar exercise to the above, the picture in Tonga is also starkly better than that suggested by the IMF analysis and by a more substantial degree than in the case of Samoa. Tonga faces significant debt risks in the short term, particularly from an extended recession or if a severe disaster triggered by natural hazards were to hit in the near term (Figure 5.14). However, these would only result in short-lived breaches of the warning threshold. Overall, debt sustainability looks much less troubling than if we were to use the IMF's assumption for the long-run primary balance.¹⁴ The difference between the IMF assumption for the average long-run primary balance and the 10–20-year historical performance is much larger in the case of Tonga, at 2.1 to 3.4 percentage points of GDP. Over the past two decades Tonga recorded a primary surplus averaging 2.6 percent of GDP, compared with the long-run IMF assumption of a deficit of 0.8 percent of GDP (before adding in average disaster costs). Potentially this reflects that Tonga receives more MDB financing relative to the size of its economy compared with Samoa. In any case, it seems that the scale of regular MDB grant financing would easily cover this difference. Even with relatively weak fiscal effort, Tonga would be able to stabilize the external debt-to-GDP ratio well below the relevant warning threshold.¹⁵



Note: GDP = gross domestic product; IMF PB = International Monetary Fund primary balance.

Sources: Authors; IMF; Government of Tonga budget documents.

Figure 5.14 Tonga public debt — near-term risks but long-run sustainability (ratio of present value of external public debt-to-GDP under different scenarios)

5. AIDING THE PACIFIC ECONOMIC RECOVERY

Economic recovery will hinge first and foremost on a resolution of the global health crisis, via the widespread availability of an effective vaccine and/or treatments. It will also depend critically on the strength of the global economic recovery more broadly, particularly in key regional economies like Australia, the PRC and New Zealand as critical sources of private external income via trade, tourism, and remittances. But even as this eventual recovery occurs, economic development in the Pacific is likely to have been permanently set back as a result of the business bankruptcies, lower private investment, and reduced investment in public infrastructure and human capital that has resulted from the pandemic.

One useful way to gauge the scale of potential permanent economic damage is to compare the expected trajectory of output (or output per capita) with that expected immediately before the start of the crisis. This can give us some sense of the scale of damage that is expected, at least at the current juncture. For this purpose, we use the medium-term forecasts produced by the IMF in its World Economic Outlook databases before and after the arrival of the pandemic and combine this with the longer-term growth assumptions used by the IMF in its most recent debt sustainability analyses for each country. Doing this suggests that the IMF expects the economies of Fiji and Samoa to remain about 12 percent below their pre-pandemic trajectories while the figures for PNG and Tonga would be 8 percent and 9 percent, respectively.

Fiscal stimulus is the standard macroeconomic policy prescription for enabling a stronger recovery. Notwithstanding debate about the general efficacy of fiscal stimulus in the small island Pacific context, the reality is that this would have to be driven to a significant extent by the region's development partners if it were to happen. Most Pacific governments have

little-to-no access to international capital markets (even during “normal” times). Tapping domestic financial institutions is also a limited prospect, in part due to underdeveloped financial systems but also because large-scale domestic financing of the budget deficit would still be likely to run into binding balance of payments constraints. The upshot is that, just as Pacific governments have been unable to finance an adequate fiscal expansion in response to the initial stages of the crisis, so too will they be unable to adequately finance the fiscal stimulus needed to recover without substantial outside help.

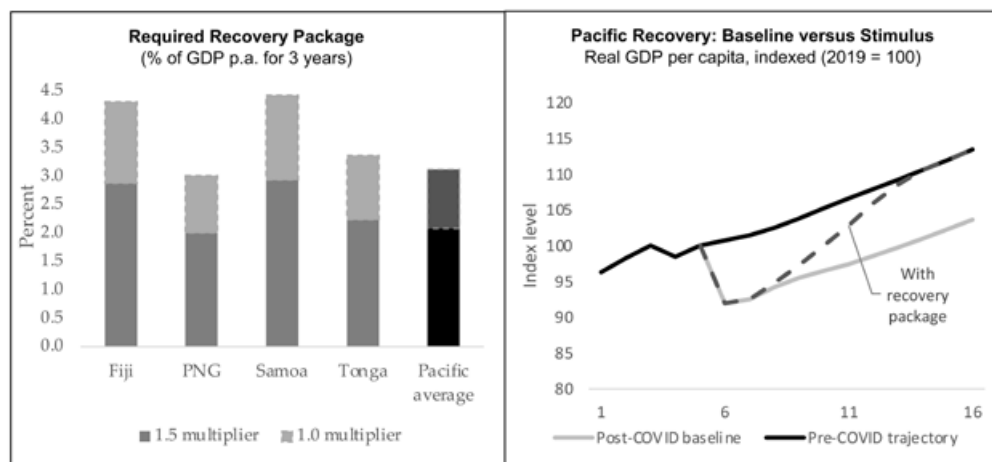
How large would a “recovery package” from development partners need to be? Fiscal multipliers can be used to estimate the scale of support needed. The size of the multiplier associated with such a recovery package would probably be high:

- First, multipliers tend to be much more positive during recessions or when the economy is otherwise operating well below the potential multiplier (IMF 2020c). Given the size of the pandemic shock, the multiplier effect can be expected to be much larger than normal. An interesting point of reference is that the IMF has suggested that the multiplier effect in advanced and emerging economies could be as high as 2.7 during the current crisis (Gaspar et al. 2020).
- Second, the multiplier effect can be maximized by directing recovery activities toward productive investments with high economic returns. The multiplier effects associated with public investment tend to be much stronger than other forms of stimulus, since this also generates long-term economic benefits (Izquierdo et al. 2019). Many Pacific governments have infrastructure investment pipeline plans that could help to quickly identify potential projects.¹⁶ Economic returns to maintenance and climate adaptation are also particularly large, which is especially relevant in the Pacific context where there is great need in these areas (PRIF 2013; Global Commission on Adaptation 2019).
- Third, a recovery package financed by development partners would be accompanied by significant technical support to assist with effective policy, planning, design, appraisal and implementation. This would help to alleviate issues of limited institutional capacity that studies show otherwise tend to reduce the effectiveness of stimulus in many developing countries (Miyamoto et al. 2020; Gupta et al. 2014).
- Fourth, a multiyear recovery package could further help to alleviate capacity constraints while still satisfying the principle of being “timely” from a countercyclical perspective. Implementation over several years would allow for effective upfront planning while reducing the pressure on limited local implementation capacity. This is especially important in the near term when the virus itself is still a threat internationally and travel restrictions and supply chain disruptions could therefore hamper effective implementation (Guerrieri et al. 2020). Given that economic activity is likely to be depressed for several years, a multiyear stimulus program should not greatly reduce the countercyclical benefits in terms of the expected size of the multiplier effect.
- Finally, a recovery package with substantial support from development partners could have strong effects in reducing economic uncertainty and bolstering business confidence, thereby having a much stronger effect in catalyzing greater private sector investment and spending and increasing the size of the multiplier effect (IMF 2020c).

The empirical literature on the size of fiscal multipliers specifically in small states is limited. Heavy import dependence, elevated public debt, and low institutional capacity suggest that

ordinary (i.e., government financed) fiscal multipliers are small (to the extent they can be financed) while the presence of fixed/managed exchange rates and heavily cash-constrained households and businesses suggests the opposite. One recent IMF study focused on small states finds that the medium-term fiscal multiplier from an increase in government consumption is zero but for public investment it is 0.6–1.1, rising to as high as 1.5 during recessions (Alichi et al. 2019). For all the reasons listed above, it seems reasonable to expect that, in the current context, a well-designed recovery package financed by development partners would be able to realize a multiplier toward the top end of this range.

To determine the size of the required Pacific recovery package, we use a multiplier of 1.0–1.5 to estimate what would be needed over a three-year period to return each of our four focus Pacific economies—Fiji, PNG, Samoa, and Tonga—to their pre-virus economic trajectories. Given differing levels of economic damage from the pandemic, each country requires a different degree of stimulus, varying in the range of 2.0–4.5 percent, depending on the size of the multiplier (Figure 5.15, left panel). These four economies have been among the most significantly affected by the pandemic shock in the Pacific, thereby requiring relatively more recovery stimulus to fully recover. Repeating the exercise for all Pacific island economies, the region as a whole yields a somewhat smaller estimate of the stimulus required of about 2.1 percent to 3.1 percent of GDP in each year or between \$2.3 billion and \$3.5 billion in total over three years in constant 2019 US dollars. With this, real output per capita would recover to its pre-COVID-19 trajectory toward the end of the decade (right panel).



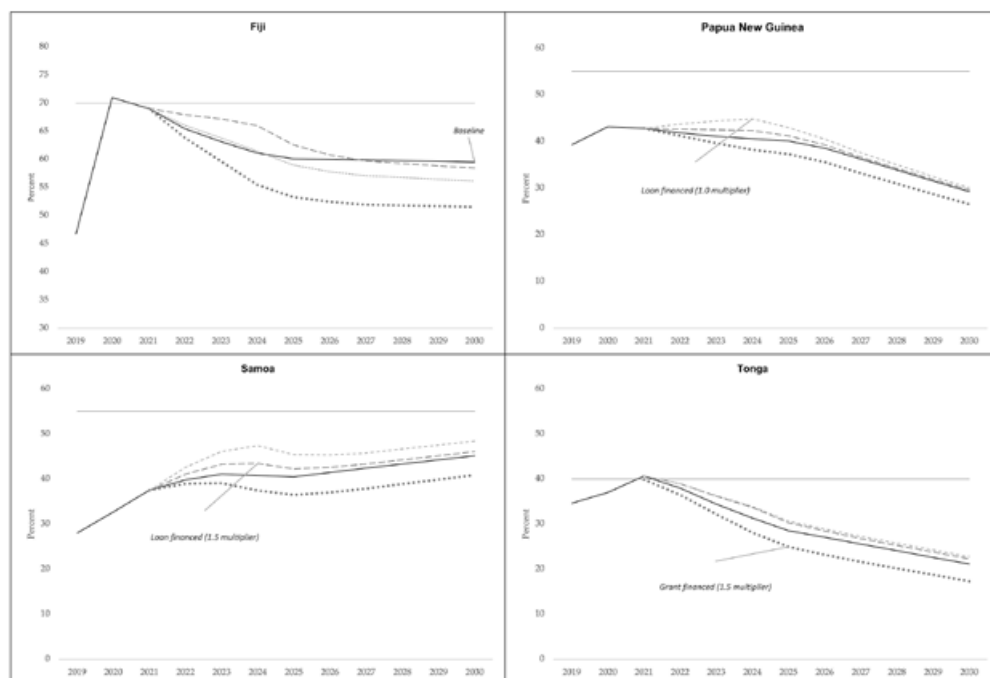
Note: PNG = Papua New Guinea; p.a. = per annum.

Source: Authors based on IMF World Economic Outlook databases.

Figure 5.15 Aiding the Pacific recovery via stimulus

Ideally the \$2.3 billion–\$3.5 billion recovery package the Pacific needs would be financed by an increase in external grants. This would not only avoid adding to debt burdens in the Pacific but also help to improve the trajectory of public debt by raising the sustainable level of output that can be used for debt servicing. However, the odds of this occurring seem low at this point.

Consideration must therefore be given to alternative financing options. Fortunately, a silver lining to the huge scale of the pandemic shock is that the multiplier effects are potentially large enough to make even a debt-financed recovery package a viable option.



Notes:

GDP = gross domestic product; PNG = Papua New Guinea.

* For Fiji and PNG, the figure refers to total public debt. For Samoa and Tonga, it relates to external debt since this is the more binding constraint for these economies.

Sources: Authors; IMF; government budget documents.

Figure 5.16 Impact of “recovery package” on Pacific debt sustainability (present value of key public debt-to-GDP ratio against relevant warning thresholds*)

Figure 5.16 shows the impact on our baseline for Pacific debt sustainability if the required stimulus were funded by semi-concessional loans from development partners. We assume a 2 percent interest rate, five-year grace period, and 20-year maturity—similar to the standard terms for the PRC’s EXIM concessional loans as well as MDB non-concessional and Australian bilateral loans prior to the fall in global interest rates with the arrival of the virus. We show two debt-financed stimulus scenarios using a multiplier of 1 and 1.5. We also show the impact of a pure grant-financed stimulus (using a multiplier of 1.5).

Stimulus financed by semi-concessional loans is a viable option for aiding the Pacific recovery, even if grant financing would clearly be the most beneficial (Figure 5.16). Fiji is the most interesting case, with the results indicating that a recovery package financed by semi-concessional loans would actually improve its debt outlook, even using the lower multiplier of 1.0. Meanwhile in PNG, Samoa, and Tonga, debt-financed stimulus would have little material impact on long-run debt sustainability. In total, semi-concessional loans seem a viable option for reaching the scale of financing needed to aid the Pacific’s economic recovery.

6. CONCLUSIONS

The Pacific has been hard hit by the pandemic. Despite success in containing the domestic spread of the virus itself, the economic ramifications are likely to be severe due to the region's reliance on narrow external income sources, particularly international tourism. Debt sustainability is a perennial concern in the Pacific, owing to the region's extreme geography—giving rise to high financing needs but also a weak ability to sustainably service large amounts of public debt. Collapsing growth and pressures on government budgets due to the pandemic are substantially worsening the Pacific's debt sustainability outlook. Globally, there is significant concern about a looming debt crisis in the developing world, and international attention is focused on the need for coordinating substantial debt relief.

However, our analysis suggests that the Pacific exhibits a somewhat different set of financing challenges. The crisis is still playing out on both the health and economic fronts, so any assessment can only be preliminary and subject to high uncertainty. Nonetheless, the outlook for Pacific debt sustainability at the time of writing looks less troubling than in many other parts of the developing world, in large part reflecting the region's reliance on concessional external financing from development partners, rather than debt owed to international private creditors. Fiji's public debt situation is the most troubling, reflecting high domestic, rather than external, debt before the crisis and the devastating impact of the collapse in international tourism. Much will depend on the recovery path in tourism and how this can be balanced against the need for fiscal consolidation over the longer term to reduce debt to a safer level. In PNG, Samoa and Tonga, however, the threat to public sector solvency looks much less troubling, and the biggest problems are mostly about overcoming short-term liquidity issues.

The direct financing gaps caused by drops in government revenue are being plugged via budgetary adjustments and a combination of redirected and increased support from development partners. The true financing gap facing the Pacific, however, is the inability to mount the kind of large-scale public sector stimulus needed in order to limit the long-term economic and social damage from the pandemic. Importantly, the problems here are again more about liquidity than solvency. Our analysis shows that the \$2.3 billion–\$3.5 billion “recovery package” that we estimate is needed from development partners could be financed with semi-concessional loans without materially worsening the region's debt sustainability outlook. In Fiji, such recovery borrowing could actually improve its debt outlook over the medium term.

Of course, a large increase in external grant financing would be far more beneficial and improve the debt sustainability outlook in all countries. But this would be more costly for development partners and the odds of this occurring seem low. Other options will therefore need to be considered. Providing semi-concessional loans is one potential option and could be pursued in a variety of ways. Debt relief could form a part of this if it were specifically structured to make additional upfront financing available to help with the recovery. The key message is that unlocking greater upfront financing will be more important to the Pacific's economic recovery than simply erasing old loans or avoiding new debt.

A large development partner financed recovery package is well justified in the face of a once-in-a-century exogenous shock like COVID-19, for which concerns about moral hazard are largely irrelevant. Long-term global interest rates are also incredibly low. Pacific governments for their part will need to double-down on complementary fiscal and economic reforms that will be critical to aiding their own recoveries and making clear that enhanced development partner support at a time of mutual crisis will be money well spent.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. World Health Organization. Strengthening Pacific Health Systems. Accessed at: <https://www.who.int/westernpacific/activities/strengthening-pacific-health-systems>.
3. Development Policy Centre, Australian National University. Pacific Covid Economic Database. <https://devpolicy.crawford.anu.edu.au/pacific-research-program/pacific-covid-economic-database> (accessed October 2020).
4. Author's calculations based on Organisation for Economic Co-operation and Development (OECD) aid data and the World Bank data on gross national income (both available at <https://data.worldbank.org/>).
5. Although these ratings are produced jointly by the IMF and the World Bank, we will refer to them in this paper as IMF ratings, for brevity and as the IMF tends to lead the analysis.
6. See OECD. Official Development Assistance – Definition and Coverage. Paris. Accessed at: <http://www.oecd.org/development/financing-sustainable-development/development-finance-standards/officialdevelopmentassistance/definitionandcoverage.htm>.
7. AidData. China's Global Development Footprint. <https://www.aiddata.org/china-official-finance> (accessed October 2020).
8. See the subpoint under paragraph 37 in IMF (2018) which states:
 "For the World Bank (IDA) and other MDBs, regular credit terms on all lending should be assumed for all years in the projection period for which grant finance has not already been committed. These lenders link the terms of their assistance and allocation of grants to the DSF risk rating, and thus a clean assessment without possible grants is needed. Grants from these donors committed on the basis of the DSA can then be captured at the next DSA cycle."
9. At the time of writing, the Government of Fiji was seeking a rapid financing package from the IMF worth 50% of its quota (equal to a just over half a percentage point of its GDP), indicating remaining concern about Fiji's balance of payments.
10. The IMF assessment expected debt to peak at 75% of GDP in 2020 and decline to below 70% by 2025.
11. There is also a single year breach of the external debt service-to-revenue ratio warning threshold due to a bullet payment in 2028, which is discounted by the IMF in both its current and previous assessment particularly on the back of revenues expected from future resource projects.
12. PV external debt-to-GDP ratio is expected to hover at about 22% (threshold: 40%); external debt service to stay around 3.5% of exports (threshold: 15%) and around 10% of revenue (threshold: 18%); while the PV overall debt-to-GDP ratio is expected to peak at 44% in 2024 (threshold is 55%) and decline thereafter.
13. See IMF (2017) Debt Sustainability Analysis for Samoa for a detailed explanation of the basis for this adjustment. The IMF also incorporates a 1.3 percentage point reduction in long-term growth, which we also include in our projections. Note: both our and the IMF analyses do not include these adjustments in the "severe disaster triggered by natural hazards" scenario, since this would be double-counting the impact.
14. In the disaster scenario, the debt ratio declines in the long term below the other scenarios as it does not include the average disaster effects assumed in the baseline as per the IMF approach. Otherwise, it would double count the disaster effects.
15. For weak fiscal effort, we assume that the primary balance follows the average over the past decade at 0.8% of GDP, rather than the 20-year average of 2.2%, with a further 1 percentage point of GDP subtracted for disaster costs from 2027 onward.
16. Pacific Region Infrastructure Facility. National Infrastructure Investment Plans. <https://www.theprif.org/national-infrastructure-investment-plans-niips> (accessed October 2020).

REFERENCES

- Alichi, A., I. Shibata and K. Tanyeri. 2019. Fiscal Policy Multipliers in Small States. *IMF Working Paper*. No. 19/72. Washington, DC: International Monetary Fund (IMF).
- Asian Development Bank (ADB). 2017. Meeting Asia's Infrastructure Needs. Manila.
- Asian Development Bank (ADB). 2018a. *Key Indicators for Asia and the Pacific 2018*. Manila.
- Asian Development Bank (ADB). 2018b. *Pacific Economic Monitor – December 2018*. Manila.
- Asian Development Bank (ADB). 2019. *Asian Development Outlook 2019: Strengthening Disaster Resilience*. Manila.
- Asian Development Bank (ADB). 2020. *Asian Development Outlook 2020 Update: Wellness in Worrying Times*. Manila.

- Australian National University, Development Policy Centre. 2021. *Pacific Covid Economic Database*. Accessed at: <https://devpolicy.crawford.anu.edu.au/pacific-research-program/pacific-covid-economic-database>.
- Bulow, J., C. Reinhart, K. Rogoff and C. Trebesch. 2020. *The Debt Pandemic*. International Monetary Fund Finance and Development. October. Washington, DC: IMF.
- Gaspar, V., Lim, R. and M. Raissi. 2020. Public Investment for the Recovery. *IMF Blog*. Washington, DC: IMF.
- Gibson, J. and K.L. Nero. 2007. *Are Pacific Island Economies Growth Failures? Geo-Political Assessments and Perspectives*. New Zealand: University of Waikato.
- Global Commission on Adaptation. 2019. *Adapt Now: A Global Call for Leadership on Climate Resilience*. Washington, DC: World Resources Institute.
- Government of Tonga. 2018. *Post Disaster Rapid Assessment*. Accessed at: https://www.gfdr.org/sites/default/files/publication/WB_Tonga_Report_FA07.pdf.
- Government of Vanuatu. 2015. *Post-Disaster Needs Assessment*. Accessed at: https://www.gfdr.org/sites/default/files/publication/WB_Tonga_Report_FA07.pdf.
- Guerrieri, V., G. Lorenzoni, L. Straub and I. Werning. 2020. Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages?. *NBER Working Paper*. No. 26918. Accessed at: <https://www.nber.org/papers/w26918>.
- Gupta, S., A. Kangur, C. Papageorgiou and A. Wane. 2014. Efficiency-Adjusted Public Capital and Growth. *World Development*. 57(May), pp. 164–78.
- Howes, S. and S. Surandiran. 2020. *Pacific Covid Economic Database*. Development Policy Centre, Australian National University. July.
- International Monetary Fund (IMF). 2015. *Public Debt Limits in IMF-Supported Programs*. Washington, DC.
- International Monetary Fund (IMF). 2017. Samoa: *Staff Report for the 2017 Article IV Consultation – Debt Sustainability Analysis*. Washington, DC.
- International Monetary Fund (IMF). 2018. Guidance Note on the Bank-Fund Debt Sustainability Framework for Low Income Countries. Policy Paper. Washington, DC. Accessed at: <https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/02/14/pp122617guidance-note-on-lic-dsf>.
- International Monetary Fund (IMF). 2020a. Pacific Islands Threatened by COVID-19. *IMF News*. Washington, DC. Accessed at: <https://www.imf.org/en/News/Articles/2020/05/27/na-05272020-pacific-islands-threatened-by-covid-19>.
- International Monetary Fund (IMF). 2020b. Sovereign Debt: A Guide for Economists and Practitioners, Session 4: Debt Sustainability. Washington, DC.
- International Monetary Fund (IMF). 2020c. Fiscal Monitor: Policies for the Recovery. *Fiscal Monitor Reports*. Washington, DC: IMF.
- Izquierdo, A., R. Lama, J.P. Medina, J. Puig, D. Riera-Crichton, C. Vegh and G.J. Vuletin. 2019. Is the Public Investment Multiplier Higher in Developing Countries? An Empirical Exploration. *IMF Working Paper*. No. 19/289. Washington, DC: IMF.
- Miyamoto, H., A. Baum, N. Gueorguiev, J. Honda and S. Walker. 2020. Growth Impact of Public Investment and the Role of Infrastructure Governance. In G. Schwartz, M. Fouad, T. Hansen and G. Verdier (eds), *Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment*. Washington, DC: IMF.
- OECD website. *Official Development Assistance – Definition and Coverage*.
- Pacific Region Infrastructure Facility (PRIF). 2013. *Infrastructure Maintenance in the Pacific: Challenging the Build-Neglect-Rebuild Paradigm*. Summary Paper. Sydney.
- Pacific Region Infrastructure Facility. 2020. *National Infrastructure Investment Plans*, October.
- Rajah, R., A. Dayant and J. Pryke. 2019. *Ocean of Debt? Belt and Road and Debt Diplomacy in the Pacific*. Sydney: Lowy Institute.
- Republic of Fiji. 2020. *Republic of Fiji: Assessment Letter for the Asian Development Bank and Asian Infrastructure Investment Bank*. Accessed at: <https://www.adb.org/sites/default/files/linked-documents/48490-004-imf.pdf>.
- Ruhr Universität Bochum. 2018. World Risk Report 2018 Focus: Child Protection and Children's Rights. Berlin and Bochum: Bündnis Entwicklung Hilft and Ruhr University Bochum – Institute for International Law of Peace and Armed Conflict (IFHV).
- World Bank. 2011. Discussion Note: Pacific Futures. Washington, DC. Accessed at: <https://devpolicy.org/publications/reports/Discussion%20Note-Pacific%20Futures-July%202011.pdf>.
- World Bank. 2013. Samoa Post-Disaster Needs Assessment. Washington, DC. Accessed at: <https://openknowledge.worldbank.org/bitstream/handle/10986/15977/ACS44320ESW0wh00Box0379812B000UO090.pdf?sequence=1&isAllowed=y>. // World Health Organization 2020. *Strengthening Pacific Health Systems*. July 2020.

APPENDIX 5.1 BASIS OF KEY ASSUMPTIONS AND PROJECTIONS FOR EACH COUNTRY IN THE BASELINE SCENARIO

Table 5A.1 *Fiji*

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Sources and Notes on Assumptions
PV Debt-to-GDP ratio	71.0	69.1	65.4	63.2	61.1	60.1	60.0	59.9	59.8	59.7	59.5	
Debt-to-GDP ratio	75.9	73.9	70.0	67.5	65.4	64.3	64.2	64.1	63.9	63.8	63.7	Initial debt ratio: IMF Article IV 2019
Assumptions:												
Real GDP growth	-21	11.5	8.5	5.0	4.0	2.2	3.2	3.2	3.2	3.2	3.2	IMF WEO Oct 2020 (2020–25); IMF Article IV 2019 (long term)
Real effective interest rate	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	IMF Article IV 2019 (projection average)
Primary balance	-6.5	-13.7	-4.0	0.2	1.4	1.8	0.3	0.3	0.3	0.3	0.3	IMF WEO Oct 2020 (2020–25) then 20-year historical average
Average concessionality of debt (PV/FV)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	Average PV/FV of external debt = 0.6 based on semi-concessional debt; constant external debt share = 26%

Note: FV = face value; GDP = gross domestic product; IMF = International Monetary Fund; PV = present value; WEO = World Economic Outlook.

Table 5A.2 Papua New Guinea

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Sources and Notes on Assumptions
PV Debt-to-GDP ratio	43.2	42.9	42.0	41.2	40.7	40.3	38.8	36.4	34.1	31.8	29.6	
Debt-to-GDP ratio	44.0	44.9	44.8	45.2	45.7	45.7	44.6	42.3	40.1	37.8	35.5	Initial debt ratio: IMF 2020 DSA
Assumptions:												
Real GDP growth	-3.3	1.2	2.9	3.0	2.8	3.2	3.3	3.2	3.1	3.1	3.1	IMF WEO Oct 2020 (2020–25) then IMF 2020 DSA
Real effective interest rate	0.1	-3.1	-2.1	0.1	1.1	0.9	0.7	0.4	0.2	0.0	-0.3	IMF 2020 DSA
Primary balance	-3.7	-2.8	-2.1	-1.7	-1.2	-1.1	0.0	1.1	1.1	1.1	1.1	IMF WEO Oct 2020 (2020–25) then IMF 2020 DSA
Average concessionality of debt (PV/FV)	0.98	0.95	0.94	0.91	0.89	0.88	0.87	0.86	0.85	0.84	0.83	IMF 2020 DSA

Note: DSA = debt sustainability analysis; FV = face value; GDP = gross domestic product; IMF = International Monetary Fund; PV = present value; WEO = World Economic Outlook.

Table 5A.3 Samoa

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Sources and Notes on Assumptions
PV external debt-to-GDP ratio	32.7	37.5	39.8	41.1	40.8	40.5	41.4	42.4	43.3	44.3	45.2	
External debt-to-GDP ratio	52.1	59.8	63.5	65.5	65.0	64.5	66.1	67.6	69.1	70.6	72.0	
Total debt-to-GDP ratio	63.4	72.7	77.3	79.7	79.1	78.5	80.4	82.3	84.1	85.9	87.6	Initial ratio: IMF 2020 DSA (includes certain contingent liabilities)
Assumptions:												
Real GDP growth	-5.0	-1.5	2.7	2.2	2.2	2.2	0.9	0.9	0.9	0.9	0.9	IMF WEO Oct 2020 (2020–2025) and 2020 IMF DSA
Real effective interest rate	-1.2	-0.8	-0.5	-0.8	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	IMF 2020 DSA
Primary balance	-6.5	-8.9	-6.8	-4.7	-2.0	-2.0	-3.5	-3.5	-3.5	-3.5	-3.5	IMF WEO Oct 2020 (2020–2025); Other years: IMF WEO Oct 2019 (20-year historical average) less 1.5pp of GDP for disasters from 2027 onwards
External debt share	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	Constant 2020 ratio: IMF 2020 DSA
Average concessionality of external debt (PV/FV)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	Constant 2020 ratio: IMF 2020 DSA

Note: DSA = debt sustainability analysis; FV = face value; GDP = gross domestic product; IMF = International Monetary Fund; PV = present value; WEO = World Economic Outlook.

Table 5A.4 *Tonga*

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Sources and Notes on Assumptions
PV external debt-to-GDP ratio	37.0	40.7	38.0	34.4	31.3	28.6	27.0	25.6	24.1	22.6	21.2	Initial ratio: Government budget statement 2021
External debt-to-GDP ratio	39.3	43.2	40.3	36.6	33.3	30.3	28.7	27.1	25.6	24.0	22.5	Initial ratio: Government budget statement 2021
Total debt-to-GDP ratio	46.1	50.7	47.3	42.9	39.0	35.6	33.7	31.8	30.0	28.2	26.4	Initial ratio: Government budget statement 2021
Assumptions:												
Real GDP growth	-2.5	-3.5	4.0	3.0	2.5	1.8	1.1	1.1	1.1	1.1	1.1	IMF WEO Oct 2020 (2020–2025); IMF Article IV 2017 (long term) incl disaster effects
Real effective interest rate	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	IMF Article IV 2017 (projection average)
Primary balance	-0.8	-2.8	1.5	3.1	3.0	2.9	1.6	1.6	1.6	1.6	1.6	Government budget (2020–2023); IMF WEO Oct 2020 (20-year historical average) less 1 percentage point of GDP for disasters; authors (interim)
External debt share	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	Constant 2020 ratio: Government budget statement 2021
Average concessionality of external debt (PV/FV)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	Constant 2020 ratio: Government budget statement 2021

Note: DSA = debt sustainability analysis; FV = face value; GDP = gross domestic product; IMF = International Monetary Fund; PV = present value; WEO = World Economic Outlook.

6. Subnational debt: developing a sustainable market

Lili Liu¹

1. INTRODUCTION

The importance of subnational debt market is driven primarily by decentralization and the immense needs of financing infrastructure. The responsibility for urban infrastructure investments and operations has been increasingly decentralized to subnational governments (SNGs) in many countries.² The massive scale of urbanization requires infrastructure investment (such as in power, water, sanitation, roads, airports, schools, and hospitals) to absorb the influx of rural populations (Liu and Tan 2009). “Developing Asia will need to invest \$1.7 trillion per year in infrastructure until 2030 to maintain its growth momentum, tackle poverty, and respond to climate change” (ADB 2017). Allowing SNGs to access financial markets for financing infrastructure has thus become a policy focus in many countries.

There are public policy benefits for SNGs to access financial markets for infrastructure financing. As noted by Liu and Waibel (2008a), borrowing enables SNGs to capture the benefits of major capital investments immediately, rather than wait to accumulate savings from current income. Subnational borrowing also finances infrastructure more equitably across multigenerational users of infrastructure services because debt maturity can match the economic life of the assets being financed, and the beneficiaries can pay for the services.

For a long time, bank lending and central government onlending were the only forms of credit supplied to SNGs, but many countries in recent years have started to experiment with allowing SNGs to access capital markets.³ Bank loans tend to have much shorter maturities (except some policy loans from government development banks). In contrast, bond instruments can better match the maturity of the debt service with the life span of the infrastructure assets being financed.

Compared with bank loans, bond instruments can enforce financial and governance transparency of borrowers, as credit ratings are a precondition for borrowers (bond issuers). A competitive bond issuance process can differentiate risk premiums for borrowers according to their different financial strengths, thus more effectively acting as an intermediary between savers (credit suppliers) and borrowers (debtors). It can also build on the existing sovereign and corporate bond market, to further strengthen securities market institutions, such as rating agencies, dealers, auditors, and trusts, as well as to diversify the investor base by attracting mutual funds, life insurance, pensions, and individual investors.

Macroeconomic challenges from COVID-19 may have added momentum to the expansion of SNG borrowing. Economic disruptions would reduce SNG revenues, as SNGs in many

countries rely heavily on fiscal transfers. The main sources of fiscal transfers are value-added tax and corporate and personal income taxes, all of which are cyclical. For resource-rich countries, a significant portion of fiscal transfers comes from volatile commodity-export revenues.

Notwithstanding the demand for, and benefits of, SNG borrowing, history is replete with subnational default risks. The 1990s saw widespread subnational debt crises:

To many observers, runaway provincial debt in Mendoza and Buenos Aires was a major factor behind Argentina's sovereign debt default in 2001. Brazil experienced two subnational debt crises following the early one in the 1980s. The 1995 Tequila crisis in Mexico exposed the vulnerability of subnational debt to the peso devaluation and led many Mexican subnationals into debt crisis. In Russia, at least 57 of 89 regional governments defaulted from 1998 to 2001 (Liu and Waibel 2008b, p. 216).

As noted by Liu and Waibel (2008b), even without explicit defaults, fiscal stress and implicit liabilities are a real concern. In India, many states experienced fiscal stress in the late 1990s, with fiscal deficits, debt, and contingent liabilities increasing rapidly. SNGs in Colombia, Hungary, and South Africa also experienced fiscal stress in the 1990s.

This chapter focuses on the challenges of developing subnational debt markets, which involve issues relating to the intergovernmental finance system that will impact the subnational borrowers' capacity and credit strength to borrow, and market institutional infrastructure that will impact the depth, liquidity, and cost of credit supply. Financial discipline for both borrowers and creditors is intertwined with these supply and demand challenges. Managing macroeconomic stability, particularly in times of crisis, also adds to the challenges, because a sovereign's macroeconomic fundamentals largely determine the fiscal and debt dynamics of SNGs (Liu and Tan 2009).

The rest of the chapter is structured as follows. Section 2 reviews the development of subnational debt markets in select middle-income countries in the Asian region. Section 3 discusses regulation of subnational debt in the context of common pool problems and key elements of the intergovernmental fiscal system, including the importance of incorporating SNG annual deficit and debt targets in the overall fiscal and net borrowing of the public sector. Section 4 reviews thematic issues of the intergovernmental fiscal system, debt restructuring, and off-budget liabilities that have an important bearing on subnational borrowing. Section 5 discusses the importance of macroeconomic frameworks to SNG debt sustainability. Section 6 concludes.

2. SUBNATIONAL DEBT MARKET DEVELOPMENT

Developing a sustainable subnational debt market is a long-term challenge in many countries. Bank loans continue to be the main source of credit supply. Subnational securities markets are mostly small in scale and lack liquidity and secondary markets. But in India and the People's Republic of China (PRC) reforms have led to significant progress in developing subnational bond markets.

It will be useful to start the section with a quick look at the experience of the United States (US), as it has the longest history of developing subnational debt markets, and its gradual and incremental reforms offer valuable lessons to other countries.

The US has large, liquid and competitive subnational debt markets. State and local governments and their special purpose vehicles issue bonds in capital markets to raise funds for

infrastructure and other projects for public purposes. With approximately 50,000 subnational issuers, annual issuance averages \$425 billion, with debt outstanding at about \$3.8 trillion. Notwithstanding episodic cases of defaults, the overall default rates are extremely low.⁴

Such a large and well-functioning market was not created overnight. The US introduced a series of institutional and legal reforms throughout its 200-year capital market history (for a review, see Liu et al. 2013a; 2017). Notable reforms include (1) state reforms of off-budget vehicles in the 1840s to bring transparency and link debt service with revenue base; (2) the development of revenue bonds and their legal foundation in the late nineteenth century; (3) the securities laws in the 1930s; (4) Chapter 9 of the federal Bankruptcy Code for municipalities in the 1930s Great Depression; (5) the creation of the Municipal Securities Rulemaking Body in 1975; (6) continuous reforms at the state level for local governments; and (7) the creation of the nationwide Electronic Municipal Market Access. According to Liu et al. (2013a), some of the reforms were introduced to respond to subnational debt crisis (e.g., reforms of state off-budget vehicles in the 1840s and the enactment of Chapter 9 during the Great Depression), while other reforms targeted debt instruments, market institutions, and market transparency (e.g., revenue bonds, securities laws, the Municipal Securities Rulemaking Body, and Electronic Municipal Market Access).

Development of the subnational debt market has been on the policy agenda of many developing and emerging economies since the 1990s (see Liu and Webb 2011; Canuto and Liu 2013). After the subnational debt crisis in the mid- to late-1990s in several countries as noted, the development slowed down. Since the 2008 financial crisis, there has been renewed interest. As noted by Canuto and Liu (2013), SNGs in various countries have already issued bond instruments (for example, in the PRC, India, Colombia, Mexico, Poland, the Russian Federation, and South Africa). Some other countries are developing policy frameworks for preparing SNGs' access to financial markets (for example, Indonesia preparing legislations and Peru piloting capacity-building activities). As explained below, subnational credit market development in India, Indonesia, the PRC, and the Philippines present different reform challenges and experiences, yet they help delineate certain common principles underlying their reform efforts.⁵

2.1 India

In India, the state subnational debt market differs substantially from the municipal one, with the former having a long history while the latter is nascent but with a new spurt of growth.⁶ Article 293 of the Constitution grants to states the legal authority to issue debt but forbids their borrowing overseas.⁷ The debt-to-gross domestic product (GDP) ratio across all states was about 25 percent in 2019/2020, stable over the last several years. In general, market borrowing of public enterprises owned by states is backed by state guarantees with contractual budgetary provisions for debt services.

Historically, the central government borrowed and lent to states (for example, loans from the center accounted for 50 percent of states' borrowing in 1997/1998). The Twelfth Finance Commission (FC) established in 2002 (Government of India 2004) recommended states be given more autonomy and market access, and the financial intermediary role of the central government be discontinued.⁸ Loans from the center gradually declined and were discontinued in 2005. Market-based borrowing by states increased over time, from 15.1 percent of total

borrowing in 2002 when the reform began, to 51.4 percent in 2018, 54.3 percent in 2019, and projected 57.9 percent in 2020.⁹ Market borrowings are managed by the Reserve Bank of India through an auction platform.

As reviewed by Rangarajan and Prasad (2013), with more freedom, states also bore the greater responsibility of managing their debt. The new lending policy has led to greater market discipline and transparency to enhance credibility among the market participants. Competition gradually increased among states to avail the best market terms and obtain credit ratings. There has been evidence of some variation in the spreads among states, with some states borrowing at slightly lower rates, although the overall range of the spreads has been narrow.

Commercial banks (mostly public banks) hold the majority of state debt securities at about 50 percent, insurance companies hold about 26 percent, and other investors hold the rest.¹⁰ Commercial banks' statutory reserves requirements include state securities which are collateralized by "automatic" intercepts from the state treasury account, with no restructuring or defaults associated with these.¹¹

In contrast to the large state securities market, the municipal securities market is smaller but shows promising momentum. It was not until 1992 that the 74th Amendment to the Constitution created the third-tier government. The first municipal bond was issued in 1997, followed by 24 more issues as of 2015, totaling ₹17.47 billion (\$389 million). The market grew more rapidly after the 2015 regulation by the Securities and Exchange Board of India (SEBI), which stipulates that the municipal bonds in capital market public offering be revenue bonds. From June 2017 to January 2019, seven municipal bonds were issued totaling ₹41.09 billion (\$601.5 million).¹² Still, only a limited number of urban local bodies (ULBs) in India have investment grade ratings. The cost of borrowing would be prohibitively high for ULBs with below investment grade ratings.¹³

2.2 Indonesia

Still at an early stage of development, the Indonesia bond market (sovereign, corporate) is relatively small, with total bonds outstanding at less than 20 percent of GDP. Sovereign bonds dominate, with corporate bonds accounting for only 3 percent of GDP.¹⁴ The domestic corporate bond market remains limited, with a few repeat issuers dominating the corporate debt offerings. As a result, Indonesia has one of the smallest corporate bond markets in Asia.¹⁵

The history of Indonesia's decentralization is shorter (started in 2001) than that of some other countries.¹⁶ It takes time to establish intergovernmental systems. Although SNGs in Indonesia have not yet issued bonds, the government has been active in developing a regulatory framework for SNG borrowing and bond issuance (see next section). As an intermediary step, SNGs have access to the Indonesia Infrastructure Development Fund for loans to finance infrastructure while the fund has direct access to the market. It would also be feasible for SNGs with strong revenue bases and a history of sound financial management to pilot the issuance of bonds.

There are encouraging developments in the domestic bond market, which over time should bode well for the development of the subnational credit market. First, both the sovereign and corporate markets have continued to grow, after a short interruption during the global financial crisis. The share of sovereign and corporate bonds to GDP increased from 15 percent in 2015

to 19 percent in 2019, with the corporate bonds' share of GDP increased from 2.3 percent in 2016 to 3 percent in 2018.¹⁷

Second, all major types of institutional investors (financial institutions, insurance companies, pension funds and mutual funds) have invested in government and corporate bonds; particularly worth noting is that 17–18 percent of corporate bonds are held by pension, insurance, and mutual funds, which have asset–liability matches that are better suited for subnational bonds (World Bank 2016a).

Third, for corporate bonds, pricing is more responsive to credit risks. The higher-rated issuance carries a lower cost of spread; for example, for investment grade bonds, AAA-rated bonds have a medium coupon rate of 9.6 percent compared with BBB-rated bonds which have a higher medium coupon rate of 12 percent (World Bank 2016a).

In the medium to long term, the subnational debt market will need to address several challenges. First, cost of financing is high even for corporate bonds with a high rating. The medium coupon rates for highly rated corporate bonds (AAA and AA) range from 9.6 percent to 10.1 percent, with 350 basis points for a larger range of coupon rates (World Bank 2016a). Second, a high degree of bond market volatility as suggested by wide ranges of coupon rates can be punitive for new market entrants such as SNGs with a new asset class. Although bank loan rates have a slightly lower interest rate than bonds, the short maturities imply volatility and a potentially higher cost of refinancing (World Bank 2016a).¹⁸ Finally, strengthening regulatory frameworks for subnational borrowing will go a long way to help develop the subnational credit market.

2.3 People's Republic of China

The subnational debt market development in the PRC has gone through three distinct phases. The following review of the first two phases draws from Liu and Qiao (2013a) and Liu (2011).¹⁹ During the first phase, from the early 1990s to 2009, SNGs relied on a combination of sources to finance infrastructure: central government onlending, SNGs' financing vehicles, borrowing directly from the financial markets (mostly loans but also bonds), and subnational land-asset-based finance. These financing instruments spurred rapid infrastructure development, but their limitations became evident over time. With central government onlending, SNGs have no market interaction with creditors, and the borrowing power is disconnected from payment obligations. The SNGs' off-budget financing and debt are nontransparent. Financing infrastructure through land lease is not sustainable in the long run, because of the up-front collection of leasing fees.

The second phase, from 2009 to 2014, focused on preparations for the transition to a modern regulatory framework. Capacity building was an important part of design because critical preconditions for the issuance of bonds directly by provinces did not yet exist. The SNGs had no market access experience, and it would take time to develop credit rating systems. The SNGs would also need to set up institutions such as debt management offices to integrate debt management into overall budget preparations. During this transition phase, provinces were permitted by the central government to issue bonds, with the central government acting as the issuing agency, so that provinces could learn the auction process of debt issuances. From 2009 to 2011, CNY600 billion (\$90 billion equivalent) of provincial bonds was authorized and issued. In 2011, the State Council approved piloting of direct bond issuance of CNY23

billion (\$3.56 billion equivalent) by four cities, without the central government acting as the issuing agency.

The ongoing third phase started with the new Budget Law (August 2014) and the State Council's directives (September 2014) outlining a modern framework for subnational debt management. Provinces are permitted to borrow on budget, but their capacity to incur debt is subject to regulatory limits, approval of the People's Congress, and assessment of the provinces' market creditworthiness.

To implement the new law, an important operation was launched to swap the existing debt of SNGs' financing vehicles into SNG bonds within a three-year timetable, with the aim to bring off-budget debt on budget for transparency, improve SNG debt profile by converting shorter maturity debt into longer maturity bonds with lower cost, and facilitate the development of the subnational securities market. The issuance of new bonds was capped to control aggregate indebtedness. Under the new law, SNGs are required to disclose key financial data such as revenue, expenditures, and debt.

From 2015 to August 2018, the amount of debt stock swapped totaled CNY12.19 trillion (\$1.76 trillion). The nature of the existing debt stock changed from loans or corporate bonds issued by subnational government financing vehicles to bonds issued by SNGs. As of October 2019, subnational bonds accounted for 99 percent of all SNG debt. SNG bonds, issued in the interbank market and stock exchanges, have now become an active part of the fixed-income securities market in the PRC. By the end of October 2019, SNG debt outstanding was CNY21.38 trillion (\$3 trillion), accounting for 21 percent of GDP.²⁰

Several notable trends have emerged. Yield spread of publicly auctioned debt has differentiated among provinces, and the spread is higher for longer maturity than for shorter maturity, as pricing is more responsive to differentials in credit risks. Maturities of bonds have extended and differentiated into five categories, from three years to 30 years. Revenue bonds, an important bond instrument for infrastructure financing when debt is serviced by the revenue generated by the project being financed, have grown. The investor base is diversifying—although commercial banks continue to be the main holders of SNG bonds, their share has declined. Institutional investors have increased their purchase of SNG bonds. Foreign institutional investors have also purchased SNG bonds. Finally, SNGs can directly coordinate with the market on their own to decide the timing of issuance and maturities of bonds, without needing guidance from the central government. The central government continues to provide guiding principles such as the maturity of the bond to match the project cycle.

2.4 Philippines

In the Philippines, the Local Government Code of 1991 commenced decentralization and defined the structure of local government units (LGUs) in a unitary system (the discussions on the Philippines prior to 2013 draw from Liu et al. (2013b) unless otherwise indicated). The code assigned greater spending responsibilities to LGUs, entitling them to receive more fiscal transfers and expanding their own revenue power. Nonetheless, aggregate LGU spending as a share of national government spending has remained low, averaging 18.2 percent from 2009 to 2016, with a declining trend during the period (Diokno-Sicat and Maddawin 2018).

The LGUs, as a whole, run a budget surplus, and their borrowing is low (with debt outstanding about 1 percent or less of GDP).²¹ The low level of indebtedness is partly explained by the

limited infrastructure responsibility assigned to LGUs. The national government control and fund major infrastructure projects and its agencies continue to play major roles in the delivery and finance of local services.

The LGU debt portfolio reflects the Philippines' largely bank-denominated credit system. Bank loans account for almost 99 percent of LGU debt outstanding, and the share of bonds in LGU debt outstanding has declined from just a bit over 1 percent in 2013 to about 0.26 percent as of June 2019.²² Bonds are purchased mostly by private banks and guaranteed by the LGU Guarantee Corporation (LGUGC) and the private Philippine Veterans Bank that can accept LGU deposits (private financial institutions are generally not allowed to serve as depository banks for LGUs). The maturities of loans average about two to four years and of bonds about seven years.

The 1991 decentralization policy recognized the importance of private financing to help LGUs attain self-reliance and become effective partners in the attainment of national goals.²³ Using its guarantees, the LGUGC spurred private financial institutions' direct lending to LGUs, water districts and electric cooperatives. The fixed-income exchange has developed a "yield curve" for government securities that can be used as a benchmark for other fixed-income obligations including LGU bonds. The Philippine Water Revolving Fund, established in 2008 to mobilize private funds to the water sector, qualified several private financial institutions to participate.²⁴

However, progress in private financing of LGUs has been slow.²⁵ Loans from government financial institutions (GFIs) dominate the LGUs' outstanding debt, with loans outstanding from private banks accounting for a declining share, from about 13 percent in 2010 to 9.81 percent in June 2019.²⁶ LGUs must use GFIs for depositing fiscal transfers. GFIs can intercept or offset deposits to secure loan repayments, thus lowering the risk premium. GFI loans directly compete with the loans and bond market of private financial institutions. With no LGU bond issues to guarantee, the LGUGC, in which private financial institutions had invested, closed at the end of 2019. In the long term, the development of a competitive subnational credit market in the country would benefit from greater infrastructure spending responsibilities by LGUs and competition among financial institutions.

3. REGULATORY FRAMEWORKS FOR SUBNATIONAL DEBT MARKET

As argued by Liu and Webb (2011), the design of regulatory frameworks for subnational debt markets must overcome a unique challenge: the so-called common pool and free riders. The interests of an individual SNG may diverge from the common national interest. When a subnational government follows unsustainable fiscal policy, it may only bear part of the cost of its misbehavior, but would still receive all of the accrued benefit, if (most of) the other SNGs continue to follow good fiscal behavior. Subnational borrowers "have an incentive not to repay their lenders as principals because they perceive that they will be bailed-out by the central government in case of default, resulting in moral hazard" (Liu and Webb 2011, p. 14).

Thus, unconditional bailouts create a moral hazard. "Market participants may tolerate unsustainable subnational fiscal policy if past history backs their perception that the central government implicitly guarantees the debt service of the subnational government" (Ianchovichina et al. 2007, p. 114). However, regulatory frameworks alone cannot ensure

sustainable fiscal policy. A fiscal transfer system simply fills the financing gap of SNGs, which would incentivize them to run a larger fiscal deficit.

This section summarizes regulatory reforms in India, Indonesia, the PRC, and the Philippines, and highlights important design issues.

3.1 India

The regulation of subnational debt in India, which is anchored by its federal system, has gradually moved toward a rule-based framework and market discipline. As discussed by Rangarajan and Prasad (2013), under the old system, the states' borrowing was limited by the central government's annual discussions with states on their financing plans, leveraged by the central government's loans to the states. Although it limited explosive debt growth and systemic insolvency, the system did not prevent states from fiscal deterioration in the late 1990s. Fiscal deficit, debt, and contingent liabilities grew rapidly because of rising expenditures on salaries, retirement benefits, pensions, and subsidies to state-owned enterprises; and states increasingly used new borrowings to finance operating deficit.

To address the fiscal decline, fiscal consolidation included the standard measures of expenditure and taxation reforms (Ianchovichina et al. 2007). But, importantly, as reviewed by Rangarajan and Prasad (2013), a rule-based framework was developed, which included a fiscal responsibility law to ensure fiscal/debt sustainability. The framework underpinned the move to market-based borrowing for states. However, large interest payments on high-cost legacy loans from the center hindered fiscal adjustment. Cognizant of moral hazard in debt relief, per the recommendations of the Twelfth FC (established in 2002) and the Thirteenth FC (established in 2007), the center restructured or wrote off its loans, conditioned on the state's reform commitment and progress (e.g., enacting a fiscal responsibility law and establishing milestones for attaining fiscal and debt targets).

The key provisions of fiscal responsibility laws are similar across states with respect to debt and deficit: borrowing not to finance operating deficits; limits on deficit, debt and guarantees; and fiscal transparency. Some states also included a guarantee redemption fund for servicing any contingent liabilities and a provision of no guarantee for private entities.

All states have adopted a municipal law, which, among others, authorizes municipal governments to issue debt and create a sinking fund for debt service. In 2019, SEBI amended its 2015 regulation for municipal securities, similar in many ways to that for corporate securities.²⁷ The regulation covers the entire process of municipal bond issuance, trading, refinancing and reporting. It requires a municipal issuer to, *inter alia*, submit and disclose three-year audited financial statements including details of all liabilities, establish an escrow account dedicated to debt service, have surplus income for the prior three years, have no defaults for at least a year, undertake credit ratings, and disclose all information of material nature.

3.2 Indonesia

The regulatory framework for subnational borrowing in Indonesia is established by Law 23 of 2014, which sets forth the key provisions. The Ministry of Finance Decree 180-PMK-07-2015 provides implementation details. The Financial Services Authority (OJK), the Indonesian

financial market regulator, has provided guidelines regarding the issuance of regional government bonds from the perspective of the financial market.²⁸

The framework has several key elements. First, the regional council is the approval authority for bond issuance. Second, the framework defines the purpose of the subnational bonds: to finance public investments and infrastructure. Third, it requires that annual budgets include provision for scheduled debt service, which is a major step forward, considering the legacy of debt arrears by many SNGs. Fourth, general allocation grants or the revenue-sharing fund to an SNG can be intercepted if the SNG has arrears to the central government or the PT SMI, with the intercept linking to factors such as subnational fiscal capacity.²⁹ Fifth, SNGs need to strengthen fiscal transparency by compiling and reporting financial data (such as debt outstanding, budget deficit, debt service ratio). Finally, SNGs need to strengthen debt management capacity for monitoring risks.

Since 2014, ongoing reforms have continued to refine regulatory frameworks and harmonize provisions from different agencies, for example, Ministry of Finance, OJK, and the Indonesia Stock Exchange (IDX), as anticipated by Law 23/2014. One such reform relates to defining the sources of revenue for different types of subnational bonds. A provision in Government Regulation 30/2011 states that debt service payments for regional borrowing should be taken from project revenues, while Law 23/2014 allows a local government to create a reserve fund for debt service, implying that the general budget can be used to finance public investments that do not generate sufficient revenues. Another regulation relates to the purpose of the debt. Government Regulation 30/2011 requires bonds to be used for financing revenue-producing infrastructure projects, while Law 23/2014 recognizes that a regional loan might be used to finance a budgetary deficit, which again seems to recognize that some public investments may not generate sufficient revenues to cover debt service.

In 2018, Regulation No. 56 in 2018 set forth provisions on subnational borrowing, which put a regulatory limit on outstanding debt in relation to an SNG's fiscal capacity. The Omnibus Law on Job Creation in 2020 amends Law 23 of 2014, with two relevant aspects: (1) approval from the regional council on borrowing is no longer required, though the consideration and approval from the central government remain; and (2) SNGs may issue bonds and/or sukuk to finance public infrastructure and investments.³⁰

3.3 People's Republic of China

The new budget law and the State Council's directives in 2014 set the framework for regulating the PRC's subnational debt market.³¹ The new law specifies that SNGs are allowed to borrow by issuing bonds within the approved debt limit, and any other channels of borrowing are prohibited. SNGs are not permitted to provide guarantees for debts of any entities or individuals, subject to any limitations otherwise provided by law. The new legal framework also contains provisions for the issuer, the debt instruments, the issuing procedures, the purpose of borrowing, and the responsibilities of SNG borrowers.

SNGs can only borrow within a statutory ceiling of outstanding debt. The State Council submits to the National People's Congress the annual aggregate borrowing limit for government, including both the central government and SNGs. Within the aggregate annual limit, the State Council sets debt limits for each individual province. An SNG at each level must incor-

porate debt into its annual budget and submit it for approval and supervision by the People's Congress at each level.

SNG bonds are issued to finance infrastructure and social services. Two major types of bond instruments and their respective revenue sources for debt service are specified: general bonds are collateralized by the broad revenue base of the issuer (province), and special bonds (e.g., project bonds, which are similar to revenue bonds) are collateralized with the revenues generated by the project being financed.

The government has issued the Emergency Response Plan for Subnational Government Debt and the Guidance on the Classification and Treatment of Risks in Subnational Government Debt. The Ministry of Finance has established an early warning system and conducts periodic assessments of debt risks for SNGs at all levels—provinces, municipalities or prefectures, and counties/districts. The assessments cover key indicators such as debt ratio, debt servicing ratio, interest expense, and maturity. All provinces are required to develop risk resolution and emergency response plans.

3.4 Philippines

In the Philippines, the Local Government Code of 1991 grants LGUs the general power to borrow, but also with restrictions (Liu et al. 2013b).³² Together with the provisions put forward by financial sector regulators, the regulatory framework for LGU borrowing is rigorous: (1) there are numerical limits on the ratio of debt service to LGU revenue; (2) borrowing must finance long-term investments; (3) LGUs cannot incur operating deficits and must appropriate in their annual budget amounts sufficient to cover debt obligations; and (4) the fiscal transfers can be used by lenders as intercept for loan repayments.

In addition, as noted by Liu et al. (2013b), the New Central Bank Act (Republic Act 7653) requires that, as a condition of borrowing, the monetary board render an opinion on the impact of the borrowing on monetary aggregates, the price level, and the balance of payments. For a sovereign guarantee, there is a more rigorous test, and approval is required from the secretary of finance. No subnational government has borrowed with such a guarantee, nor has any borrowed in foreign currency.

An agreement signed among government agencies in 2002 requires that GFIs, the central bank, and the LGUGC submit data on LGU debt to the Bureau of Local Government Finance (BLGF) under the Department of Budget and Management. LGUs are also required to submit quarterly financial statements to BLGF. The central bank monitors GFI loans to LGUs and the purchases of LGU bonds. BLGF works closely with the Municipal Development Fund Office in tracking LGU borrowing and debt service capacity.

The rigorous monitoring and supervision have helped prevent systemic defaults. BLGF provides detailed monthly data on net debt service ceiling and borrowing capacity for each LGU, as well as detailed data from financial institutions on LGU indebtedness. The aggregate debt service payments of LGUs are equal to only 2 percent to 3 percent of what is defined as revenue capacity of LGUs.³³

4. SOME KEY REFORM ISSUES

The above country experiences provide valuable lessons for other countries that wish to grant or expand subnational borrowing power. Summarized below are some key thematic reform issues, which would also be relevant to the continuing reform efforts of countries discussed in this chapter. The regulation for subnational borrowing is intertwined with the intergovernmental fiscal system. Moreover, ex-ante regulation would need to be enforced through effective debt restructuring. Finally, contingent liabilities and risks may not be easily captured by existing accounting systems, making it difficult to regulate these liabilities. While it is beyond the scope of this chapter to examine these issues in depth and empirically, this section highlights relevant key issues for policymakers to consider in ensuring the sustainability of subnational borrowing.

4.1 Intergovernmental Fiscal System

Three aspects of intergovernmental fiscal systems have immediate bearing on subnational borrowing: (1) what are the expenditure responsibilities, particularly in the area of public infrastructure investments, for SNGs?; (2) do SNGs have reliable revenue sources to service debt?; and (3) is there sufficient fiscal and debt space for the subsovereign? These questions are examined below.³⁴

The question of whether SNGs have responsibility for infrastructure investment is an essential part of designing the intergovernmental fiscal system, that is, expenditure assignment. The golden rule—borrowing is to finance public investments not operating deficit—is a core element of regulatory frameworks for subnational borrowing in all the country cases. This issue can become front and center at the time of macroeconomic crisis when SNGs may desire, and push for, borrowing power to ease liquidity as they are starved for cash while central government transfers are squeezed.

The second question on revenues collateralizing debt service is based on a simple fact: all debts must be repaid. Thus, the sources of SNG revenues and their reliability and predictability for debt service are important to investors (if there is no expectation of bailouts). The more clarity there is on the sources, the easier it is for investors to price default risks (and reward fiscally responsible SNGs by providing a lower cost of financing).

There are three sources of SNG revenues: own-tax revenues, fees (such as cost recovery fees on public services), and fiscal transfers from the central government. Own-tax revenues and fiscal transfers are the main sources of collateral for general obligation bonds, and cost recovery fee charges (e.g., for water and sanitation, electricity, airports) are the main sources of collateral for revenue bonds.

There are profound intergovernmental fiscal reform issues concerning each of the three subnational revenue sources. Regardless of whether SNGs collect their own-source revenues or rely on central government transfers, the reform covers a broad range of issues concerning personal income tax, corporate income tax, value-added tax, sales tax, property tax, equalization transfers, or conditional grant transfers. Moreover, the design issues concerning user fees differ substantially across infrastructure subsectors, with some sectors achieving cost recovery more easily (such as energy and airport) than other sectors (such as water and sanitation).

Adding to the complexity is the existence of a variety of revenue systems within a country. In a federal system such as India, each state decides the modalities of the revenue system for its local governments. Even in a unitary system such as the PRC, each province sets out the revenue-sharing system for its cities, districts, and townships, within the broad revenue framework established by the central government.

SNGs in many countries rely heavily on central government transfers, but the design of transfers confronts the trade-off between equity and efficiency, as well as the basic question of the appropriate division of responsibility and financing sources. Cost recovery for public services in infrastructure (such as water and sanitation) is low even in many middle-income countries.

This does not mean that SNGs cannot have borrowing power until the reforms in each of these areas are completed. It does mean, however, that granting and/or expanding SNG borrowing power must be cognizant of the revenue issues, and the reform of intergovernmental fiscal systems is intertwined with the regulatory frameworks for SNG borrowing. For example, fiscal transfers will need to be reformed to become steady and predictable, not influenced by political negotiations between the central and subnational governments. Revenue bonds can be piloted for those public infrastructure projects with good cost recovery history.

It goes without saying that any clarity on collateral would require reforms in subnational financial management, so as to provide uniform benchmarking standards in collecting, reporting, auditing, disclosing, and monitoring fiscal data.

The third question—on the division of debt space between the central government and SNGs—is an important one:

For any given resources available to repay the total public debt, the borrowing space is ultimately split between national and subnational entities. This split should ideally reflect the relative position of both levels of government in terms of taxation capacity, revenue sharing and expenditure responsibility, particularly concerning infrastructure investments, as well as the institutional arrangements for sharing resources (Liu and Pradelli 2012, p. 7).

In the PRC, the low share of sovereign debt to GDP (below 20 percent) over the decades affords more debt space to SNGs, which takes up a major share of public investments.

Research has shown that total public debt thresholds in the range of 80–90 percent of GDP would draw the line between growth-enhancing effects of government debt and growth-hampering ones.³⁵ The European Union Maastricht Treaty establishes indicative numerical thresholds for member states, that is, public debt as 60 percent of GDP and fiscal deficit as 3 percent of GDP.

The issue of debt space becomes more relevant during a macroeconomic crisis when national governments in many countries launch countercyclical fiscal and monetary measures, and sovereign debt rapidly increases (such as during the 2008 global financial crisis and the ongoing COVID-19). A country that is thinking of granting or expanding subnational borrowing power must recognize that expanding subnational borrowing should not be viewed as a way of bridging expenditure–revenue gaps or easing liquidity constraint. Rather, a long-term view is required as to the allocation of financial resources (i.e., credit supplies from the financial system to finance public borrowing) between sovereign and subsovereign. Moreover, SNG debt dynamics become an important part of public debt dynamics when subnational debt grows.

4.2 Debt Restructuring

From the financial market perspective, creditors are keenly interested in the type of insolvency system or legal remedies available for dealing with defaulting subnational borrowers. Establishing a predictable set of insolvency rules is essential to capital market development. While the financial implications of default cannot be fully spelled out *ex ante*, insolvency procedures guide restructuring and negotiations. Lenders are aware of the circumstances under which they may have to take losses. This helps achieve better pricing of credit risks and enhances predictability on returns to capital.

The lack of insolvency procedures is less of a concern when higher levels of government exercise tight control over subnational borrowing, or when only a few lenders (such as public banks) provide credit to SNGs. Insolvency procedures become more important as the subnational bond market develops. A large number of bondholders exacerbate the collective action problem with protracted and costly negotiations between a debtor and numerous creditors.

Moral hazard is at the heart of debt restructuring challenges. As noted in the previous section, the federal restructuring of the states' legacy debt in India aimed to avoid moral hazards while helping reduce the high cost of legacy debt and helping states comply with newly established fiscal rules. The restructuring of the rural school legacy debt in 2007 in the PRC also established rule-based write-offs to avoid moral hazard (Liu and Qiao 2013b).

International experience shows that developing an insolvency system is more challenging than developing *ex-ante* fiscal/debt rules.³⁶ Debt restructuring must not only be cognizant of moral hazards, but must also involve the respective role of each tier of government in addressing the politically challenging tasks of reducing spending and increasing revenues. Debt restructuring itself is already daunting, as it needs to protect creditors' rights while protecting essential public services (public assets cannot be liquidated and government cannot be dissolved, as in private bankruptcy). When the US enacted Chapter 9 of the Bankruptcy Code for municipalities, the country's intergovernmental system was already well defined; still it took four years for Congress to deliberate on and enact Chapter 9. In many countries, including the country cases discussed in this chapter, the intergovernmental fiscal system is still evolving, reforms are multifaceted, and institutional capacity is still developing.

4.3 Managing Implicit/Contingent Liabilities and Fiscal Risks

Several types of liabilities may not be easily captured or quantified, thus making them more difficult to regulate. Yet these liabilities have a significant impact on subnational fiscal and debt sustainability.

Deficit financing through arrears

SNGs may delay wage and pension payments or payments to suppliers when facing economic or fiscal stress. In India, the accumulation of such arrears was an integral part of the state fiscal crisis in the late 1990s. Fiscal accounting, being on the mandated cash system, did not capture the depth of fiscal deterioration, owing to non-reporting of accrued liabilities. Addressing the arrears was a core part of state fiscal reforms in the early 2000s.³⁷

Liabilities from special purpose vehicles (SPVs) and public–private partnerships (PPPs)

SNGs create SPVs to undertake public investments. In the US, SPV revenue bonds account for about two-thirds of \$400 billion annual issuance of subnational bonds.³⁸ In France, sociétés d'économie mixte locales (SEMs) (i.e., a PPP) deliver infrastructure such as water and sanitation across a large number of small municipalities.³⁹ SEMs' net debt outstanding is often close to that issued directly by SNGs.⁴⁰

In the US, revenue bonds are outside the state debt limit, as debt service comes from project revenues, not state budgets. But the regulation of revenue bonds is extremely rigorous, covering issuance process, independent trusts that hold bond proceeds and debt service escrows, credit ratings, audits, accounting, high standard of market disclosure, and legal enforcement. PPP risks are also disclosed in annual audited public financial statements, and are subject to scrutiny of independent credit rating agencies.

SNGs have utilized SPVs for infrastructure projects in many countries, and PPPs experienced a sevenfold increase in developing countries during 2006–2008 compared with 1990–1992 (Engel et al. 2009). Both instruments have implications for subnational balance sheets, as SNGs may provide guarantees to SPVs or commit to PPP contractual obligations (such as subsidies or revenue support).

It is important to develop regulatory frameworks to define, measure, quantify, disclose, and monitor these liabilities and fiscal commitments, and assess their risks to budgets. Compounding this difficult task are the wide varieties of legal contractual relationships in PPPs. The essence of a legal contractual agreement for a PPP project is to spell out risk-sharing arrangements between a government and a private operator, including the fiscal commitment of the government to the PPP project. The legal contracts are to help mitigate a variety of risks in PPPs, such as revenue shortfalls, and macroeconomic, regulatory and operational risks. The contractual agreements differ in substance and form across PPP sectors and projects. The types of macroeconomic risks (such as currency volatility) and regulatory risks (such as tariff setting for cost recovery) differ across countries.

Land-asset-based financing of infrastructure

SNGs in developed and developing countries have used these instruments (e.g., land sales, lease auctions) to generate revenue from publicly owned land assets. Land is often the most important public contribution to PPPs in metro (subway) lines, airports, or other large infrastructure projects (Peterson and Kaganova 2010).⁴¹

There are fiscal risks. During economic downturns and budget shortfalls, the government could be under pressure to use land-asset revenues to finance the operating budget, which can be made easier when sales are conducted off-budget. Bank loans for financing infrastructure are often backed by land collateral and the expected appreciation of future land value. The volatility of land and real estate markets can create sizable nonperforming loans.

It is critical to develop prudential rules, which could be guided by the following principles: (1) asset sale proceeds are ring-fenced for capital spending, not for the operating budget; (2) collateral/loan ratios are linked to banking regulations; (3) land financing is linked with medium-term capital budgeting; and (4) data on public land inventories, valuations, sales, and contributions to PPPs are reflected in SNG financial statements.

Pension and health-care liabilities

As SNGs take on more expenditure obligations, other liabilities could strain SNG debt sustainability. Meeting pension and health-care obligations is a serious long-term challenge in advanced economies, including at the state level in federal countries.⁴² These obligations could also grow for SNGs in large middle-income countries.

Structured financial products

During times of macroeconomic stress and reduced fiscal space, some SNGs may be tempted to use instruments such as swaps and other derivative instruments. But these instruments often restructure the profile of the debt such as interest rate and maturity in a way that may lower the cost of financing in the short term, but could increase longer-term risks of volatility and higher financing cost. Public accounting standards will need to keep pace with developments in these new products, and in evaluating their costs and risks.

Foreign exchange risks

If SNGs are permitted to borrow in foreign currency, the cost of debt service can become unsustainable when local currency depreciates during a macroeconomic crisis. For example, foreign currency debt dominated local government borrowings during 2007–2013 in Hungary, reaching over 60 percent of local government debt. The Hungarian forint depreciated against the Swiss franc, the euro, and the US dollar in the aftermath of the 2008 global financial crisis. The costs of servicing and refinancing the debt increased significantly despite the benefits of the debt's low interest rate (Liu and Peteri 2015).

In India and the PRC, SNGs are not authorized to borrow in foreign currency. When local enterprises in the PRC borrow from abroad, the regulation stipulates that SNGs should not provide any guarantees or any form of credit support. When the national government borrows from international financial institutions (such as multilateral and regional development banks) and onlends the proceeds to SNGs, the foreign exchange risks are borne by the SNGs in both countries.

5. MACROECONOMIC FUNDAMENTALS

The sovereign's macroeconomic fundamentals are key to the fiscal sustainability of SNGs and thus to their capacity for sustainably raising funds from financial markets. As reviewed by Liu and Tan (2009), major international rating agencies, such as Fitch, Moody's, and S&P, cap subsovereign credit ratings by the sovereign credit ratings; rarely do subsovereign ratings exceed that of the sovereign.

According to Liu and Tan (2009), a country's macroeconomic management and country-wide risks affect the broader economic, fiscal, and financial conditions under which an SNG operates and also restrict an SNG's ability to raise funds. With its wide range of constitutional powers giving it first claim over the country's foreign reserves and other resources, the national government in a financial crisis is thus likely to fulfill its external or domestic debt obligations ahead of the SNG. The rating "ceiling" relationship applies less strongly to domestic currency debt instruments. Even in cases where the SNG possesses foreign currency reserves that are out of the national government's reach, the national government nevertheless could impose nationwide capital or exchange controls to restrict capital outflows and thereby

disallow the SNG from repaying its foreign debts. In short, the sovereign is unlikely to default before any SNG does.

As noted by the Moody's Investors Service (2018),

In assessing the systemic risk score, we use the country's sovereign bond rating. Generally, an [regional and local governments] RLG is unlikely to be rated above the sovereign's rating, which means that the sovereign bond rating represents an effective cap on the RLG's rating. There may be certain instances, however, when an RLG's rating can exceed the sovereign's rating. In these cases, the systemic risk score may be one or two notches above the sovereign rating. Given the significant macroeconomic and financial linkages between the sovereign government and lower-tier governments, however, it is unusual for an RLG to be rated more than two notches above the sovereign's rating.

The COVID-19 crisis has shocked global economy, trade, investment, and supply chains. Its impact on subsovereign finance and debt sustainability is still unfolding, and it will take time to make a comprehensive assessment, which is beyond the scope of this chapter. But a review of the impact of the 2008 global financial crisis on subnational borrowing is illustrative.

The 2008 global financial crisis had a profound impact on subnational finance across countries (Canuto and Liu 2010). Slower or negative national and regional economic growth generally reduced the SNGs' own revenues, while their expenditure obligations remained more rigid, resulting in wider financing gaps.

A liquidity squeeze and lower risk appetite led to higher financing costs. Yield spread for subnational bond issuance steadily increased from the first quarter of 2008 to the second quarter of 2009, whereas maturity exhibited a generally declining trend. The higher financing cost of bond instruments underestimated SNG borrowing costs, as only the most creditworthy SNGs had access to capital markets.

Central governments launched a range of measures to help SNGs weather the crisis such as (1) relaxing fiscal and indebtedness targets and broadening the fiscal space for new borrowing; (2) creating a credit line for SNGs that suffered a loss of fiscal transfers; (3) providing low-cost loans for SNGs and increasing fiscal transfers; (4) helping provide financing for SNG infrastructure spending and other core services; and (5) expanding SNG access to capital markets through subsovereign bond issuance (see Canuto and Liu 2010 for a summary of these measures in select countries).

The challenges facing SNGs with respect to borrowing in the aftermath of COVID-19 are not substantively different from any other macroeconomic shocks: rigidity of spending particularly of a recurrent nature, declining revenues, increasing financing gaps, liquidity constraint, and higher financing cost. Countercyclical fiscal and monetary policies are at the purview of the central government. Whether and to what extent the central government can help alleviate the financing pressure on SNGs will depend on a specific country's conditions and to a larger extent its aggregate fiscal space and the resilience of its economy. What is important to consider is that in response to the fallout from COVID-19, countries launched countercyclical fiscal and monetary measures, and sovereign debt has rapidly increased. A long-term view is required as to the allocation of financial resources (i.e., credit supplies from the financial system to finance public borrowing) between sovereign and subsovereign.

Although COVID-19 may delay the pace of regulatory reforms and subnational debt market development, the direction of the reform remains the same, and will need to address the set of issues discussed in previous sections.

6. CONCLUSIONS

A key lesson that can be drawn from the experience of the four countries is that reform is gradual and path dependent. The transition from central government onlending or public bank lending to market-based financing takes time and requires carefully sequenced reforms. In India and the PRC, each phase of the reform process tried to resolve key bottlenecks before moving to the next phase. Despite the gradual steps taken, the synergy resulting from the many institutional and regulatory reforms had a greater impact. The experience of Indonesia shows that developing subnational credit markets is linked to the development of the sovereign and corporate securities markets. The experience of the Philippines demonstrates the challenges of introducing private competition in the subnational credit market.

Moving toward a market-based financing system is a common thread across India and the PRC, albeit at differing paces with different challenges. Thus, granting and expanding subnational borrowing power is anchored on the desire to move toward a competitive and diversified market for financing subnational infrastructure investments. A competitive capital market for subnational infrastructure financing would help lower the cost of financing and ensure a sustainable supply of credit.

Policymakers are keenly aware of the moral hazard and common pool challenges in the context of subnational borrowing and that borrowing should not be used to finance operating deficits. The issue is not just that borrowers lobby for central government bailouts, it is also a concern for creditors, as deficit financing is a joint decision of borrowers and creditors (Liu and Webb 2011). Debt restructuring guided by clear and predictable rules reduces ad hoc negotiations and increases the pain of circumventing ex ante rules (Liu and Waibel 2008b). It also guides the expectations of lenders as they enforce fiscal discipline from the market side by pricing credit risks, thus more effectively intermediating savings and investments. Addressing the significant challenge of developing an insolvency system will require a sustained effort over the medium to long term.

Subnational borrowing is intertwined with the intergovernmental fiscal system, which prescribes division among tiers of government with respect to spending, revenues, and deficit financing. If and when the central government decentralizes some or more of the infrastructure responsibilities to SNGs, two issues become paramount. First, on the source of revenue for SNG debt service, it is important to define and quantify the dedicated revenues for debt services, which not only strengthens budgetary discipline but also facilitates a close link between creditworthiness and risk premiums (Liu et al. 2013a). The second issue concerns how much fiscal and debt space there is for SNG borrowing (Liu and Pradelli 2012). This issue is particularly pertinent in times of macroeconomic stress.

Finally, financial transparency is key to sustainable subnational debt finance, as markets need to digest comprehensive information to price risks appropriately. The country cases discussed here show great attention by policymakers to the issue of financial reporting, monitoring and supervision. A long-term task is to strengthen the accounting and monitoring of complex liabilities.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. The term *subnational* refers to all tiers of government (including states/provinces, municipalities, districts, and special purpose vehicles or investment companies created by SNGs) below the central government (Liu and Waibel 2008a).
3. In this chapter, the terms subnational debt market, subnational bond market, and subnational securities market are used interchangeably. Subnational credit market mainly comprises loans and bonds.
4. Despite some well-known cases of defaults, such as Detroit in 2013 and Puerto Rico in 2017, the overall default rates for SNGs are much lower than those of the corporate sector in the US (Liu et al. 2013a; Liu and Tan 2009).
5. The review will focus on the period before COVID-19, as the chapter focuses on basic issues relating to the design of regulatory frameworks. The countercyclical policies dealing with the fallout from COVID-19 are beyond the scope of this chapter.
6. Unless otherwise indicated, the discussions on India's state debt market and regulations draw from data/analysis from the Reserve Bank of India, Rangarajan and Prasad (2013), Ianchovichina et al. (2007), and Ianchovichina and Liu (2008).
7. Indian Laws Info. Article 293 in The Constitution of India. See <https://www.indianlawsinfo.com/home/section/3722/article-293-in-the-constitution-of-india/borrowing-by-states>.
8. The FC is a constitutional body appointed every five years to review and define financial relations between the center and states. There have been 15 FCs since 1951.
9. Data source: Reserve Bank of India. <https://www.rbi.org.in/>.
10. Reserve Bank of India. Other investors include provident funds and primary dealers.
11. Rangarajan and Prasad (2013).
12. Data calculated by author based on raw data from internet including Vinod Kothari Consultants P. Ltd. (2019). From 2017 to 2019, only one issue was backed by state guarantee (₹1.75 billion, \$25 million equivalent). For SEBI regulations see SEBI (Issue and Listing of Debt Securities by Municipalities) Regulations, 2015 [Last amended on 15 February 2017]. Accessed at: https://www.sebi.gov.in/legal/regulations/jul-2015/sebi-issue-and-listing-of-debt-securities-by-municipalities-regulations-2015-last-amended-on-february-15-2017-_34611.html.
13. Of the 3,700 ULBs in India, only 55 ULBs received investment grade ratings in 2017 (Vinod Kothari Consultants P. Ltd. 2019).
14. The total bond market (sovereign and corporate) is about 15 percent of GDP in 2016, with the sovereign debt dominating while the corporate bonds accounted for only 2.3 percent of GDP (World Bank 2016a). While the total size of the sovereign and corporate bond market increased to about 19 percent of GDP in 2019 (author's calculation), the basic trend of structure has not changed much, with the corporate bond market remaining small, accounting for 3 percent of GDP at the end of 2018: Asiamoney. www.asiamoney.com (accessed 25 November 2019).
15. Asiamoney: www.asiamoney.com (accessed 25 November 2019).
16. Indonesia's decentralization process was guided by two laws which became effective in 2001: Law 22/1999 concerning Subnational Government (regulating political and administrative/governance arrangements) and Law 25/1999 concerning Fiscal Balance between the Central and Subnational Government (regulating fiscal/intergovernmental arrangements).
17. 2015 data are based on World Bank (2016a); and 2019 data calculated by author from various sources: Asiamoney: www.asiamoney.com (accessed 25 November 2019).
18. Information on loan maturities is not available, but based on the author's field work, commercial banks have shorter maturities due to the limitation of the liabilities on their balance sheet.
19. This section draws from Liu and Qiao (2013a), Liu (2011), and the author's field work including discussions with the authorities, faculty at the China Academy of Public Finance and Policy of Central University of Finance and Economics in Beijing, rating agencies, and investors.
20. For 2019, the National People's Congress approves debt outstanding below the ceiling of CNY24.08 trillion.

21. The annual budget surplus of the LGUs averaged 0.59 percent of GDP from 2009 to 2016: <https://blgf.gov.ph/lgu-fiscal-data/> (accessed December 2020). LGU debt as a percentage of GDP has been about 1 percent or less of GDP (data up to 30 June 2019, calculated from Government of the Philippines, Department of Budget and Management, Bureau of Local Government Finance: <https://blgf.gov.ph/lgu-debt-data/> (accessed December 2020).
22. Data calculated from the Government of the Philippines, Department of Budget and Management, Bureau of Local Government Finance: <https://blgf.gov.ph/lgu-debt-data/> (accessed December 2020).
23. In Government of the Philippines. Republic Act No. 7160. *An Act Providing For A Local Government Code of 1991*. Approved 10 October 1991. Manila.
24. For a summary of the Philippine Water Revolving Fund, which was closed in 2017, see World Bank (2016b).
25. The discussion on the Philippines prior to 2013 draws from Liu et al. (2013b). The development since 2013 draws from the author's discussion with Gilberto Llanto, a trustee of the Philippine Institute for Development Studies.
26. Data calculated from the Government of the Philippines, Department of Budget and Management, Bureau of Local Government Finance.
27. SEBI: Securities and Exchange Board of India (Issue and Listing of Debt Securities by Municipalities) (Amendment) Regulations, 2019. Accessed at: https://www.sebi.gov.in/legal/regulations/sep-2019/securities-and-exchange-board-of-india-issue-and-listing-of-debt-securities-by-municipalities-amendment-regulations-2019_44519.html.
28. This section on the regulatory framework in Indonesia draws from the author's field work and World Bank (2016a). Regulations prior to Law 23/2014, relevant to subnational borrowing include Government Regulation No. 30/2011 on Regional Borrowings; Regulation of the Minister of Finance of the Republic of Indonesia Number 111/PMK.07/2012 Concerning Procedures for the Issuance and Accountability of Regional Bond; Indonesia Stock Exchange (IDX) Regulation No. 1.F.3 Concerning Listing of Municipal Bonds; and OJK guidelines on documents required for regional bonds.
29. PT SMI – PT Sarana Multi Infrastruktur (Persero) – is a special purpose vehicle established in 2009 under the Ministry of Finance for financing infrastructure projects.
30. A sukuk is a sharia-compliant bond-like instrument used in Islamic finance.
31. This section draws from the author's field work including discussions with the authorities, faculty at the China Academy of Public Finance and Policy of Central University of Finance and Economics in Beijing, rating agencies, and investors.
32. This section draws from Liu et al. (2013b), with data update from the Government of the Philippines, Department of Budget and Management, Bureau of Local Government Finance. The development since 2013 draws on the author's discussion with Gilberto Llanto, a trustee of the Philippine Institute for Development Studies.
33. The latest data are available for November 2020 (at the time this chapter was written in December 2020), from Government of the Philippines, Department of Budget and Management, Bureau of Local Government Finance.
34. The intergovernmental fiscal systems, or more broadly the intergovernmental systems in which fiscal relations are part of the systems, impact subnational finance profoundly. The focus here is on a narrower set of questions that are linked to debt financing. A broader discussion is beyond the scope of this chapter.
35. See Liu and Pradelli (2012) for a review of research on thresholds.
36. For discussion on challenges of developing insolvency systems, see Liu and Waibel (2008a). For discussion on fiscal rules in the broader context of institutions, see Liu and Webb (2011). For the development of Chapter 9 of the US Bankruptcy Code for municipalities, in the overall context of the regulatory frameworks, see De Angelis and Tian (2013), Leigland and Liu (2013), and Liu et al. (2013a).
37. For more details, see Ianchovichina et al. (2007).
38. Data for 2005–2008 are from the Federal Reserve Board. The 2009 data are from Thomson Reuters. The share has been more or less the same since the 1970s.

39. More than 20,000 municipalities have fewer than 500 inhabitants, and 32,000 municipalities have less than 2,000 inhabitants (for more on SEMs, see Liu et al. 2013c).
40. Based on Fitch's ratings of 13 French SNGs in 2008. Fitch Ratings: <https://www.fitchratings.com/> (accessed February 2008) and compilation of various reports.
41. Land transactions in cities such as Cairo, Cape Town, Istanbul and Mumbai, each generated revenues much greater than the respective city's prior annual capital spending. For example, an auction of 13 hectares of land in Mumbai's new financial center in 2006 and 2007 by the Mumbai Metropolitan Regional Development Authority (MMRDA) generated \$1.2 billion to primarily finance transport projects. The proceeds are 10 times MMRDA's total capital spending in fiscal year 2005. SNGs in the PRC have used land-asset instruments in financing large-scale urban infrastructure investments. See Peterson and Kaganova (2010).
42. For growing state pension liabilities in the US, see the US Government Accountability Office (2010), and The Pew Charitable Trusts (2019).

REFERENCES

- Asian Development Bank (ADB). 2017. *Meeting Asia's Infrastructure Needs*. Manila.
- Canuto, O. and L. Liu. 2010. Subnational Debt Finance and the Global Financial Crisis. Economic Premise. No. 13. Washington, DC: World Bank. Accessed at: <https://openknowledge.worldbank.org/handle/10986/10186>.
- Canuto, O. and L. Liu (eds) 2013. *Until Debt Do Us Part: Subnational Debt, Insolvency, and Markets*. Washington, DC: World Bank.
- De Angelis, M. and X. Tian. 2013. United States: Chapter 9 Municipal Bankruptcy – Utilization, Avoidance, and Impact. In O. Canuto and L. Liu (eds), *Until Debt Do Us Part*. pp. 311–51. Washington, DC: World Bank.
- Diokno-Sicat, J. and R.B. Maddawin. 2018. *A Survey of Literature on Philippines Decentralization*. Quezon City: Philippine Institute for Development Studies.
- Engel, E., R. Fischer and A. Galetovic. 2009. *Public–Private Partnerships: When and How*. New Haven: Yale University.
- Government of India. 2004. Report of the Twelfth Finance Commission. New Delhi.
- Ianchovichina, E. and L. Liu. 2008. Subnational Fiscal Sustainability Analysis. PREM Note 117. Washington, DC: World Bank.
- Ianchovichina, E., L. Liu and M. Nagarajan. 2007. Subnational Fiscal Sustainability Analysis: What Can We Learn from Tamil Nadu? *Economic & Political Weekly*. 42(52), December.
- Leigland, J. and L. Liu. 2013. When Subnational Debt Issuers Default: The Case of the Washington Public Power Supply. In O. Canuto and L. Liu (eds), *Until Debt Do Us Part*. pp. 353–75. Washington, DC: World Bank.
- Liu, L. 2011. *Subnational Debt Finance and Risk Management – International Experience*. Washington, DC: World Bank.
- Liu, L. and G. Peteri. 2015. Global Financial Crisis and Subnational Finance in ECA Region – The Experience of Hungary. Washington, DC: World Bank.
- Liu, L. and J. Pradelli. 2012. Financing Infrastructure and Monitoring Fiscal Risks at Subnational Level. *Policy Research Working Paper*. No. 6069. Washington, DC: World Bank.
- Liu, L. and B. Qiao. 2013a. Transition from Direct Central Government Onlending to Subnational Market Access in China. In O. Canuto and L. Liu (eds), *Until Debt Do Us Part*. pp. 379–416. Washington, DC: World Bank.
- Liu, L. and B. Qiao. 2013b. Restructuring of Legacy Debt for Financing Rural Schools in China. In O. Canuto and L. Liu (eds), *Until Debt Do Us Part*. pp. 81–107. Washington, DC: World Bank.
- Liu, L. and K.S. Tan. 2009. Subnational Credit Ratings: A Comparative Review. *Policy Research Working Paper*. No. 5013. Washington, DC: World Bank.
- Liu, L. and M. Waibel. 2008a. Subnational Insolvency: Cross-Country Experiences and Lessons. *Policy Research Working Paper*. No. 4496. Washington, DC: World Bank.
- Liu, L. and M. Waibel. 2008b. Subnational Borrowing, Insolvency and Regulations. In A. Shah (ed.), *Macro Federalism and Local Finance*. Washington, DC: World Bank, pp. 215–41.

- Liu, L. and S. Webb. 2011. Law for Fiscal Responsibility for Subnational Discipline: International Experience. *Policy Research Working Paper*. No. 5587. Washington, DC: World Bank.
- Liu, L., M. De Angelis and S. Torbert. 2017. Municipal Pooled Financing of Infrastructure in US – Experience and Lessons. *Policy Research Working Paper*. No. 8212. Washington, DC: World Bank.
- Liu, L., N. Gaillard and M. Waibel. 2013c. France’s Subnational Insolvency Framework. In O. Canuto and L. Liu (eds), *Until Debt Do Us Part*. pp. 221–59. Washington, DC: The World Bank.
- Liu, L., G. Llanto and J. Petersen. 2013b. The Philippines: Recent Developments in the Subnational Government Debt Markets. In O. Canuto and L. Liu (eds), *Until Debt Do Us Part*. pp. 417–54. Washington, DC: The World Bank.
- Liu, L., X. Tian and J.J. Wallis. 2013a. Caveat Creators: State Systems of Local Government Borrowing in the United States. In O. Canuto and L. Liu (eds), *Until Debt Do Us Part*. pp. 539–90. Washington, DC: World Bank.
- Moody’s Investors Service. 2018. Rating Methodology Regional and Local Governments. January 16. Accessed at: https://www.moody’s.com/researchdocumentcontentpage.aspx?docid=PBC_147779.
- Peterson, G.E. and O. Kaganova. 2010. Integrating Land Financing into Subnational Fiscal Management. Economic Policy and Debt Department Draft Paper. Washington, DC: World Bank.
- The Pew Charitable Trusts. 2019. *The State Pension Debt Funding Gap*. Washington, DC.
- Rangarajan, C. and A. Prasad. 2013. Managing State Debt and Ensuring Solvency: The Indian Experience. In L. Liu and O. Canuto (eds), *Until Debt Do Us Part*. pp. 109–44. Washington, DC: World Bank.
- State Council of China. 2014. Opinion on Strengthening the Management of Local Government Debt. No. 43. September. Beijing.
- United States Government Accountability Office. 2010. State and Local Governments’ Fiscal Outlooks. Washington, DC. March.
- Vinod Kothari Consultants P. Ltd. 2019. *Municipal Bonds in India: An Idea Whose Time Has Come*. New Delhi. Accessed at: http://vinodkothari.com/wp-content/uploads/2019/11/Municipal-Bonds_Way-Forward.pdf.
- World Bank. 2016a. Indonesia Municipal Bonds Initiative. May. Washington, DC.
- World Bank. 2016b. Water Revolving Fund in the Philippines. August. Washington, DC.

7. Asia's corporate debt: assessing its role in financial vulnerability

Hernán D. Seoane¹

1. INTRODUCTION

This chapter studies the interaction between nonfinancial corporate debt, output dynamics, and the degree of financial fragility of Asian economies. Corporate debt may be a source of financial instability as, in principle, it weakens the balance sheets of firms and exposes them to several types of risk. But it is also a way to finance investment and, hence, future growth in firms and in the country. Thus, the dynamics of corporate debt is of primary importance in a modern economy's macroeconomic health.

Corporate debt was a destabilizing factor during the Asian financial crisis, as part of the accumulated debt was used to finance low-productivity projects. Since then, most Asian economies have achieved lower and stable corporate debt-to-output ratios. On the other hand, since the end of the global financial crisis (GFC) that started in the United States (US) in 2008, and partly because of the search for yield behavior, international capital boosted sovereign and private debt ratios (together with stock and housing prices) worldwide, particularly in emerging economies. Hence, as international capital markets evolved, we ask what will be the impact of the current accumulation of corporate debt. To answer this question, we design a vector autoregression (VAR) model to study the interaction of private debt with macroeconomic and financial data. We estimate the model for nine large Asian economies since the mid-1990s until the first quarter of 2020.

The main result is that corporate debt tends to increase the degree of financial stress. Moreover, nonfinancial corporate debt contributes to the increase in financial stress in most of the countries we consider during the 1997 crisis, but not during 2008. This result is consistent with an ample body of literature that finds that balance sheets of corporations and intermediaries were stronger in 2008 and that the regulatory frameworks improved as a result of the 1997 crisis. After 2017, corporate debt-to-output ratio seems to have contributed more to the variability of the financial stress index, suggesting that in many countries (of which the People's Republic of China (PRC) is a particularly important case), corporate debt may start playing a destabilizing role.

After studying the fit of the model and its implications for the importance of different shocks across time, we use it to evaluate the potential impact of the current crisis. We use the exogenous variables, that is, the stock market volatility index (VIX) and the US Treasury bill rate (T-bill), to simulate an environment that resembles the one after the coronavirus disease (COVID-19) shock. We also use the model to measure the impact of the crisis on

the future dynamics of debt and financial fragility. Focusing on the case of the PRC, we find that the crisis may lead to an increase in the corporate debt-to-output ratios, a slowdown of output growth, or even a recession, and a deterioration of financial stability due to the larger debt-to-output ratios, current account deterioration, and a loss of international reserves. Moreover, we can show that the larger the increase in the debt ratios, the stronger would be the impact on output growth and financial fragility. Our analysis suggests that even though debt would be an instrument to smooth the costs of the crisis to the firms, governments should pay attention to its evolution and avoid the possibility of nonfinancial corporations overborrowing, which may slow down recovery after COVID-19.

The predictions of the model allow us to speculate about the consequences of the current crisis in relation to corporate debt. As the crisis will increase the level of corporate debt, which may be a significant outcome, in the context of high uncertainty and low domestic and international demand is the emergence of the so-called zombie firms, that is, enterprises that can only operate by continuing to issue debt. The banks that lend to these firms may not have the right incentives to recognize the firms' bankruptcy and may refinance their debts to avoid a deterioration of the banks' own balance sheets. The emergence of such a situation will affect recovery from the crisis, as has been observed in Japan since the 1990s.

The package of fiscal measures implemented during the crisis could also increase the levels of sovereign debt, raising the risk of debt overhang at the sovereign level. When public debt increases to destabilizing (or unwanted) levels, governments need to consolidate fiscal policies—increase taxes, reduce spending, or in the case of nominal debt, generate inflation to reduce its real value. In the context of low demand and underutilization of production factors, it is unlikely that inflation would erode these debts in the near future, which implies that households and firms should expect a reduction in spending or tax increases, measures that are likely to slow down recovery. Consequently, without fiscal and monetary space to boost the economy, sluggish recovery may lead to regional stagnation in Asia, a situation again resembling the experience of the Japanese economy over the last decades.

It is important to highlight that even though this chapter focuses on nonfinancial corporate debt, the asset position of households and sovereigns are also key factors for macro stability and recovery after the COVID-19 crisis. Other chapters in this volume complement the analysis of this chapter, such as Chapter 8 on the current situation regarding households' debt in Asia, Chapter 10 and Chapter 9 on the analysis of sovereign debt and more generally the role of fiscal policy, and Chapter 2 which focuses on Japan.

In the remainder of this chapter, we review the main drivers of the 1997 Asian financial crisis and the ensuing policy responses in section 2. Section 3 describes the Asian experience during the GFC that started in 2008. Section 4 presents the model we estimate to study the relationship between nonfinancial corporate debt and the macroeconomic performance of Asian economies. Section 5 uses the findings of the VAR model to forecast the plausible dynamics during the COVID-19 pandemic and highlights the challenges Asian economies are likely to experience once the crisis is over. Finally, section 6 presents a few concluding remarks.

2. THE ASIAN FINANCIAL CRISIS

This section reviews the main features of the economic environment in Southeast Asia before the Asian financial crisis, followed by a discussion of the recovery from the crisis and the

policy lessons to be drawn. It then describes the economic environment of sample economies before the GFC.

2.1 Asian Economies Before the Financial Crisis

Before 1997, Southeast Asian economies had successfully attained output growth, macroeconomic stability, high investment and savings rates, in addition to the development of private sector businesses. Their economic performance was usually classified as “miraculous”. Page (1994) describes the main features of the East Asian miracle: (1) East Asian economies experienced rapid and sustained growth for over 30 years since the 1960s; (2) total factor productivity and physical and human capital grew faster than in other economies with similar degree of development; and (3) good economic policies in these economies led to a stable macroeconomic performance and incentivized export-led growth. The consensus in the profession at that time was that the 1997 crisis was unexpected. It was, however, associated with the evolution of private sector financial choices during the boom.

2.2 The 1997 Asian Financial Crisis

Ex post, several authors identified the risks that had been growing in Asian economies but were hidden during the expansive part of the cycle. Many of these risks were associated with the behavior of corporations and the regulatory frameworks; see for instance Carson and Clark (2013). Multilateral institutions such as the International Monetary Fund (IMF) found that the crisis was due to a combination of macroeconomic imbalances, external dynamics, and weak financial and corporate sectors (IMF 1998; 2000).

Corsetti et al. (1998) identified the macro- and microeconomic drivers of the crisis. During the expansion, governments in the region contributed to boosting growth by providing public guarantees to private investment projects, which, combined with poor regulatory frameworks (and being unable to control the moral hazard), ended in overinvestment that was largely financed by the issuance of external debt in foreign currency at short maturities. The combination of these factors increased the vulnerability of economies.

Firms' indebtedness caused a deterioration in macroeconomic performance in two ways. First, it led to external fragility through the accumulation of persistent current account deficits and excessive international bank borrowing in foreign currency (inappropriately hedged short-term debt). Second, the profitability of investment eventually started to decrease: for instance, Corsetti et al. (1998) found low return on invested capital in 1996 (particularly of important chaebols in the Republic of Korea). By the mid-1990s, East Asian economies were exposed to expectation reversals due to the factors described earlier: inefficient investment financed with short-term debt in foreign currency. In this context, the dollar appreciated against the Japanese yen in 1995, and considering that several Asian economies had their currency pegged against the dollar, this represented a major competitive loss for Southeast Asian economies.

By mid-1997, there was a strong perception that the currency pegs were unsustainable due to current account imbalances. Thailand's devaluation of its currency initiated a crisis that spread to the Republic of Korea; Hong Kong, China; Malaysia; the Philippines; Indonesia; and Japan. According to Corsetti et al. (1998), corporate and financial firms were hit by the

subsequent stock market crash and decline in real estate prices, increasing private default rates. This sequence of events increased economic uncertainty, which ultimately fueled the sudden stop in capital flows, pushing the collapse of currencies in the region.

The economies began to stabilize during 1998, although not all at the same pace. The Republic of Korea's recovery was robust by 1999, while Indonesia in the course of social and political distress resumed growth by the end of that year.

2.3 Institutional Changes After the Crisis

According to IMF (2000) the strategies to restore confidence had to be based on (1) monetary policy measures to avoid exchange rate overshooting as this would weaken the balance sheet of financial intermediaries; (2) restructuring and recapitalization of the financial sector; (3) improving governance, transparency and accountability; and (4) designing fiscal policy reform to face the costs of recapitalizing the banks. The IMF and the international community provided financial support to implement such reform programs, which involved substantial changes in the economies' institutional and legal frameworks.

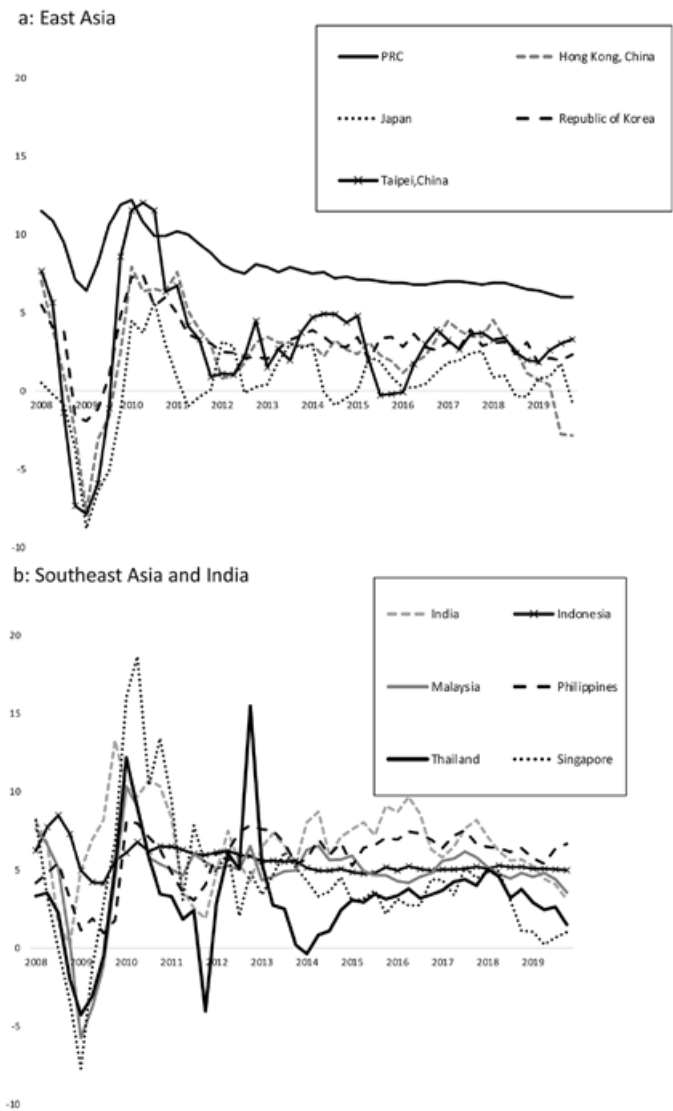
After the crisis there was a transitory tightness of monetary policy to avoid a collapse of exchange rates and further weakening of the balance sheets of corporations and banks. This was combined with fiscal austerity to cover the costs of financial reforms, which was quickly relaxed to compensate for the impact of the crisis on private demand.

As highlighted by IMF (2000), the financial reforms included the closure or recapitalization of financial institutions and improvements in regulations and monitoring activities of central banks. For instance, Thailand reformed bankruptcy and foreclosure laws and procedures, which included government intervention and rapid privatization of weak banks. The Republic of Korea's structural reforms focused on providing liquidity to the financial sector, recapitalizing banks and closing nonviable firms; improving prudential regulation; and liberalizing the capital account. Indonesia reformed its banking sector and at the same time restructured its corporate sector. The government introduced a bankruptcy system and a process of privatization. Similarly, Malaysia and the Philippines implemented policies to strengthen banks' balance sheets thereby supporting currency stability. Together with these policies, the measures slowly made progress toward restructuring the corporate debt.

3. RECENT FINANCIAL TRENDS IN ASIA: GLOBAL FINANCIAL CRISIS

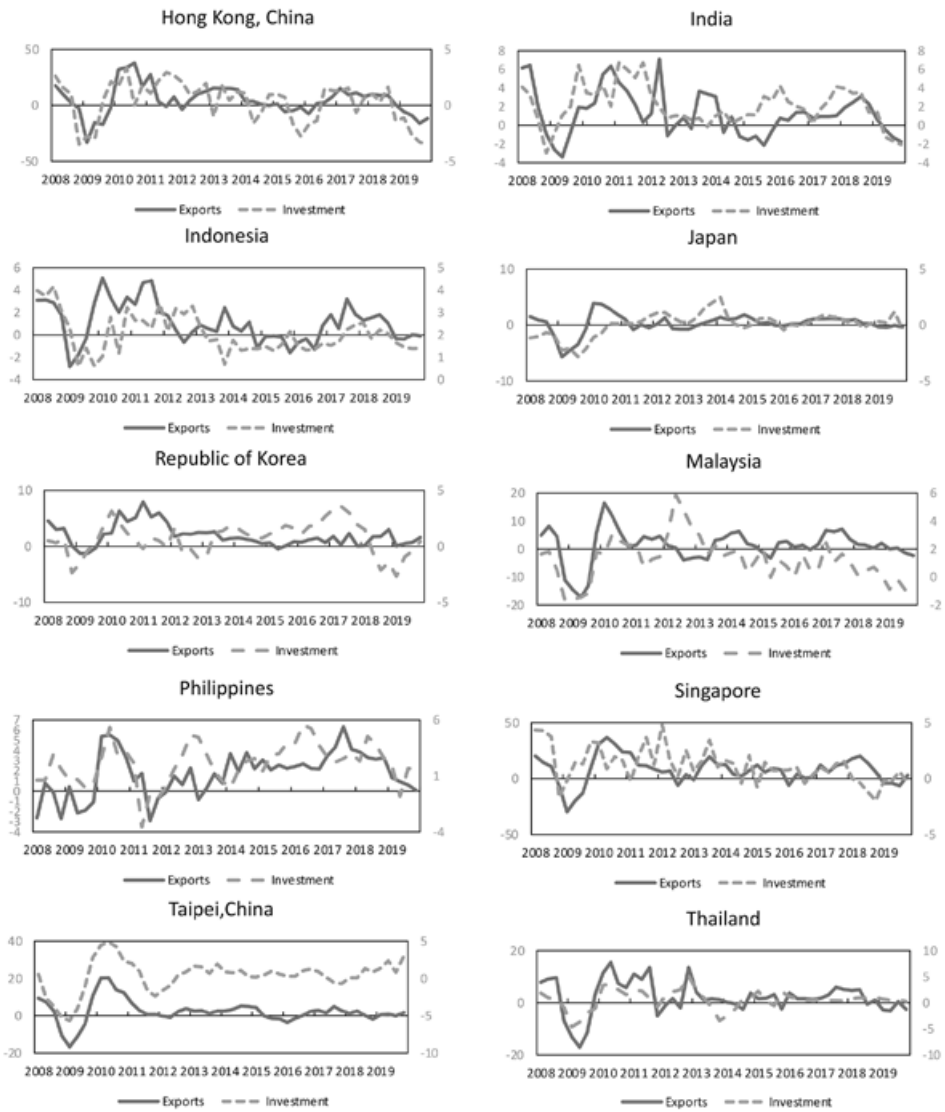
The first signs of the GFC in Asia emerged in the form of reduced global financing, with net equity inflows becoming negative and bond financing reduced to about one-quarter of pre-crisis levels, that is, the crisis started with a flight to quality from emerging to developed economies. In reality, the crisis had a negative impact on aggregate demand, reducing Asian exports worldwide and in trade within Asia.

However, Asia was resilient and more prepared for the GFC (see Park et al. 2013). After the Asian financial crisis, economies accumulated global reserves, contributing to macro stability and avoiding large swings of exchange rates. Yet there was some degrees of financial stress in private markets (in banks and stock markets, together with drops in corporate profits) and delayed increase in unemployment, affecting mostly small and medium-sized enterprises.



Notes:
PRC = People's Republic of China.
Year-on-year output growth in percentage terms.
Source: Asian Development Bank, Asia Regional Integration Center.

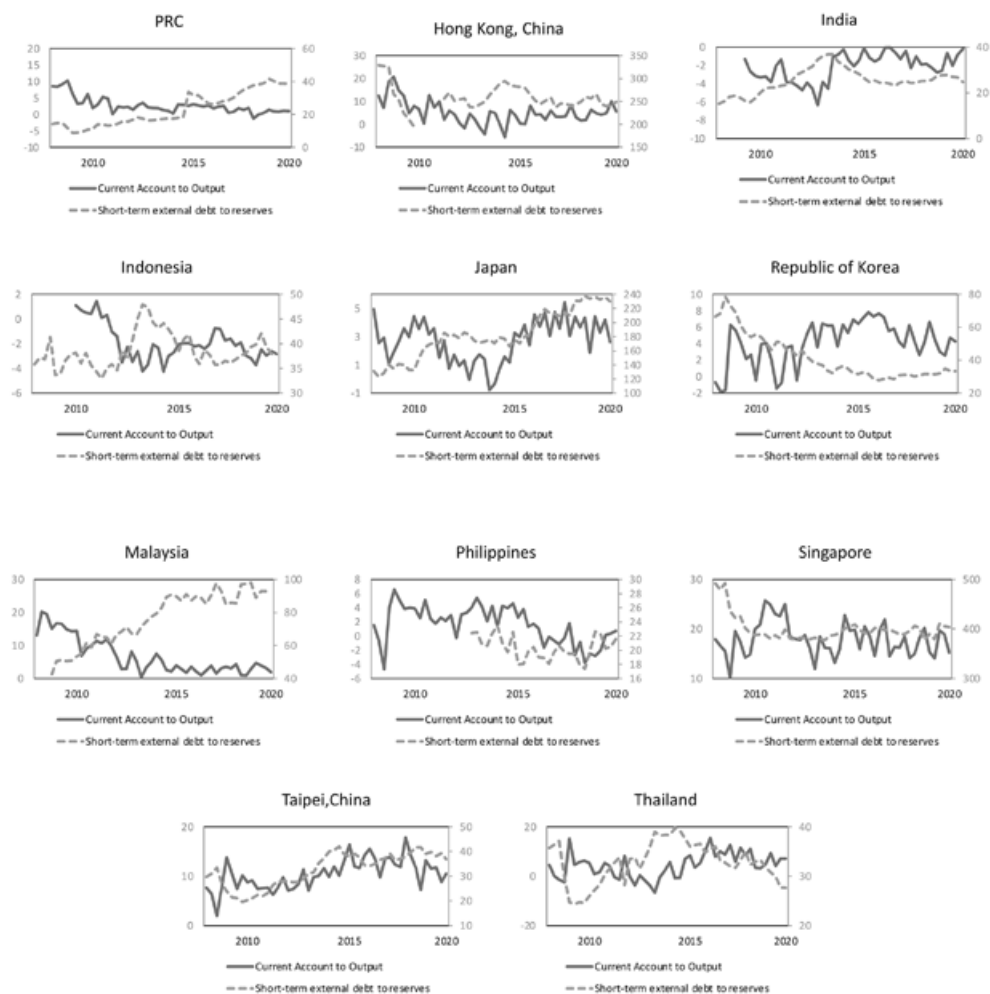
Figure 7.1 Output growth (%)



Note: Contribution of exports and investment to growth in percentage terms.

Source: Asian Development Bank, Asia Regional Integration Center.

Figure 7.2 Contribution to growth (%)



Notes:

PRC = People's Republic of China.

Current account-to-output ratio and short-term external debt to reserves in percentage terms.

Source: Asian Development Bank, Asia Regional Integration Center.

Figure 7.3 Financial fragility indicators (%)

Nevertheless, the contagion (and resolution) of the GFC was very fast. Large Asian economies managed to exploit domestic demand but the small and emerging Asian economies suffered large drops in foreign demand. Lee and Park (2009) attributed the limited impact of the GFC on Asia to (a) the limited exposure of these economies to mortgage-related assets in the US; (b) the good balance sheets and liquidity cushions of banks—the predominant operators in financial intermediation in this region—which were restored after the Asian crisis; and

(c) the region's deeper financial sectors and rising equity and bonds markets compared with the 1997/1998 crisis.

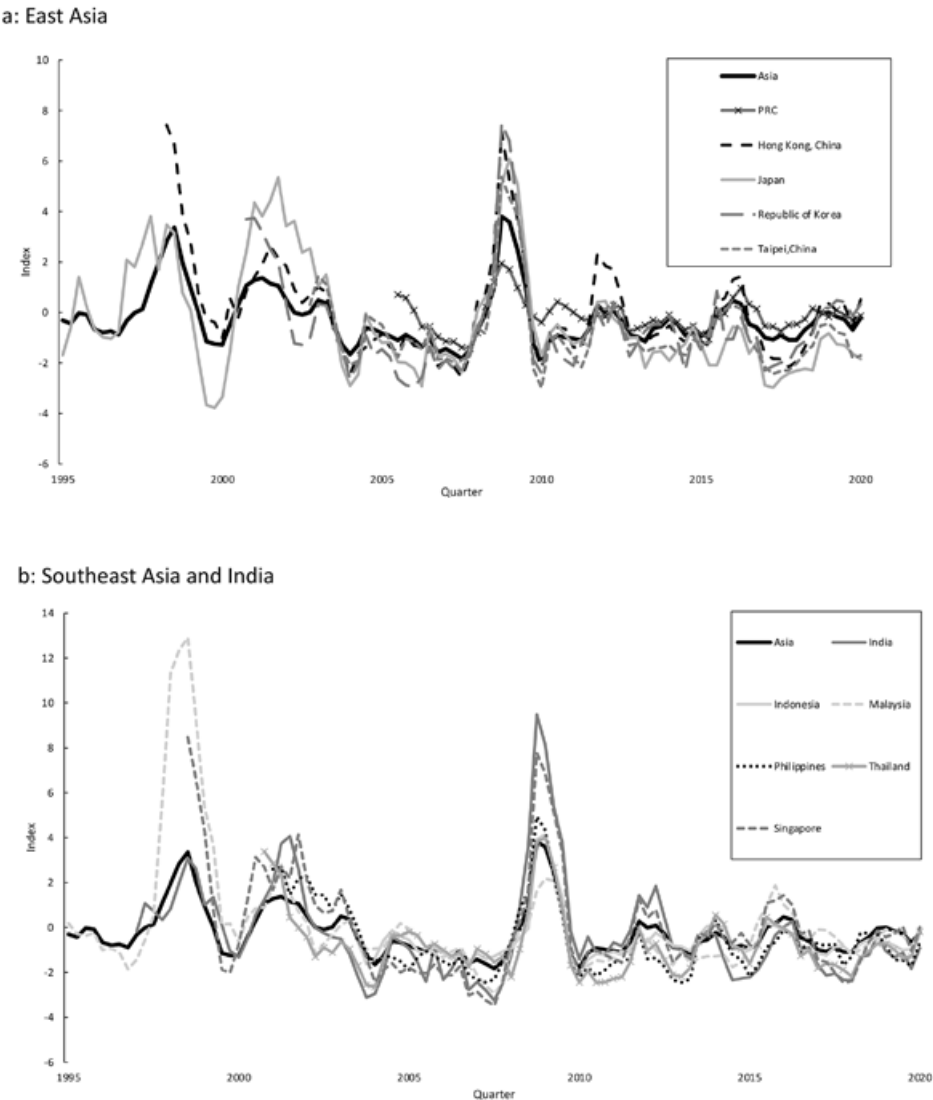
Nevertheless, the GFC was not innocuous in Asia, as highlighted by the former IMF Deputy Managing Director Takatoshi Kato in his 12 May 2009 speech. Figure 7.1 shows that Asian economies experienced large negative output growth (or slowdown) during 2008 and 2009 and a strong rebound during 2010–2012. Since 2018, output growth seems to be slowing down even further, which can potentially imply a weak position to face the current crisis derived from the spread of COVID-19, particularly for the PRC; India; the Republic of Korea; Singapore; and Hong Kong, China.

The contribution of demand to output growth provides insights into the drivers of the recession and economic slowdown after 2008. The contribution of investment to growth was very volatile and it did not seem to be a driver of growth in the sample, except for Singapore and the Republic of Korea in 2012 (Figure 7.2). In his 2009 speech, Kato pointed out that the whole domestic demand shared this pattern. Exports seemed to contribute negatively to growth in these economies. As investment and exports are not strong drivers of the growth, there may not be good reasons to expect export-led growth in the future, which can be an issue in the case of debt overhang. These variables were affected during the 2008 crisis and, currently, after 2018, they seem to be slowing down output growth in all the economies.

The recent dynamics of the ratio of nonperforming loans and the profitability of the financial sector show mixed results with regard to the evolution of nonfinancial corporate debt and its impact on financial stability. Data from the Bank for International Settlements show a fall of nonperforming loans since the GFC. In Malaysia, the Philippines, and Thailand, nonperforming loans fell from around 6 percent, 4 percent, and 7 percent, respectively, to around 2 percent. In the PRC, India, and Indonesia, there was instead an increase in the rate of nonperforming loans. Rosenkranz and Lee (2019) also studied the rise in nonperforming loans in some Asian economies. Related to the performance of banks, even though bank asset returns are relatively stable in the sample, equity returns are large but decreasing. In turn, capital adequacy ratios are mostly increasing except in Singapore and the Philippines, where this variable is fairly stable. This measure gives a sense of the increases in risk exposure of financial intermediaries.

On top of the evolving vulnerability of the financial sector, current account surpluses have been falling since 2015, particularly for Indonesia, Malaysia, the Philippines, and the PRC (Figure 7.3). This evidence, combined with the large exposure of short-term debt as a share of foreign reserves, should be considered seriously to assess the degree of financial fragility. The average short-term debt to foreign reserves for all economies seems to be around 50 percent, but in some cases such as Hong Kong, China; Malaysia; and Japan, this ratio is more than 100 percent and, in most cases, it is increasing. In this context, many economies in the region seem to be exposed to a sudden stop in foreign capital flows risk.

To provide a summary of financial vulnerability, the Asian Development Bank (ADB) calculates the financial stress index. This index measures the degree of financial stress with a focus on banks, foreign exchange rates, equity, and bond markets. Park and Mercado (2014) include details about the construction of the index. The Asian crisis in 1997/1998 and the GFC in 2008 represented a strong deterioration of this index (Figure 7.4). Currently, the index seems to have stabilized at a lower level. However, it is important to highlight that in most cases, there seems to be an increase in the degree of financial stress from 2018 onward, which is in line with the slowing down of the economies described above.

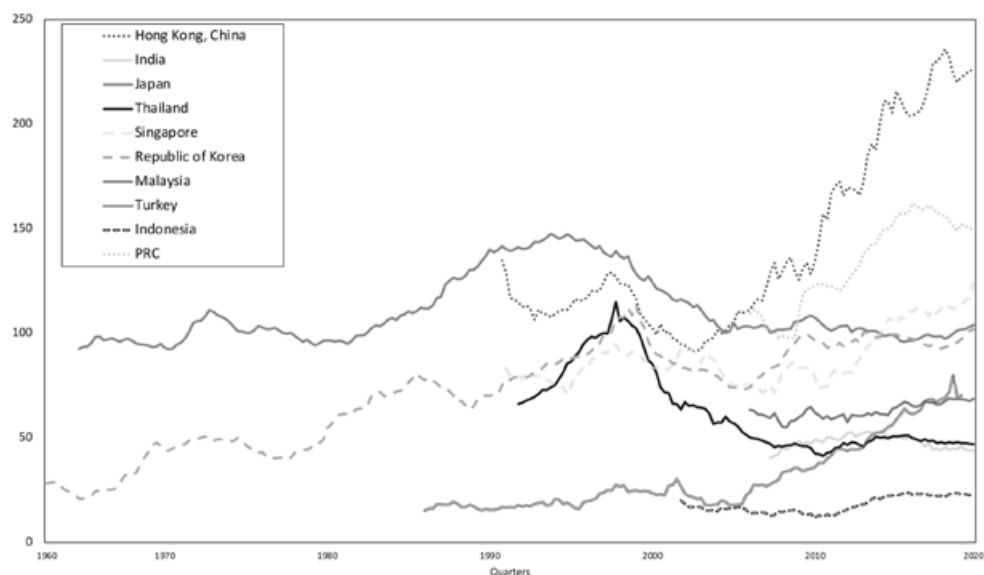


Notes:
PRC = People's Republic of China.
Year-on-year output growth in percentage terms.
Source: Asian Development Bank, Asia Regional Integration Center.

Figure 7.4 Financial stress index for Asian economies

After the deleveraging that followed the 1997 Asian crisis, corporate debt increased, particularly after the GFC, in the PRC; Hong Kong, China; Singapore; Malaysia; the Republic of Korea; and Indonesia, reaching around 100 percent of gross domestic product (GDP) or more

(Figure 7.5). The current levels are in some cases comparable to the 1997/1998 levels while larger in others, such as in Hong Kong, China.



Notes:

GDP = gross domestic product; PRC = People's Republic of China.

Nonfinancial corporate debt-to-output ratio in percentage terms.

Source: Bank for International Settlements.

Figure 7.5 Nonfinancial corporate debt-to-output ratio (%)

It is instructive to compare the policy response of Asian economies with the GFC and the Asian financial crisis. Asia faced a sharp deterioration in demand from developed economies during the GFC. This shock was absent during the 1997 crisis when external demand contributed to the recovery. On the other hand, currencies depreciated against the US dollar, and there was an expansive fiscal stimulus larger than that in the average G20 economy.

Comparing both crises, the key difference was the fiscal and monetary space and the stronger balance sheets of the private sector. While during the 1997 crisis governments had to implement fiscal austerity and contractionary monetary policy to avoid capital flight and an even further depreciation of the currency, during the 2008 crisis, the Asian economies were in better shape and had major fiscal and monetary space to implement countercyclical policies that accelerated the recovery. As the Asian crisis was local, the recovery came through the export sector, but the international goods market did not help to the same extent after 2008.

4. EMPIRICAL ANALYSIS

The previous section suggests that during the 1997 crisis the private sector played a destabilizing role due to overaccumulation of short-term debt denominated in foreign currency, while in 2008 and 2012, the crises started in developed economies with the balance sheets of the private

sector stronger than before. The situation was somewhat different in 2019. The economies that had been in good shape after the GFC, with strong recovery, seem to be experiencing some vulnerability in terms of domestic financial sector and foreign exposure to capital flow reversals. Although not all economies are alike, the corporate sector in many Asian economies increased their debt stocks substantially after 2010. Moreover, the COVID-19 crisis affected both domestic and world demand.

In this section, we estimate a separate VAR model for the PRC; Hong Kong, China; India; Indonesia; Japan; the Republic of Korea; Malaysia; Thailand; and Singapore over the 1990–2019 period, to study the relationship between corporate debt, financial vulnerability, and macroeconomic fundamentals. We consider three main questions: (a) how do nonfinancial corporate debt, financial fragility, and output growth interact?; (b) how do international factors affect the dynamics of corporate debt?; and (c) how strong is the economic environment in the current crisis?

For each economy, we postulate a model:

$$y_t = A_1 y_{t-1} + \dots + A_4 y_{t-4} + Cx_t + \varepsilon_t$$

where $t = 1, \dots, T$. The matrices A_i are unknown coefficients of the reduced form VAR, and ε_t is a vector of reduced form shocks that is assumed to be normally distributed with mean zero and unknown variance–covariance matrix Σ and non-autocorrelated. The vector of x_t includes the exogenous variables, constant and trends, and y_t includes all endogenous variables. The models include five endogenous variables: output growth (in percent), current account-to-output ratio (in percent), nonfinancial corporate debt-to-output ratio (in percent), the annual change in external reserves to output ratio (in percent), and the financial stress index. We include two exogenous variables: the three months' T-bill rate, whose evolution may be important, to assess the search for yield behavior in international asset markets that occurred after the GFC; and the VIX from the Federal Reserve Economic Data (FRED) from the St. Louis Fed that measures the degree of international financial markets' volatility as well as being an indicator of financial crisis. We include a linear trend and a constant. The data, at quarterly frequency, are seasonally adjusted before estimation if we observe evidence of a seasonal component. We include four lags for the endogenous variables. Our data sources include the Asia Regional Integration Center database from ADB, the International Financial Statistics database from the IMF, the Organisation for Economic Co-operation, and FRED from the St Louis Fed. Appendix 7.1 presents details on the data treatment.

The choice of variables is motivated by the experiences described in the previous sections, including those that have been closely interrelated in these economies over the last 30 years. Output growth measures the macroeconomic performance, the current account-to-output ratio measures the risk of external exposure, and the external reserves-to-output ratio was at the core of macroprudential policies implemented by Asia after 1997. Our variable of interest is the nonfinancial corporate debt-to-output ratio. Also, given that these economies are among the most open economies in the world, we include two variables that summarize the world macroeconomic and financial environment: the risk-free rate measured by the T-bill rate and the VIX.

We use the financial stress index to proxy the degree of financial fragility. This variable is constructed by Park and Mercado (2014) and is available at ADB's Asian Regional Integration Center. The index is constructed using information from four financial sectors: the banking sector, stock market, sovereign debt market and foreign exchange rate market. It is designed to capture episodes of financial stress in line with Balakrishnan et al. (2011), where the financial system fails in its role of intermediation among agents. In particular, the measure of stress for the different sectors is represented as follows: (1) in the banking sector by comparing information about bank equity return volatility with the volatility of stocks, in which the banks become a source of financial stress when they are relatively riskier than stocks; (2) in the stock market, the index includes stress from equity returns and from the volatility of those returns computed using a GARCH(1,1); (3) in the sovereign debt market by measuring sovereign yields for long-term bonds; and (4) in the exchange rate markets by measuring the exchange rate depreciations with respect to the US dollar and the change in the level of foreign exchange reserves.²

4.1 Overview of the VAR Results

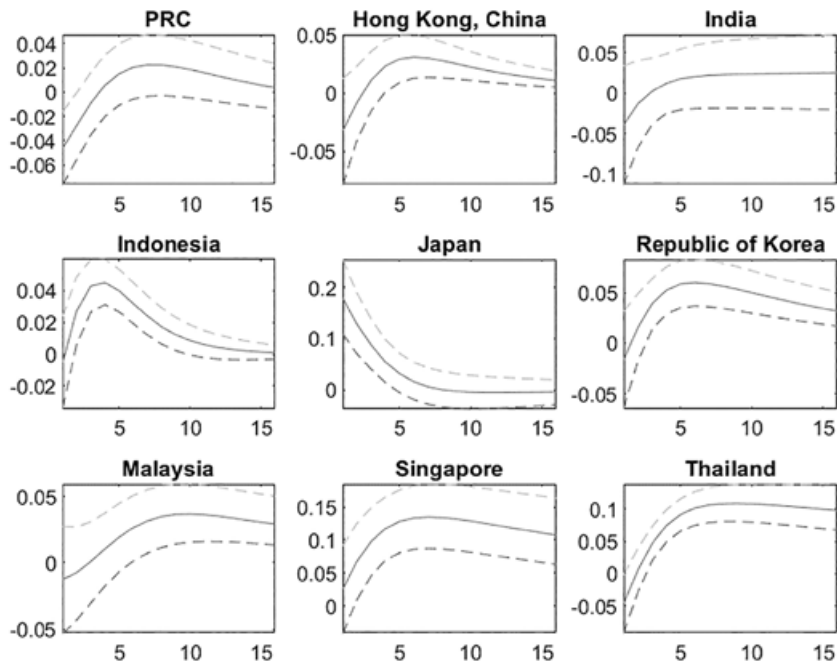
We base our VAR analysis on impulse response functions, which allows us to quantify the importance of shocks (from endogenous and exogenous variables) and analyze the way transmission channels work; and on historical variance decomposition, which analyzes the contribution of structural shocks to the evolution of financial fragility since the 1997 crisis. We focus on the role of corporate debt and its impact on macroeconomic variables and the degree of financial fragility at the country level.

Before moving to the main part of the analysis, we highlight a few additional findings that are robust in the sample.

Regarding the role of exogenous variables, we find that including the VIX and T-bill matters. Increases in the VIX and the T-bill tend to have negative effects on the macroeconomic variables, inducing negative growth, declining external reserves, and increasing the financial stress index. Moreover, they tend to reduce the firm's borrowing by increasing borrowing costs and increasing financial stress. In the cases of Japan and the Republic of Korea, even though the results are similar to the other economies in terms of growth and the financial stress index, the T-bill and VIX increase debt-to-output ratios (which does not necessarily imply that firms issue more debt; they may reflect a larger output drop).

4.2 The Effect of Private Debt Shocks

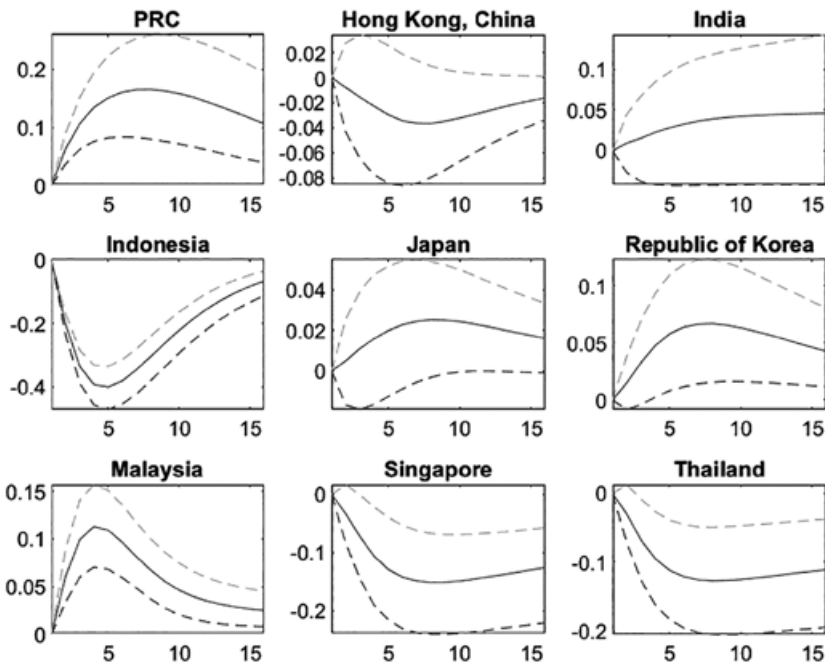
Figure 7.6 shows the impulse response functions of endogenous variables to a unitary shock to the nonfinancial corporate debt-to-output ratio for each economy.



Notes:
PRC = People's Republic of China.
The figures present the posterior median impulse responses together with the 68% credible set (1 standard deviation) in dashed lines. Impulse response function of the financial stress index to an $\varepsilon_{cd}^s = 1$ that denotes the structural innovation to the nonfinancial corporations' debt-to-output ratio.
Source: Author's elaboration.

Figure 7.6 *Response of financial stress index to a nonfinancial corporation's debt-to-output ratio*

As seen in the figure, in most of the cases an increase in the nonfinancial corporate debt-to-output ratio tends to increase the degree of financial fragility measured by the financial stress index. In the cases of Japan and Singapore, the increase is on impact, while in the other cases the initial impact is small or negative but makes the economy financially fragile on a 5- to 10-quarter horizon. The dynamic after an increase of corporate debt is heterogeneous. In the cases of the PRC, the Republic of Korea, Japan, and Malaysia, when corporate debt-to-output ratio increases, output growth accelerates, and the change in global reserves to output tends to fall (Figures 7.7 and 7.8). Intuitively, an increase in nonfinancial corporate debt-to-output ratio has two effects, which may operate in different directions with respect to its impact on financial stability. First, if the increase in debt-to-output ratio is used to finance investments, successful investments contribute to the repayment of the debt, so in this case, there is no reason to expect a deterioration of financial conditions. On the other hand, higher debt level causes the firms' balance sheets to deteriorate, potentially increasing the investors' perception of risk in the context of risky investments. In the medium term, according to the figures the second channel tends to dominate.



Notes:

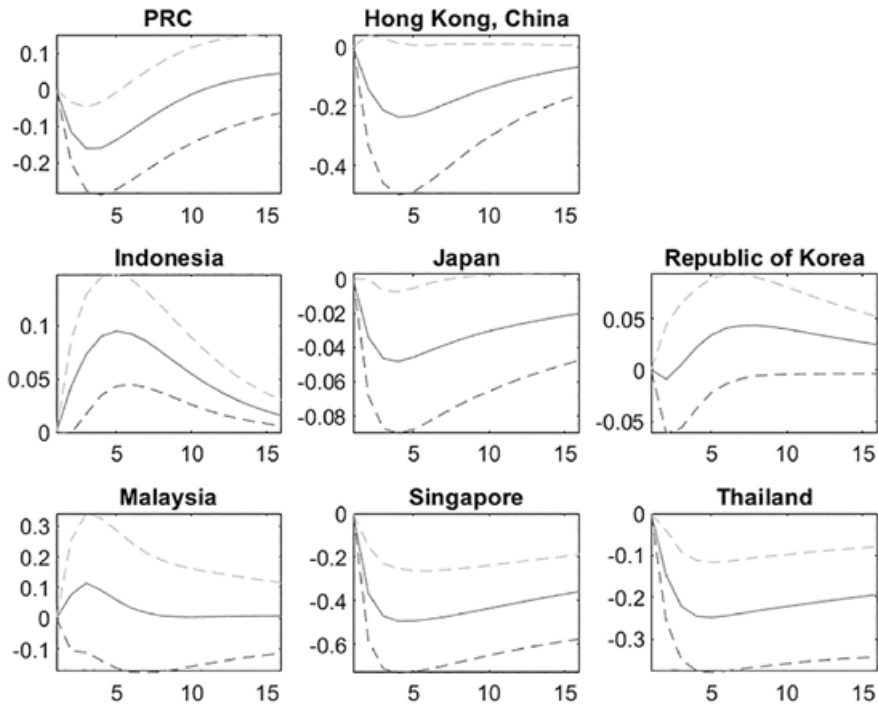
PRC = People's Republic of China.

The figures present the posterior median impulse responses together with the 68% credible set (1 standard deviation) in dashed lines. Impulse response function of output growth to an $\varepsilon_{cd}^s = 1$ that denotes the structural innovation of the nonfinancial corporations' debt-to-output ratio.

Source: Author's elaboration.

Figure 7.7 Response of output growth to a nonfinancial corporation's debt-to-output ratio shock

In the remaining cases, in contrast, debt increases tend to reduce output growth and reserves-to-output ratio. These dynamics contribute to financial deterioration.



Note:

PRC = People's Republic of China.

The figures present the posterior median impulse responses together with the 68% credible set (1 standard deviation)

in dashed lines. Impulse response function of a change in reserves-to-output ratio to an $\varepsilon_{cd}^s = 1$ that denotes the structural shock of the nonfinancial corporations' debt-to-output ratio.

Source: Author's elaboration.

Figure 7.8 Response of a change in reserves to output ratio to a nonfinancial corporation's debt-to-output ratio shock

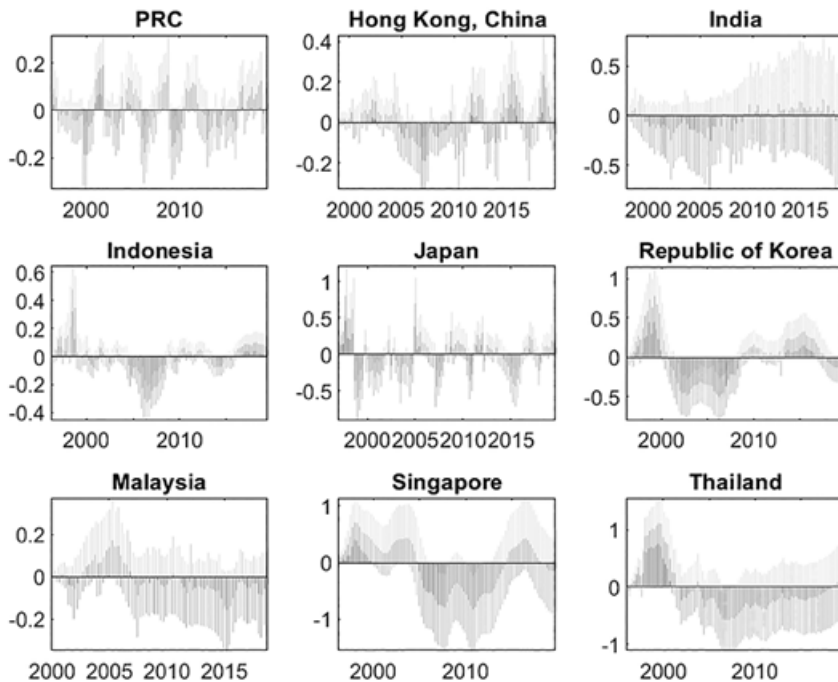
4.3 Private Debt and Financial Stress

We find that shocks to the level of corporate debt tend to increase financial stress, even though they have a less clear impact on the economy. Not all debt reduces output growth as corporations issue debt to finance investment which, if successful, is expected to have a positive impact on output. This section studies the extent to which the degree of financial vulnerability can be explained by private debt accumulation from 1995 to 2019, using a historical variance decomposition, a tool that allows us to assess the importance of corporate debt shocks at every point in time.

Figure 7.9 presents the contribution of the ratio of nonfinancial corporate debt to output shocks to the variability of the financial stress index. The vertical axis depicts the part of financial stress index variation that can be attributed to the ratio of nonfinancial corporate debt to output shocks, with positive bars indicating that corporate debt increases the financial

stress index and negative bars indicating that it contributes to a reduction of the financial stress index. It is important to point out that there is not much information we can draw from India and Malaysia as the credible sets always include zero, suggesting there is a high degree of uncertainty around those estimates.

For those cases in which we have data before 1997, part of the increase in financial stress is explained by the high debt-to-output ratios of corporations. This is particularly clear for Indonesia, Japan, the Republic of Korea, Singapore, and Thailand. After the 1997 crisis the correction in the debt-to-output ratios of the firms contributed to economic stability in financial terms, explaining part of the fall in the financial stress index observed before the GFC.



Note: PRC = People's Republic of China.

Source: Author's elaboration.

Figure 7.9 *Variability of financial stress generated by nonfinancial corporate debt-to-output ratio shocks*

The increase in the financial stress index following the 2007 crisis seems to be detached from the evolution of the firms' debt-to-output ratios. In other words, the firms' indebtedness did not play a major role in the increase in financial fragility during the GFC. After 2018, the financial stress of the economies increased. Even though there is mixed evidence, we can see that the firms' debt seems to explain part of the deterioration in the cases of the PRC; Indonesia; Japan; and Hong Kong, China. That is, the private debt-to-output ratio does not

seem to have had a generalized impact on the financial stability of all economies, but it seems to be a problem for some of the most important economies in the region.

5. THE COVID-19 CRISIS

The current crisis differs from the 1997 and 2009 crises. The fundamentals in 1997 were weaker, the pre-crisis exuberance strong and the economies less flexible. In contrast, the business and banking sectors in 2009 were more resilient, balance sheets were stronger, the regulatory frameworks better suited to face the financial crisis, and the level of external reserves of these economies put them in a much better position.

The COVID-19 crisis seems to be somewhat in between. A negative effect of the GFC was the search for yield that boosted the firms' financing. The level of corporate debt is currently larger than during the earlier crises, making economies more vulnerable. The degree of uncertainty is comparable to that brought by the 1997 crisis but the fundamentals are stronger.

To examine the role of corporate debt in the COVID-19 crisis, we compare the results of conditional versus unconditional forecasts. First, we simulate an evolution of exogenous variables of a similar order to the data in 2020, assuming the current situation lasts until the first quarter (Q1) of 2021, that is, an initial increase in VIX (assuming that it is 40 in Q4 2019, 80 in Q1 2020, and 30 from Q2 2020 onward) and a drop in T-bill rates from 1.5 percent in Q4 2019 to 0.1 percent from Q1 2020 onward. We compare two scenarios: one in which we do not impose assumptions to the trajectory of private debt-to-output ratio, and one in which we assume a strong increase in private debt-to-output ratio to 200 percent, 210 percent and 220 percent from Q4 2019 to Q2 2020. Due to space limitations and given the size and the importance for the region, we focus on the case of the PRC.

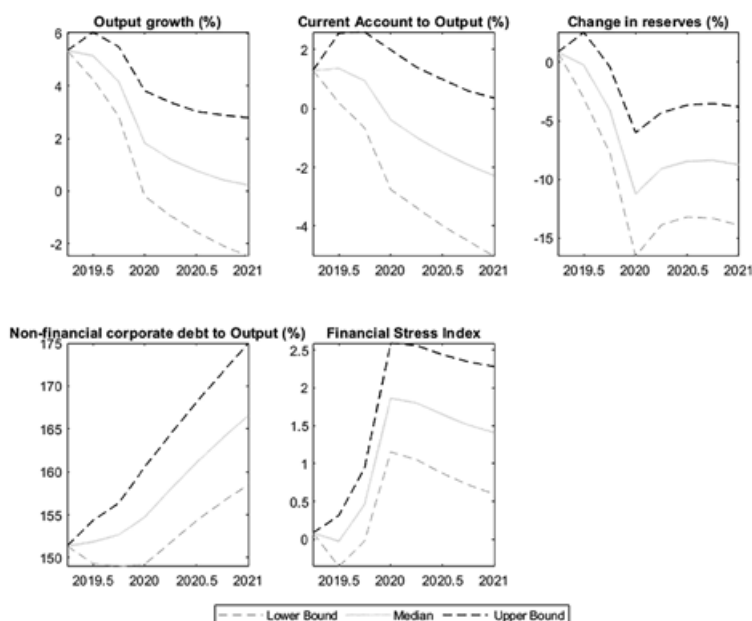
Figure 7.10 presents the unconditional forecast. The crisis, modeled as an increase in VIX and a drop in T-bill, is expected to generate an increase in the debt-to-output ratio of nonfinancial corporations and an increase in financial fragility, a drop in reserves, and slowdown in output growth. Figure 7.11 plots the scenario for an economy in which debt increases faster to 200 percent of output.

Overaccumulation of debt has increased financial fragility and in a more persistent way to the unconditional forecast, driven the economy into a recession during 2020, and induced substantial deterioration of the current account, causing global reserve assets to decline.

5.1 Policy Analysis

We also examine the role of macroprudential policies in this context. Our base model does not include policy variables due to data availability limitations (policy variables are available from Q1 2000 to Q4 2016). We construct an alternative VAR for a subset of the variables including the regulatory loan-to-value ratio and a macroprudential database. Due to space limitations, we focus once more on the case of the PRC.

The model includes a variable that measures the tightening (or loosening) of macroprudential policies using dummy-type indexes, regulatory level of the loan-to-value ratio, output growth (in percent), nonfinancial corporate debt to output (in percent), and the financial stress index, in that order. We include the T-bill, VIX and the linear trend for exogenous variables as in the baseline model and identify the model using a Cholesky decomposition.



Source: Author's elaboration.

Figure 7.10 Unconditional forecast

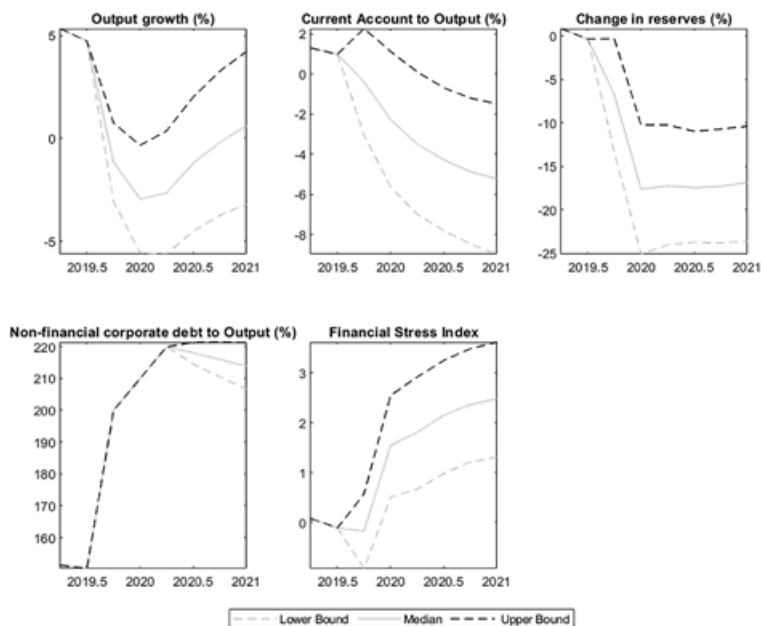
The database for the macroprudential policies is constructed in Alam et al. (2019) and provides two variables for measuring macroprudential policies: (1) the average regulatory limit on the loan-to-value ratio; and (2) the dummy index that takes a value of (+1) if a particular macroprudential instrument was tightened, (0) if it remained unchanged, and (−1) if it was loosened. They considered 17 instruments, and our variable that measures the change in macroprudential policies is the sum of these 17 dummy indexes.³

Figure 7.12 presents the median, upper and lower bounds of the estimates of the historical variance decomposition for the nonfinancial corporate debt-to-output ratio and the financial stress index using a variant of the model that includes policy variables. These include the change in macroprudential stance (MAPP), regulatory average loan-to-value ratio, output growth, nonfinancial corporate debt-to-output ratio (NFCD/Y), and financial stress index (FSI). Part of the below-trend behavior of both corporate debt and FSI between 2012 and 2015 is explained by both changes in the loan-to-value ratio and the macroprudential dummy indexes.

These findings suggest that macroprudential policies in the PRC seem to be effective for controlling private indebtedness and financial stress in the post-GFC period.

6. DISCUSSION AND POLICY REMARKS

This chapter has studied the interaction between nonfinancial corporate debt, output growth and financial fragility in Asia over the last 30 years. We find that corporate private debt played a role in explaining financial stress during the 1997 crisis, but not during the 2007 GFC.



Source: Author's elaboration.

Figure 7.11 Conditional forecast to large private debt-to-output ratio increase

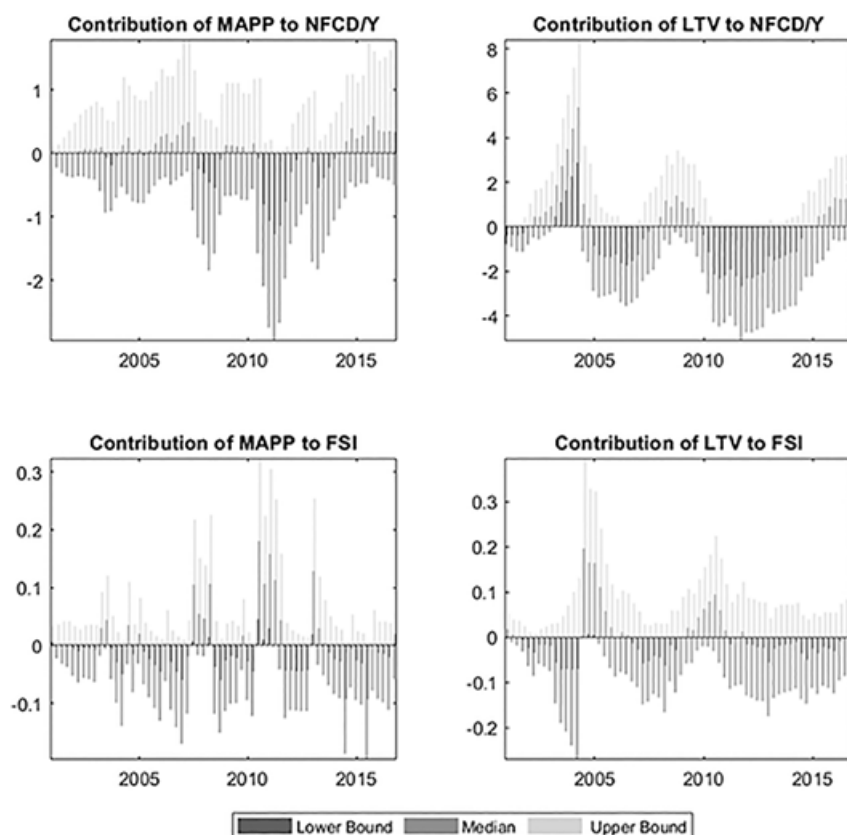
Lately, presumably as a consequence of large liquidity provision and a search for yield behavior in international markets, the private debt levels-to-output ratio has been increasing in Asian economies, positively contributing to an increase in financial stress.

The results of the forecasting exercise for the PRC suggest that the current crisis will lead to an accumulation of private debt, which in turn can have a dramatic impact on the economy. A major concern in this case is the possible emergence of zombie firms and the limits this situation will impose on fiscal responses and the behavior of international capital. In sum, the challenges of the COVID-19 crisis can be related to the following three issues: the emergence of zombie firms, the impact of countercyclical fiscal policies, and the reversal of capital flows.

6.1 Zombie Firms

Persistent and unforecastable lockdowns may lower aggregate demand. While expecting a temporary crisis to loom, firms are likely to issue debt to finance operations while restrictions are in place. Lenders are likely to make credit lines available to these firms, while also expecting a temporary crisis. Hence, the COVID-19 crisis may increase firms' debt and the risk of zombie firms, that is, those that cannot service their debt using their own profits for several periods.

Highly indebted firms face many problems. Banerjee and Hofmann (2018) find, using firm-level data from 14 developed economies, that these firms cause economic performance to deteriorate. Additionally, they tend to decrease their investment more than other firms



Note: Variables: Change in macroprudential stance (MAPP); regulatory average loan-to-value ratio (LTV); output growth (YGSA); nonfinancial corporate debt-to-output ratio (NFCD/Y); and financial stress index (FSI).
Source: Author's elaboration.

Figure 7.12 Historical decomposition of NFCD/Y and FSI

after a crisis (Kalemli-Ozcan et al. 2018). Ahearne and Shinada (2005) showed that zombie firms in Japan have contributed to weak economic performance and low dynamism over the last decades. Industries with a higher concentration of zombie firms tend to experience lower productivity growth than the other industries, and reallocation of market shares in industries with zombie firms tend to operate in the wrong direction, that is, these firms hinder productive firms from increasing their market share.

Andrews and Petroulakis (2019) found that zombie firms in Europe tend to borrow from unhealthy banks, crowd out credit to productive firms, and have a negative effect on productivity and capital allocation. In turn, banks keep lending to these firms in order to avoid recognizing nonperforming loans and facing losses on their balance sheets. This relates to regulation of the banking industry and particularly, as studied by Andrews and Petroulakis (2019), to the role of insolvency frameworks. In this regard, the authors find that it seems important to design frameworks that do not prevent corporate restructuring during insolvency regimes. This last

point was studied by Adalet McGowan and Andrews (2018), who found differences across European countries in corporate restructuring policies.

6.2 Fiscal Impact of Countercyclical Policies

The COVID-19 crisis is likely to be a transitory negative shock. Therefore, we should expect the government to implement countercyclical fiscal policies, as has indeed been the case in emerging and developed economies. Economies with more fiscal space, that is, low deficits and low debt, can run countercyclical policies to smooth the impact of the crisis on macroeconomic aggregates for longer periods.

A consequence of the crisis in these economies should translate into higher sovereign debts, potentially leading to a debt overhang situation that will necessitate fiscal consolidation in the future, which may slow down the recovery. Moreover, the risk of poorly forecasting the end of the crisis may lead economies to incur too much debt or respond inadequately to the crisis.

The firms' performance is likely to be affected by this situation because fiscal consolidation will potentially affect tax systems for firms and households and consequently affect domestic aggregate demand. Given that this situation is also relevant worldwide and in the region, the fiscal consolidation will potentially drag down the recovery even for economies that rely on external demand.

6.3 Flight to Quality, Search for Yields, and the Regulatory Framework

International capital flows are likely to flee from emerging Asian economies at the beginning of the crisis and return later if the interest rates of developed economies still remain low. This, in turn, introduces extra volatility and puts pressure on exchange rates, prices, and aggregate demand. Even though this may be an important driver of uncertainty, the large accumulation of external reserves is likely to make this problem less relevant for Asian economies compared with other emerging economies in Latin America. The design of financial market regulation should take into account the role of banks and nonbank financial intermediaries (shadow banks) as their share of private sector loans has been growing in recent years according to Bank for International Settlements data.⁴

6.4 Policy Remarks

We have seen that the risks brought by the current crisis are associated with the accumulation of large private (and sovereign) debt. This may lead some firms to default. Regarding nonperforming loans during the crisis, Rosenkranz and Lee (2019) suggest early resolution of these loans. In the context of the COVID-19 crisis, the early resolution of nonperforming loans will help contain the emergence of zombie firms.

We have shown that macroprudential policies can have substantial effects on the economy—lowering corporate debt and exposure to risks and controlling the degree of financial stress. These policies can help shield the economy against sudden capital inflows/outflows. In line with our findings, Kim (2019) studied the impact of macroprudential policies in Asia and found that tightening them had negative effects on output growth, comparable to a restrictive monetary policy. Where monetary policy space is limited, relaxing macroprudential policies

may help to smooth out the cycle in terms of output growth, albeit at the risk of financial fragility. This trade-off has to be taken into account to avoid exposing corporations and the entire financial system to excessive risk.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. Park and Mercado (2014) and the companion webpage at the Asian Development Bank, Asia Regional Integration Center. Asia Financial Stress Index: <https://aric.adb.org/database/fsi> provide details about the construction of the index.
3. The instruments considered in the database are: (1) bank requirements for countercyclical capital buffers; (2) bank requirements for capital conservation buffer; (3) capital requirements for banks; (4) bank leverage limits; (5) provisions for loan losses; (6) limits for the growth/volume of credit; (7) restrictions on loans; (8) limits on foreign currency lending; (9) limits on loan-to-value ratios; (10) limits on loans-to-income or loan repayment-to-income ratios; (11) taxes on some financial transactions with a macroprudential objective; (12) liquidity measures; (13) loan-to-deposit ratios; (14) limits on FX positions/exposures; (15) reserve requirements; (16) measures to mitigate risks of systemically important financial institutions (SIFI); and (17) other macroprudential policies not considered before.
4. I thank Maria Teresa Punzi for pointing out this feature of data pertaining to developing Asia and the Pacific.
5. See European Central Bank. The BEAR Toolbox: <https://www.ecb.europa.eu/pub/research/working-papers/html/bear-toolbox.en.html>.

REFERENCES

- Adalet McGowan, M. and D. Andrews. 2018. Design of Insolvency Regimes across Countries. *OECD Economics Department Working Papers*. No. 1504. Paris: OECD Publishing.
- Ahearne, A.G. and N. Shinada. 2005. Zombie Firms and Economic Stagnation in Japan. *International Economics and Economic Policy*. 2(4), pp. 363–81.
- Alam, Z., A. Alter, J. Eisman, G. Gelos, H. Kang, M. Narita, E. Nier and N. Wang. 2019. Digging Deeper – Evidence on the Effects of Macroprudential Policies from a New Database. *IMF Working Paper*. No. 19.66. Washington, DC: IMF.
- Andrews, D. and F. Petroulakis. 2019. Breaking the Shackles: Zombie Firms, Weak Banks and Depressed Restructuring in Europe. *ECB Working Paper*. No. 2240.
- Balakrishnan, R., S. Danninger, S. Elekdag and I. Tytell. 2011. The Transmission of Financial Stress from Advanced to Emerging Economies. *Emerging Markets Finance and Trade*. 47(sup2). pp. 40–68.
- Banerjee, R. and B. Hofmann. 2018. The Rise of Zombie Firms: Causes and Consequences. *BIS Quarterly Review*. September. pp. 67–78.
- Carson, M. and J. Clark. 2013. Asian Financial Crisis. Federal Reserve History Essay. Federal Reserve Bank of New York. Accessed at: https://www.federalreservehistory.org/essays/asian_financial_crisis.
- Corsetti, G., P. Pesenti and N. Roubini. 1998. What Caused the Asian Currency and Financial Crisis? Part I: A Macroeconomic Overview. *NBER Working Paper*. 6833. Cambridge, MA: National Bureau of Economic Research.
- International Monetary Staff (IMF). 1998. The Asian Crisis: Causes and Cures. *Finance and Development*. 35(2). Washington, DC. Accessed at: <https://www.imf.org/external/pubs/ft/fandd/1998/06/imfstaff.htm>.
- International Monetary Staff (IMF). 2000. Recovery from the Asian Crisis and the Role of the IMF. IMF Issues Brief. Accessed at: <https://www.imf.org/external/np/exr/ib/2000/062300.htm#I>.
- Kalemli-Ozcan, S., L. Laeven and D. Moreno. 2018. Debt Overhang, Rollover Risk, and Corporate Investment: Evidence from the European Crisis. *NBER Working Paper Series*. No. w24555. Cambridge, MA: National Bureau of Economic Research.

- Kim, S. 2019. Macroprudential Policy in Asian Economies. *ADB Economics Working Paper Series*. No. 577. Manila: Asian Development Bank (ADB).
- Lee, C.S. and C-Y. Park. 2009. Beyond the Crisis: Financial Regulatory Reform in Emerging East Asia. *ADB Working Paper Series on Regional Economic Integration*. No. 34. Manila: ADB.
- Rosenkranz, P. and J. Lee. 2019. Nonperforming Loans in Asia: Determinants and Macrofinancial Linkages. *ADB Working Paper*. No. 574. Manila: Asian Development Bank.
- Page, J. 1994. The East Asian Miracle: Four Lessons for Development Policy. *NBER Macroeconomics Annual*. 9. pp. 219–69.
- Park, C-Y. and R. Mercado, Jr. 2014. Determinants of Financial Stress in Emerging Market Economies. *Journal of Banking and Finance*. 45. pp. 199–224.
- Park, D., A. Ramayandi and K. Shin. 2013. Why Did Asian Countries Fare Better during the Global Financial Crisis than during the Asian Financial Crisis. In C. Rhee and A.S. Posen (eds), *Responding to Financial Crisis: Lessons from Asia Then, the United States and Europe Now*. pp. 103–139. Washington, DC: ADB / Peterson Institute for International Economics.

APPENDIX 7.1 DATA SOURCES

People's Republic of China: Second quarter (Q2) 1995–Q3 2019 variables included in the vector autoregression (VAR): output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the financial stress index (FSI).

Hong Kong, China: Q1 1998–Q4 2019 variables included in the VAR: output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

India: Q1 1997–Q4 2018 variables included in the VAR: output growth, current account-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

Indonesia: Q2 1995–Q3 2019 variables included in the VAR: output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

Japan: Q1 1996–Q4 2019 variables included in the VAR: output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

Republic of Korea: Q2 1995–Q4 2019 variables included in the VAR: output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

Malaysia: Q1 1999–Q4 2018 variables included in the VAR: output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

Singapore: Q2 1995–Q4 2019 variables included in the VAR: output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

Thailand: Q1 1995–Q4 2019 variables included in the VAR: output growth, current account-to-output ratio, reserve change-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI.

Data Treatment

Overall, we have been fairly conservative in the treatment of the data with the exception of two variables: the FSI and the nonfinancial corporate debt-to-output ratios. For these variables, we had to impose some assumptions to be able to extend the sample for some of the economies.

The FSI

For economies that do not have a complete sample of the FSI, we extend it back using as a proxy the regional FSI as the data suggest strong co-movement between country-specific FSI for our sample and the regional one. In particular, given that the FSI takes negative values (and switches from negative to positive values, with some values very close to 0), we use the growth rate of the exp (FSI) to construct backward a proxy for the missing data (instead of using regular growth rates), that is, suppose the first available observation of variable y for

country i is the one in period $t+1$, but we fully observe that variable for all periods for the whole region "A", then we assume:

$$e^{y(\text{imputed}, i, t)} = e^{y(\text{observed}, i, t+1)} \frac{e^{y(\text{observed}, A, t)}}{e^{y(\text{observed}, A, t+1)}}$$

Or,

$$y(\text{imputed}, i, t) = \ln \left(e^{y(\text{observed}, i, t+1)} \frac{e^{y(\text{observed}, A, t)}}{e^{y(\text{observed}, A, t+1)}} \right)$$

Where $y(\text{imputed}, i, t)$ is the imputed value for country i unobserved value in period t using the observed value for country i in period $t+1$ under the assumption of the same growth rate to the one observed for the whole Asian index.

Nonfinancial corporate debt-to-output ratios

As this variable is always positive, we extend the sample of Malaysia, the People's Republic of China (PRC), India and Indonesia by assuming that the growth rate of nonfinancial corporate debt-to-output ratios is equal to the growth rate of the credit to the private nonfinancial sector-to-output ratio.

On top of this, if for some variable we have a missing observation (or a short interval of missing data) we impute it by averaging the closest available observations.

APPENDIX 7.2 METHODOLOGY

We estimate the VAR model using the BEAR toolbox developed by the European Central Bank (ECB).⁵

Following some standard derivations, which are described in the companion resources of the toolbox, we can define:

$$Y = \begin{bmatrix} y_1' \\ \vdots \\ y_T' \end{bmatrix}; X = \begin{bmatrix} y_0' & \cdots & y_{-4}' & x_1' \\ \vdots & \ddots & \vdots & \vdots \\ y_{T-1}' & \cdots & y_{T-4}' & x_T' \end{bmatrix}; B = \begin{bmatrix} A_1' \\ \vdots \\ A_4' \\ C' \end{bmatrix}; J = \begin{bmatrix} \varepsilon_1' \\ \vdots \\ \varepsilon_T' \end{bmatrix}$$

And using the following convenient notation: $y = \text{vec}(Y)$, $\bar{X} = I_n \otimes X$, $\beta = \text{vec}(B)$ and $\xi = \text{vec}(J)$, the VAR can be written as $y = \bar{X}\beta + \xi$.

In the Bayesian approach, it is standard to refer as θ the vector containing all unknown parameters, y for the data, $f(y|\theta)$ for the likelihood, and $\pi(\theta)$ for the prior distribution.

The estimation has the objective of computing the posterior distribution of the parameters conditional on the data, that is:

$$\pi(\theta | y) \propto f(y | \theta)\pi(\theta)$$

We estimate each model using a Bayesian VAR approach with independent Normal-Wishart priors with the prior assumptions as shown in Table 7A.1. The parameters in the table determine the shape of the prior distributions, each of them affecting the dimension described in the “Description” label. The values in the table are standard for this model in the literature.

Table 7A.1 Values for prior hyper-parameters

Parameter	Description	Value
Autoregressive coefficients		0.8
λ_1	Overall prior tightness	0.1
λ_2	Cross-variable weightings	0.5
λ_3	Lag decay	2
λ_4	Exogenous variables tightness	100

The standard strategy for the estimation of this model is to use a Gibbs Sampler. We run 20 000 draws and keep the last 10 000 for computing the posteriors of interest. The structural decomposition is recursive (Cholesky factorization) with the following order (from first to last): output growth, current account-to-output ratio, the change in external reserves-to-output ratio, nonfinancial corporate debt-to-output ratio, and the FSI. That is, the FSI is assumed to respond contemporaneously to all variables while output growth responds with one period lag. As the data are quarterly, we include four lags for all endogenous variables and only contemporaneous values for the exogenous variables.

8. Household debt: supply-driven sugar rushes

Maria Teresa Punzi¹

1. INTRODUCTION

In many Asian economies, household debt as measured by the household debt-to-gross domestic product (GDP) ratio has been escalating for two decades. The process worsened after the 2008–2009 global financial crisis (GFC) that originated in the United States (US). The GFC was triggered by the inherent vulnerabilities of the financial system which spilled over into the real economy. As a consequence, the household debt-to-GDP ratio expanded at an even faster pace, primarily driven by loans to purchase residential properties. More recently, household debt-to-GDP ratio increased further since the onset of the COVID-19 crisis in 2020. Many economies have been experiencing unfavorable economic conditions and slow growth of disposable income, which are affecting household balance sheets and household incomes.

The shock from the pandemic shares both similarities and differences with the 2008–2009 GFC. While the GFC was rooted in a weak financial system, which allowed households with low credit scores to obtain mortgage loans, the COVID-19 pandemic is rooted in a widespread health crisis, which has led governments to impose measures to contain the spread of the virus such as prolonged lockdowns, causing adverse shocks to the real economy. Many households were pushed to borrow more to mitigate the severe economic downturn. In addition, lower working hours, furloughs, and outright unemployment have limited the capacity of households to service their outstanding debts. The COVID-19 crisis has brought households to the brink of bankruptcy as they suffer from debt distress in the face of the economic slowdown, adding extra costs and credit risk to the pre-existing vulnerabilities of large household debt.

In general, an increase in household debt is not necessarily a reason for concern. Household debt can stimulate long-term investment: households taking out credit are essential to a growing economy as they smooth out consumption and invest in illiquid assets, such as dwellings, thus boosting the economy. However, household debt has also been shown to increase the risk of low economic growth over the medium term. Taking a mixed sample of 30 advanced and emerging economies, Mian et al. (2017) found a 0.4 percent decline in economic growth after seven years following an initial two-year increase. Based on a sample of 80 economies, the International Monetary Fund (IMF) also found that a 5 percent increase in the household debt-to-GDP ratio would lead to a 1.25 percent decline in real GDP over a three-year horizon, as the resulting debt burden slows economic growth. Debt can also make the economy more vulnerable to economic shocks, because by investing their debt in the long term (for education and housing, for example), households will have insufficient funds to handle emergencies. Zabai (2017) found that due to this trade-off between short-term growth

and long-term vulnerability, household debt may threaten both macroeconomic and financial stabilities. Adverse shocks have a negative impact on households' ability (or willingness) to pay their debts, producing a strong negative impact on the financial health of lenders. This may either trigger or deepen or lengthen economic recession. As a result, household debt may amplify cyclical downturns and weaken economic recovery (Leigh et al. 2012).

The household debt-to-GDP ratio and its increase are not sufficient indicators of financial instability, however. By the end of 2007, right before the GFC, the household debt-to-GDP ratio of the US stood at 99 percent, with an increase of about 28 percentage points (pp) since 2000, which could lead us to conclude that a ratio of this magnitude is unsustainable, and that economies with a household debt-to-GDP ratio higher than 90 percent should be considered beyond the alarm threshold. Indeed, this high ratio of debt, if confronted with an economic shock, such as a GFC, may lead to disastrous consequences for the economy, or even a recession, as people lack sufficient liquid assets to survive the crisis. The GFC has shown that income and wealth shocks get amplified by high levels of household debt and, in the case of negative shocks, a spending cut occurs mainly across highly indebted households, rather than the non-indebted ones.² This creates an inherent fragility of the economic system. Unpredictable events such as the current COVID-19 pandemic, which bring about unexpected and sudden reductions of households' income, could lead to two outcomes: (1) households could try to take out more loans to finance current consumption, piling up more debt and further compromising future stability; or (2) households could miss or postpone their monthly repayment, generating immediate stress on the banking sector.

Schularick and Taylor (2012) showed that a rapid growth of credit can trigger financial instability, as increasingly more disposable income will be directed toward debt service, raising concerns about sustainability. Cecchetti et al. (2011) also found that a household debt-to-GDP ratio exceeding a threshold value of around 85 percent would negatively affect economic growth, but Australia, Denmark, and the Netherlands have not experienced major financial crises even though their ratios stood at 110 percent, 124 percent, and 110 percent, respectively, as of 2007.³

As the correlation between the household debt-to-GDP ratio and the likelihood of a financial crisis may not be robust, other factors should be taken into account to determine the extent to which rapid household debt accumulation poses risks to the stability of the economic and financial system. These include the composition of debt, which affects how resilient each debt is to shocks and determines the likelihood of default and the extent to which household debt servicing capacity is supported by adequate financial buffers and income growth.

To determine how best to address the problem of rising debt, it is necessary to evaluate whether the run-up in household debt is mostly driven by demand or supply factors.⁴ The sharp increase in the household debt-to-GDP ratio is often considered to be an outcome of credit demand shocks pushing constrained households to borrow more. Indeed, the presence of a collateral value is amplified as the housing market expands and contracts.⁵ However, recent studies have found that credit supply shocks also play an important role in explaining the rise in household debt. Banking deregulations, behavioral factors, or simply a willingness to lend more make more credit available for households. It is important to understand and identify the nature of shocks, as demand or supply will have different implications. Credit demand boosts households' consumption, which in turn shifts aggregate demand. Credit supply, however, shifts aggregate supply, which has a deflation effect relative to the demand side. Nevertheless,

if the expansion in household debt is mostly driven by supply shocks, without an equal expansion in income, then too rapid or too large a debt buildup will trigger financial instability and economic recession.

Against this background, we develop different approaches to assess the sustainability of household debt in Asia. First, we identify whether the surge in household debt is supply- or demand-driven by comparing the effects of household debt and nonfinancial corporate debt on real GDP. A panel regression analysis based on nine Asian economies shows that a 1 pp increase in the ratio of household debt increases real GDP by 0.5 percent, but this positive effect is reversed after seven years, with a decline of 1.5 percent. We also find that supply shocks have been driven by the large expansion in household debt. Indeed, relaxation of lending constraints and deregulation of the banking sector have made possible the supply of credit at low interest rates, which can be unsustainable for two reasons: (1) credit issued during periods of low interest rates could flow toward households with lower credit quality, causing risk of default in the future; and (2) if household debt is driven by supply shocks rather than demand shocks, then the debt expansion is not associated to an equal expansion in income, causing risk of default during cases of overoptimism about future income.

Second, to assess the vulnerability of households to COVID-19 shocks—such as a sudden decrease in income due to lower working hours, furloughs, and unemployment—we analyze how adverse shocks would affect each household's debt-repayment ability. Based on their income level, we identified households with excessive debt levels and weak financial soundness to assess how vulnerable these groups are to the occurrence of external shocks.

Results indicate that in the People's Republic of China (PRC) and the Republic of Korea (ROK), the bottom 20 percent of households by income distribution are most likely to default on their mortgages after a 10 percent decline in disposable income. However, while the probability of default for the upper-income households is marginal in the ROK, a higher probability of default for all income groups is shown in the PRC, even if the probability decreases in the higher-income group.

The results of this analysis show that although the household debt burden might sound sustainable at the macro level, debt distribution by income group matters for financial vulnerability. Lockdown disrupts household income, which decreases the ability of low-income households to service their debt obligations and increases the probability of default. This condition gradually causes foreclosure of the collateral for secure debts, exposing lenders to a high risk of bankruptcy. Because of their higher risk of default, lower-income borrowers pose additional risks and are more likely to exacerbate the economic downturn caused during the COVID-19 crisis and increase the vulnerability of the whole financial system.

This chapter is organized as follows: section 2 presents the stylized facts for nine Asian economies (the PRC; Hong Kong, China; India; Indonesia; Japan; the ROK; Malaysia; Singapore; and Thailand) to monitor the relationship between household debt in each economy and other economic indicators from 2010 to 2019. Section 3 estimates a panel vector autoregression (VAR) model to assess the short- and medium-term impact of household debt on GDP. It also develops a macro stress test to evaluate the household debt vulnerability to negative shocks. Section 4 discusses policy responses. Section 5 concludes and discusses policy recommendations.

2. STYLIZED FACTS

This chapter analyzes the reason for and implications of household debt trends in conjunction with other economic measures and macro-financial linkages. To best monitor these linkages, we analyze the evolution of a number of indicators during 2010–2019, following the GFC. We choose this sample period because since the crisis many economies have expanded their policy toolkits to make future financial crises less likely or less severe. The analysis provides an insight into the effects of such policies. Interestingly, emerging economies have been primarily responsible for the buildup of global private debt over this period, with a few Asian economies experiencing the largest increases. This raises concerns about the effectiveness of implemented risk mitigation policies.

The level of household debt in Asian economies is a concern due to its relatively large size, high growth rate, and quality, because an unanticipated deterioration in market conditions or household economic circumstances can affect a household's ability to service its debt obligations. The PRC has witnessed the most rapid growth in the household debt-to-GDP ratio, rising from 27 percent in 2010 to 56 percent in 2019 (Table 8.1). The ratio of its household debt to disposable income was around 90 percent in 2018 compared with 31 percent in 2008. After rising by 28 percent during 2010–2019, the ratio of household debt to GDP reached 96 percent in the ROK, followed closely by Hong Kong, China—where the ratio grew by 37 percent during the same period—Singapore, Malaysia, and Thailand, although the latter two economies have seen a declining ratio in recent years as a result of the implementation of measures such as tightened regulations on unsecured consumer lending (Figure 8.1). India and Indonesia have the lowest household debt-to-GDP ratios, ranging from around 12 percent to 17 percent. At a constant 17 percent, Indonesia's ratio has remained stable throughout the last five years.

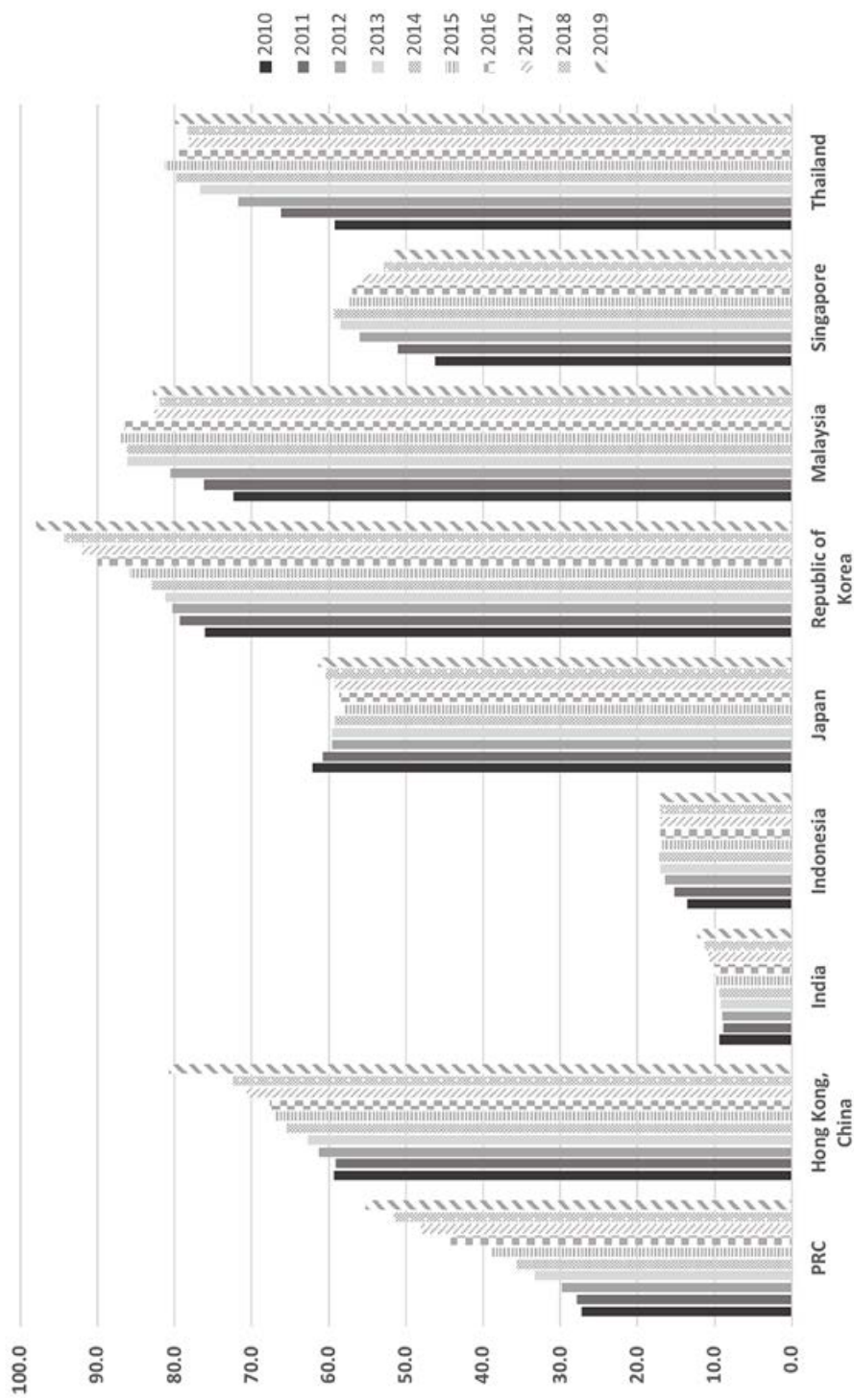


Figure 8.1 Total credit to households (% GDP)

Table 8.1 Household credit-to-GDP ratio

Economy	2010	2019	Changes (%p)	Economy	2010	2019	Changes (%p)
Australia	112	120	8	Republic of Korea	76	98	22
New Zealand	90	94	4	Hong Kong, China	59	81	22
United Kingdom	92	84	-8	Thailand	59	80	21
United States	92	75	-17	Malaysia	72	83	10
Euro area	64	58	-6	Japan	62	61	-1
G20 (aggregate) ^a	63	61	-2	PRC	27	56	29
Advanced economies ^a	81	74	-7	Singapore	46	52	6
Emerging market economies ^a	27	43	16	Indonesia	14	17	3
All reporting economies ^a	64	62	-2	India	9	12	3

Notes:

BIS = Bank for International Settlements; GDP = gross domestic product; %p = percentage point (pp); PRC = People's Republic of China.

^a Aggregates based on conversion to US dollars at market exchange rates.

Sources: CEIC database and BIS Statistics.

It is worth comparing Asia's emerging economies with the rest of the world (Table 8.1). Advanced economies like the US and the United Kingdom (UK) display some of the biggest decreases, at 17 percent and 8 percent, respectively. Of the Asian economies, only Japan has a slight decrease of 1 percent. As a comparison, advanced economies average out to a 7 percent decrease while emerging economies have a significant average increase of 16 percent.

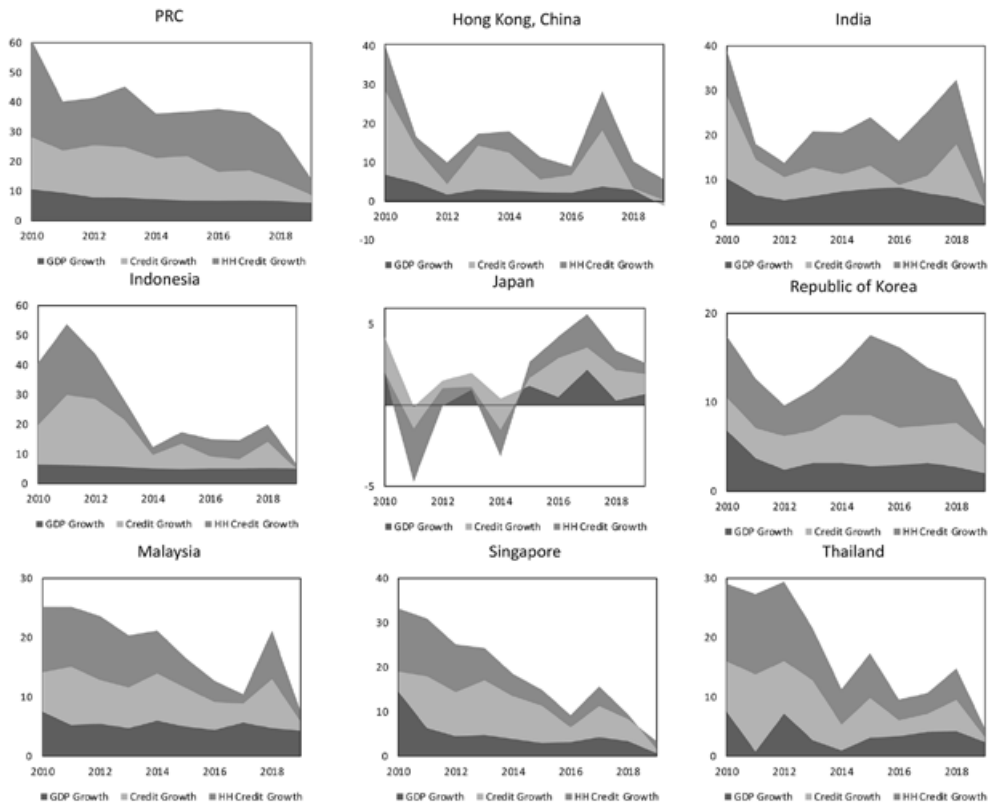
Asia's high increase in household debt might be associated with and may have even contributed to the rapid growth of Asian economies, as economies take on debt in order to invest. However, for most Asian economies, household credit growth is larger than the growth rate of GDP and total credit, except for Hong Kong, China and Indonesia (Figure 8.2).

A closer look at the PRC reveals that the real per-capita disposable income grew 6.1 percent in 2019, down from 6.5 percent and 7.3 percent in 2018 and 2017, respectively. Moreover, the charges on household debt service to disposable income accounted for about 7 percent, 8 percent, and 11 percent in 2011, 2015, and 2017, respectively, proving that more income is directed toward debt repayments.

An important indicator of financial stability is the Basel Credit Gap as a percentage of GDP, which measures the deviation of the credit-to-GDP ratio from its long-term trend (Baba et al. 2020). Figure 8.3 reports the values of this index, which are estimated with a one-sided Hodrick-Prescott (HP) filter. The Basel Credit Gap shows a downward trend in all the sample economies since 2015, except in Japan where the gap has been rising rapidly, signaling a growing risk of financial crisis. The Gap has started to grow in India, but it is still negative (-7 percent), as it is in the PRC—meaning that credit-to-GDP is still lower than the long-term expected value in these two economies.

Last, we consider the real house price index (RHPI) fluctuations from 2010 to 2019, with the benchmark level in 2010 set at 100. This index is used to measure and compare residential

housing prices and predict future changes in the prices, as increasing prices stimulate housing demand as an alternative form of investment, causing a further increase in the prices.



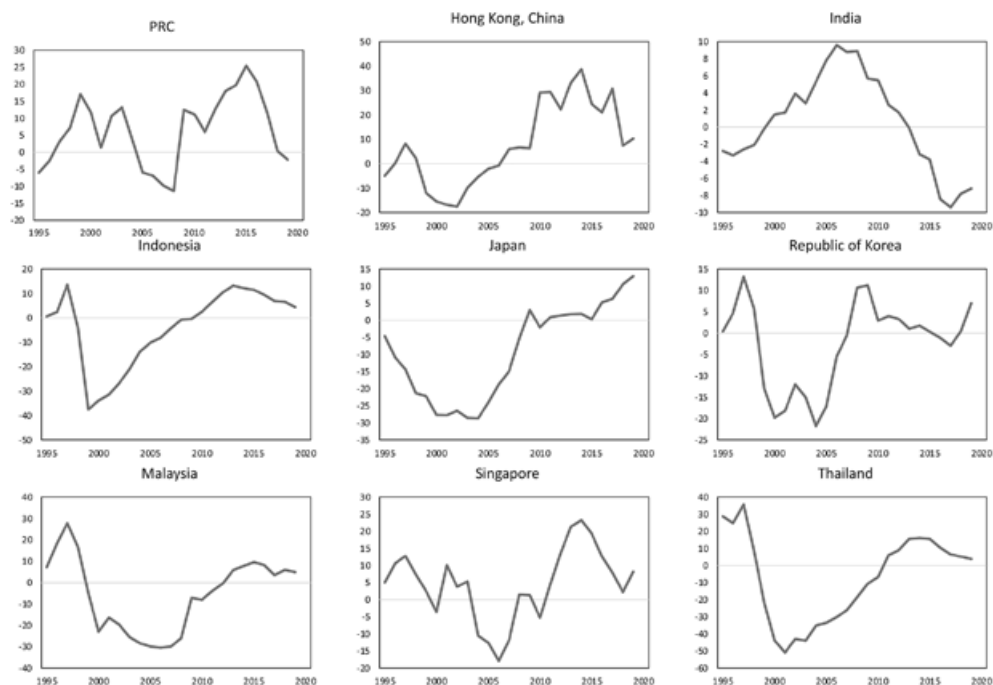
Note: BIS = Bank for International Settlements; GDP = gross domestic product; HH = households; PRC = People's Republic of China.
Source: BIS Statistics.

Figure 8.2 Growth rates (%)

In recent years, the RHPI in Indonesia, India, and Malaysia has shown an upward trend (Figure 8.4). That can mean that these economies' property prices have increased compared with 2010, increasing the risk of default, as the value of a house can fall below the mortgage balance if the bubble bursts, leading to default if the borrower does not have sufficient income to service its mortgage. The lowest fluctuations in RHPI occur in Indonesia, the ROK, Japan, and Singapore, suggesting that residential housing prices in those economies have remained relatively stable, reducing the risk of mortgage defaults.

The low interest rate environment and the surge in household debt have clearly led to a large run-up in house prices in Asia. Household borrowing is strongly correlated with house prices, with a strong co-movement over time. Subsequently, we may expect house prices to fall during

the COVID-19 recession, as households facing financial stress may put their home up for sale to survive the dramatic effect of the lockdowns. Moreover, these households would be likely to cut their spending, exacerbating the economic downturn even further.



Note: BIS = Bank for International Settlements; GDP = gross domestic product; PRC = People's Republic of China.
Source: BIS Statistics.

Figure 8.3 Basel Credit Gap (% of GDP)

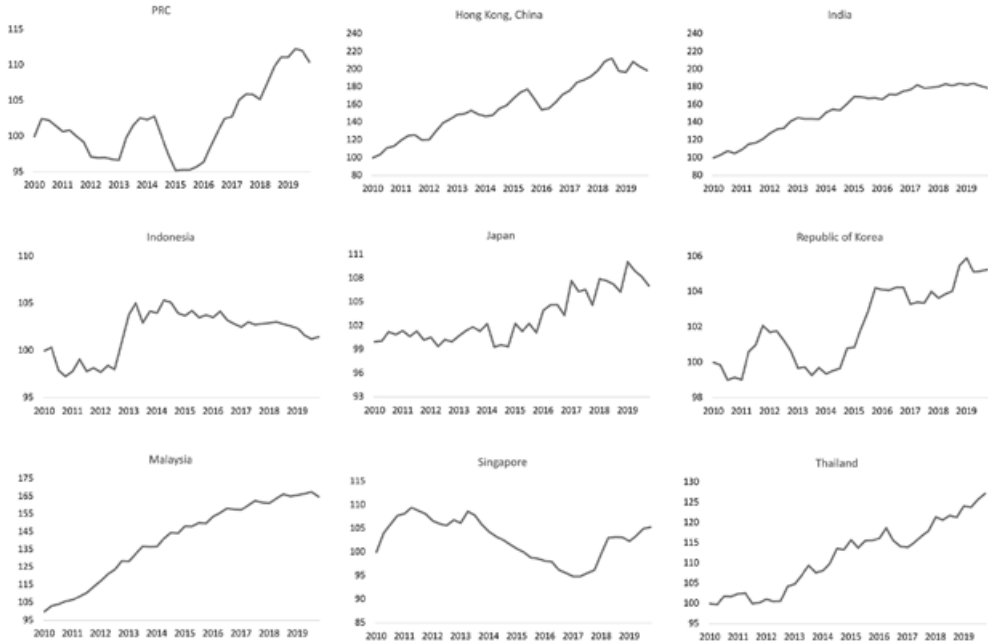
3. ECONOMETRIC MODELS

Using two different approaches, this section explores the relationship between household debt and macroeconomic variables. First, we employ an unbalanced panel VAR to highlight a systematic empirical relation between household debt and fluctuations in the business cycles. Second, we implement a micro-simulation model from household survey data to assess household financial vulnerability and its exposure to macroeconomic shocks.

3.1 Panel Vector Autoregression Model

This section investigates the relationship between household debt and the magnitude of economic downturns. Following Mian et al. (2017), we estimated a panel VAR model over three variables: household debt-to-GDP, firm debt-to-GDP, and the log real GDP. Our sample includes annual observations from 2001 to 2019 for nine Asian economies: Hong Kong,

China; the PRC; India; Indonesia; Japan; the ROK: Malaysia; Singapore; and Thailand.⁶ The model estimates the impulse response functions with a local projection estimator, which has become an increasingly widespread alternative econometric approach.⁷ See Jordà (2005).



Note: BIS = Bank for International Settlements; PRC = People's Republic of China.

Source: BIS Statistics.

Figure 8.4 Real house price index (2010 = 100)

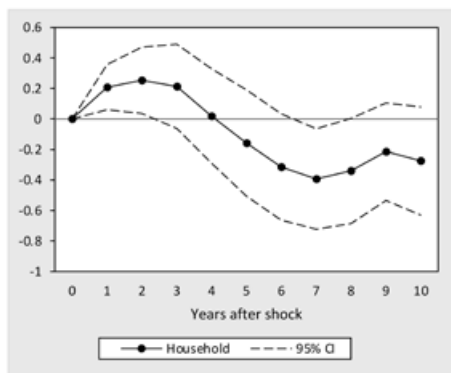
The panel VAR model is given by the following system:

$$Y_{i,t} = \left\{ \ln(RGDP_{i,t}); \frac{HHD_{i,t}}{RGDP_{i,t-1}}; \frac{NFD_{i,t}}{RGDP_{i,t-1}} \right\},$$

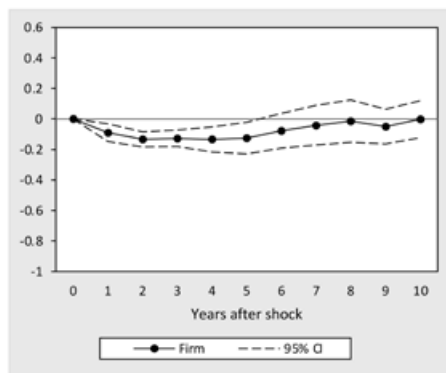
where $RGDP$ is the real GDP, HHD is the level of household debt, and NFD is the level of nonfinancial firm debt. As in Mian et al. (2017), to avoid capturing innovations to GDP in the debt functions, the debt variables are normalized by the previous annual GDP. Moreover, the estimates include a time trend to prevent the ratio of debt to GDP from reflecting the change in GDP growth and the expansion in the level of debt that many economies have been experiencing. For the sake of comparison, we present estimates for an unbalanced panel across 30 mostly advanced economies over the sample period from 1960 until 2012, as developed by Mian et al. (2017). The results show that an increase in household debt leads to an initial expansion in GDP for about two years (Figure 8.5). After that, it reverses and becomes

negative in the medium term. Conversely, the GDP response to firm debt is negative in the short term, only reverting to positive after five years.⁸ Mian et al. (2017) concluded that a rise in the household debt-to-GDP ratio over a three- to four-year period predicts a decline in economic growth.

Panel A: GDP Responses after Household Debt Shock



Panel B: GDP Responses after Firm Debt Shock

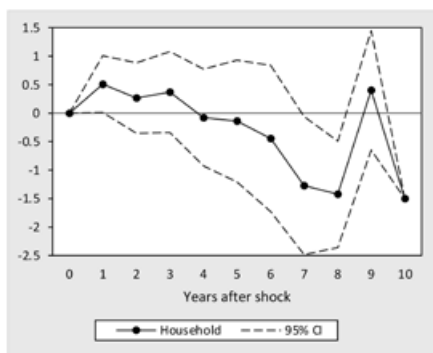


Note: CI = confidence interval; GDP = gross domestic product.

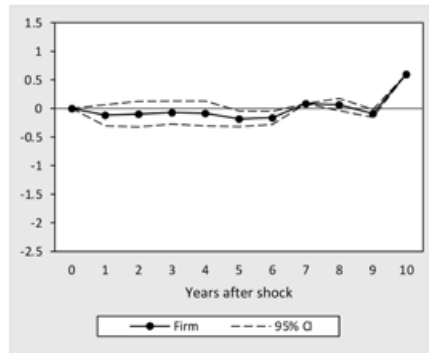
Sources: Author's calculations and Mian et al. (2017).

Figure 8.5 Local projection impulse responses (sample size: 30 economies; sample period: 1960–2012)

Panel A: GDP Responses after Household Debt Shock



Panel B: GDP Responses after Firm Debt Shock



Note: CI = confidence interval; GDP = gross domestic product.

Source: Author's calculations and Mian et al. (2017).

Figure 8.6 Local projection impulse responses (sample size: nine Asian economies (Asia-9); sample period: 2001–2019)

Turning to our sample of nine Asian economies (Asia-9), an increase in household debt initially increases real GDP, but such an increase is very short-lived, as real GDP starts declining after one year (Figure 8.6). Asia-9 shows that three years after the initial shock (i.e., the increase in debt), the real GDP returns to the same level at which it was before the shock. For four to eight years after the original shock, the real GDP continues to decline to very low levels.⁹ Comparing our results with those of Mian et al. (2017), we note that Asia-9 shows an increase in GDP by 0.5 percent, while the sample of advanced economies predicts an increase in GDP of 0.2 percent after two years. Moreover, while the larger sample predicts an economic downturn between five years and seven years for a decline of about 0.4 percent in GDP, Asia-9 predicts a larger GDP decline of about 1.5 percent after seven to eight years. In contrast, a shock to firm debt-to-GDP ratio leads to a short- and medium-run decline in GDP, but it is statistically insignificant (Figure 8.6, right panel).¹⁰ These results confirm the findings of IMF (2017), which show that household debt enhances economic growth in the short term but exacerbates macroeconomic and financial stability risks in the medium term.

The opposite effect of household debt-to-GDP ratio on GDP can be due to a combination of demand and credit shocks. On the one hand, demand shocks allow households to boost consumption, expanding the aggregate demand in the short term. On the other hand, firms respond to the larger aggregate demand by investing and producing more and making an impact on labor productivity and employment in the longer term, thus affecting households' decisions relating to mortgage loans. The next section investigates the credit supply side in more detail.

3.2 Credit Supply Shock Model

The results discussed in the previous section may raise concerns pertaining to the identification of the shock. Increases in household debt driven by credit demand shock would boost consumption in goods and dwellings, just as expansions in household permanent income, population growth, or optimistic expectations about house price growth would stoke household borrowing. Nevertheless, household debt shock leads to a short-lived economic expansion, which is a cause for concern when identifying demand- or supply-driven household debt shock (Figure 8.6).

Against this background, this section explores the relative importance of credit supply shocks on the rise in household debt. Credit supply shocks refer to a situation in which banking deregulation allows a larger supply of loans or banks lower the interest rate on mortgage loans.¹¹ For example, in 2014 the Government of the ROK drastically eased real estate regulations, raising the loan-to-value (LTV) ratios (solvency requirement) from 50 percent to 70 percent (20 pp) and the debt-to-income ratios (affordability requirement) from 50 percent to 60 percent (10 pp). As a result, expectations of higher housing prices stimulated housing demand as a source of investment.

We used a residual regression from the VAR model to explore the importance of interest rates during the household debt cycle and assess how credit supply expansion leads to household debt cycles and business cycle fluctuations. Following Mian et al. (2017), we first estimate the reduced-form VAR residuals from the previous section with the ordinary least squares (OLS) regression method; and second, we regress the residuals from the household debt-to-GDP equation on the mortgage-sovereign spread, which is expressed as the difference between the mortgage interest rate and the 10-year government bond yield.

Table 8.2 *Supply shocks^a*

	Panel A		Panel B	
	Sample: 30 economies		Sample: Asia-7	
	HHD_GDP	NFD_GDP	HHD_GDP	NFD_GDP
MS spread	−0.341** (0.101)	−0.0182 (0.267)	−1.5235*** (0.5732)	−2.5419** (1.227)
F-statistics	11.372	0.005	7.21	4.37
R^2	0.024	0.000	.071	0.073
Observations	580	580	81	81

Notes:

HHD_GDP = household debt-to-GDP; MS = mortgage-sovereign spread; NFD_GDP = firm debt-to-GDP.

Panel A reproduces estimates from Mian et al. (2017). Panel B reports estimates from the Asia-7 sample, which includes Hong Kong, China; Indonesia; Japan; the Republic of Korea; Malaysia; Singapore; and Thailand.

*, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

^a MS data for the People's Republic of China and India are available only for a very short period, and thus have been removed from the estimation.

Sources: Author's calculations; and Mian et al. (2017).

The negative coefficients in panels A and B in Table 8.2 indicate that much of the variation in household and firm debt is explained by a low interest rate environment. This result supports the argument that mortgage spreads are correlated with outward shifts in credit supply, rather than in credit demand. Moreover, such correlation is much stronger in Asian economies relative to advanced economies: Mian et al. (2017) estimated a negative correlation between the mortgage-sovereign spread instrument and the household debt for 30 advanced economies equal to −0.341, while the sample of seven Asian economies reported a coefficient of −1.5235, indicating a larger magnitude when focusing only on the Asian region. The slower economic growth of the last decade has been coupled with ultra-low inflation and policy rates. In general, a low interest rate environment can lower the debt service burdens of households, helping them to be solvent. Further, asset prices tend to rise when interest rates are low, thus increasing the collateral value and making households more creditworthy for banks. Such effect will amplify the credit cycle. However, as already mentioned, such a positive effect is short-lived across Asian economies and would lead to economic recession in the longer term. If this occurs, lower income will preclude households from servicing their mortgage obligation despite the low interest rates, aggravating the recession even more and causing prolonged bust phases. Furthermore, the persistence of low interest rates pushes the household debt-to-GDP ratio to rise even further, leading to sustainability risk. This research shows that the expansion in household debt has been mainly supply-driven (i.e., lending expansion by financial institutions and low interest rates), rather than demand-driven (i.e., higher productivity or a permanent increase in household incomes). This result corroborates the hypothesis that sustainability issues escalate when the expansion of credit is not accompanied by a similar expansion in income.

3.3 Survey Data—Macro Stress Test

An analysis based on aggregate data is not sufficient to gauge the sustainability of household debt; a proper analysis using micro data is needed to complement it. This section gives an outline of a micro-simulation model for stress testing the household sector in the PRC and the ROK. The model uses data from the China Family Panel Studies, which covers surveys in 2014 and 2016, and data from the ROK's Labor and Income Panel Study (KLIPS) from 2015 to 2018.¹²

This model captures the debt-repayment capacity of households and assesses the financial resilience of the household sector to COVID-19 shocks, such as a sudden decrease in disposable income. To assess the soundness of the financial system, it is important to evaluate the households' default risk based on their characteristics and thus assess their vulnerability by income group.

Following Funke et al. (2018), the model builds a financial margin (FM) indicator for the household liquidity condition. The FM is defined as:

$$FM = Y - C - DS,$$

where Y denotes household disposable income, C is household consumption, and DS is debt service. These variables are measured annually.

We define the condition in which households default on their debt as a situation in which they lack sufficient semi-liquid or liquid assets to sell to repay their debts. Unlike real estate assets, liquid financial assets are typically easy to sell and are subject to lower haircuts and, hence, could serve as a short-term buffer against unanticipated adverse shocks to disposable income. Since the KLIPS surveys do not provide a breakdown of liquid assets and nonliquid assets, we use nonhousing assets as a proxy to measure for liquid assets.¹³

Following Funke et al. (2018) and Han et al. (2019), households would default on their debt if the following extended financial margin (EFM) condition is satisfied:

$$FM < 0 \text{ and } FM + LA < 0,$$

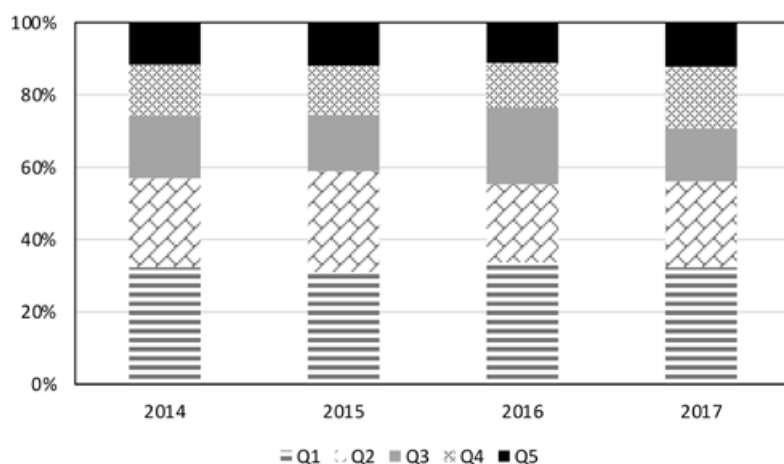
where LA denotes liquid assets. Thus, the default condition follows a situation where households have insufficient liquid assets to cover the negative FM.

When the EFM condition is satisfied, then the probability of default (PD) is equal to 1, otherwise zero:

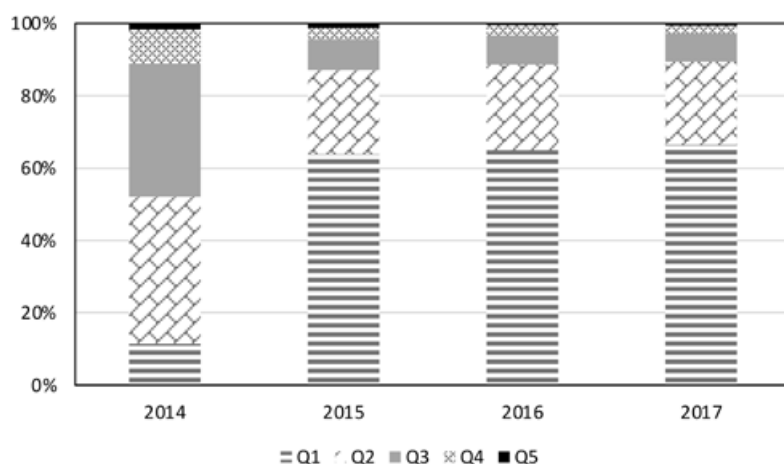
$$PD = \begin{cases} 1, & \text{if } FM < 0 \text{ and } (FM + LA) < 0 \\ 0, & \text{otherwise} \end{cases}$$

Figure 8.7 reports the share of households with a negative FM and insufficient liquid assets to cover the FM. In the PRC in 2014, around 30 percent of households with negative FM belonged to the first quintile, that is, they had the lowest income share. This share increases slightly in the following years. About 25 percent of the second income quintile also has a negative EFM condition, which likewise decreases over time. In the highest-income quintile, the model predicts that 11 percent of households would have a negative FM and insufficient

Panel A: People's Republic of China



Panel B: Republic of Korea



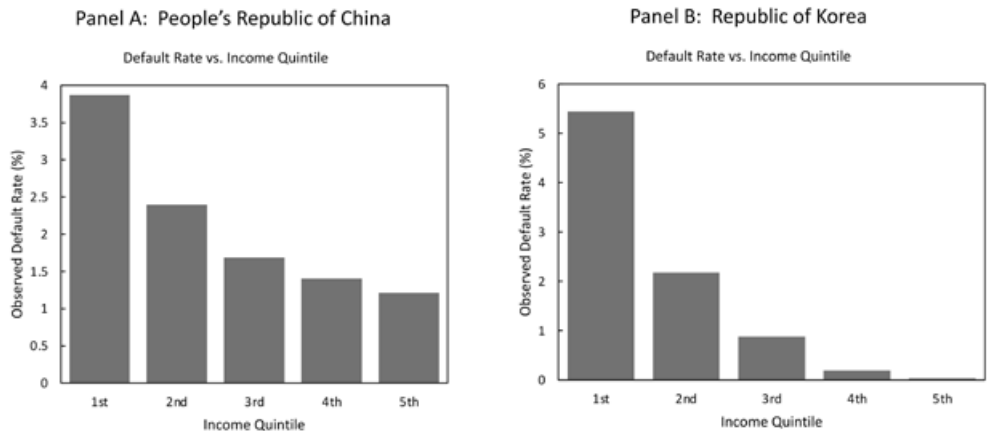
Note: EFM = extended financial margin; Q = quarter.

Sources: China Family Panel Studies (CFPS); Republic of Korea's Labor and Income Panel Study (KLIPS); author's calculations.

Figure 8.7 EFM condition by income quintile

liquid assets. In the ROK, however, around 65 percent of the first income quintile group satisfies the EFM conditions, and a very small share belongs to the third, fourth and fifth income groups. Like the PRC, around 23 percent of the second income quintile has a negative FM. Interestingly, in 2015, only 10 percent of the first income quintile had a negative FM, while

a sizable share is held by the second and third income quintile, with a share of 40 percent and 37 percent, respectively. Naturally, the risk of default falls in both economies as income level rises. But it falls from much higher levels in the PRC.



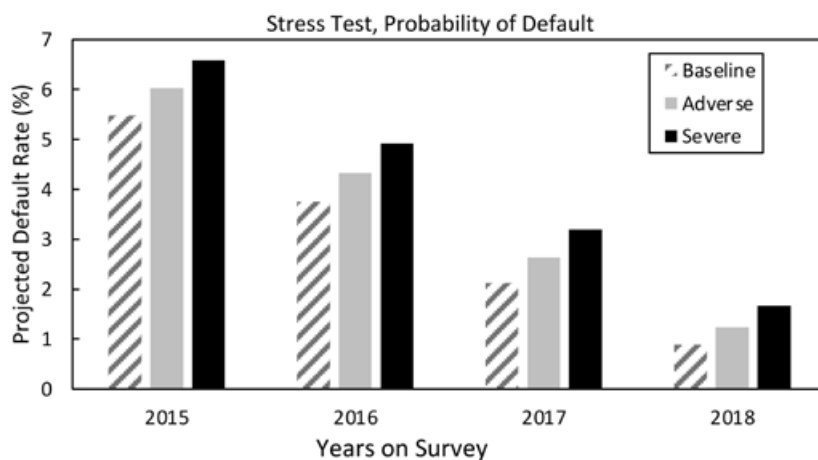
Note: Average across the years of survey.
Source: Author's calculation.

Figure 8.8 Observed default rates

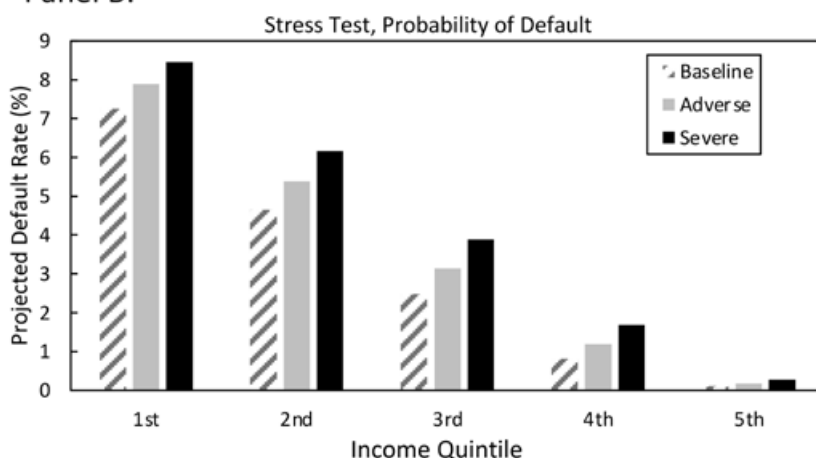
Figure 8.8 shows the observed averaged default rate calculated from the EFM conditions by income quintile. The share of indebted households with negative financial margins tends to decrease with higher disposable income. The ROK observes a default rate higher than 5 percent and 2 percent for the first and second income group, respectively, while the default rate is lower than 1 percent for the other income quintiles.¹⁴ On the other hand, the PRC reports higher default rates for all income groups; however, the first income quintile reports a default rate of almost 4 percent, lower than the ROK. The default rate resolved by income class can be indicative of the capability of households to sustain the current situation and future shocks. There is no benchmark value for the default rate. However, for instance, Luxembourg in 2014 showed a default rate of about 9.3 percent for the first income quintile,¹⁵ and was deemed by the European Systemic Risk Board (ESRB 2016) to have medium-term vulnerability, based on this result and some other estimates. In the ROK, about 60 percent of indebted households are in the lowest-income quintile. Worryingly, their financial margin is not only negative, but this income class does not hold sufficient liquid assets to meet their loan obligations. Indeed, the lowest-income class reports a default rate of about 5.5 percent. Higher-income classes, instead, show a very low probability of default. Even if the Korean default rate is not as high as in the case of Luxembourg, the high level of household debt-to-GDP and the slowing economic growth are reasons for concern. In contrast, survey data show that in the case of the PRC, the default rates are much higher across all income classes. However, the debt burden has worsened much faster for low-income households, making them more vulnerable to unfavorable income shocks. Even if the household debt-to-GDP is not as high as in the ROK, the much

higher growth of the indebtedness level relative to other economies makes the high default rate problematic.

Panel A:



Panel B:

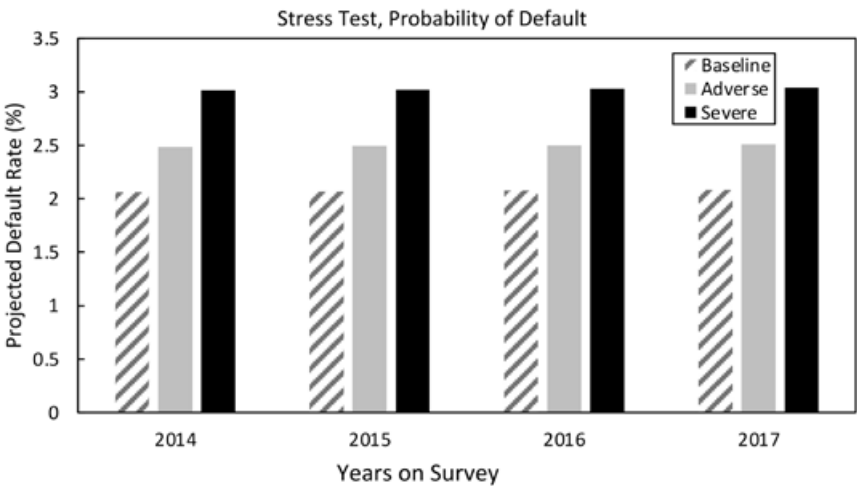


Source: Author's calculation.

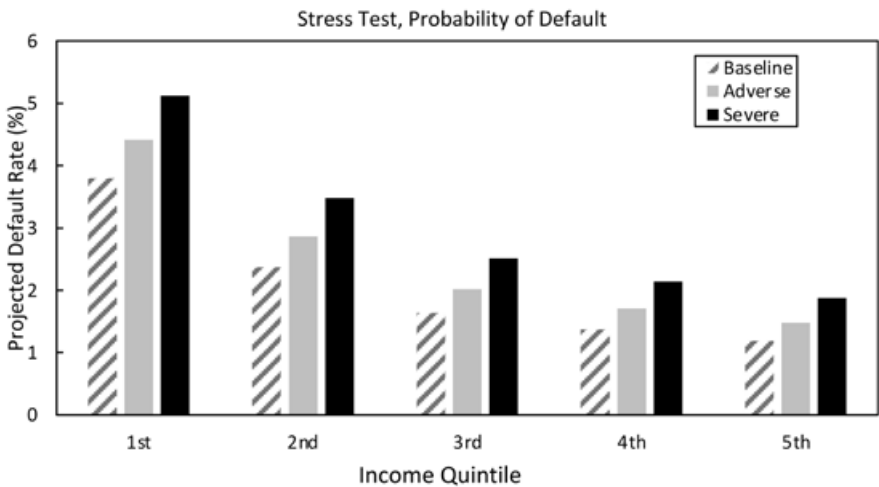
Figure 8.9 Republic of Korea—stress test

After constructing the probability of default from the EFM condition, the model evaluates the financial resilience of the household sector to macroeconomic shocks. From the survey data, we construct a panel dataset of mortgage loans to identify default rate patterns for loans

Panel A:



Panel B:



Source: Author's calculation.

Figure 8.10 People's Republic of China—stress test

of different income levels. Thus, information can be derived about the income quintile to distinguish default rates for different income levels, using the “logistic regression” model to make predictions.

The macro stress simulates an adverse shock equal to a 5 percent decline in household income, and a severe shock equal to a 10 percent decline. Despite the large increase in house-

hold debt-to-GDP, the ROK reports a declining predicted default rate across all households (Figure 8.9, panel A). Negative shocks to income lead to higher probability of defaults, as lower income would impact a household's ability to repay mortgage loans. This is a possible impact of the COVID-19 pandemic and consequential lockdowns, where many households with less income and higher unemployment would find it harder to meet mortgage payments. In terms of income groups, households belonging to the first three income quintiles appear to be more sensitive to changes in disposable income. The second income group is slightly more vulnerable to income changes relative to the first income group. This is most likely because the second income quintile held a larger share of negative EFM in 2015. The fourth and fifth quintile groups are only marginally affected (Figure 8.9, panel B).

Unlike the ROK, the data predict similar default rates year on year for the PRC. A decline in income would lead to an increase in the default rate by about 20 percent, while larger income drops of 10 percent would generate an increase of about 45 percent. Thus, there is an amplified effect to the sensitivity of income shocks (Figure 8.10, panel A).

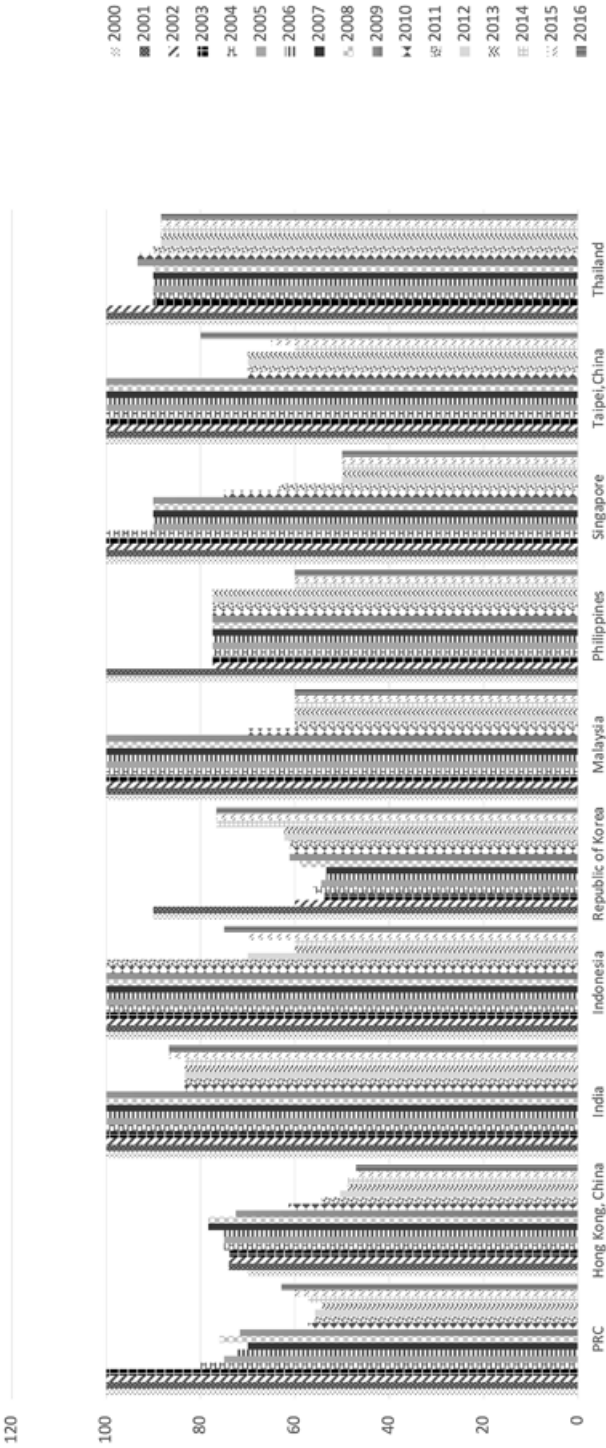
Across income classes, the first quintile would experience an increase in the default rate of about 15 percent and 30 percent for the adverse and severe scenarios, respectively (Figure 8.10, panel B). It is worth noting, however, that the other income classes also report an increasing default rate, indicating that income shocks affect the vulnerability to repay loans in equal measure across households. In contrast, income shocks in the ROK are most likely to affect only lower-income holders.

4. POLICY RESPONSE

Since the GFC, macroprudential policy has been used as a powerful tool to lean against credit and housing cycles. Even if the economic and financial impact is still controversial, policies which aim to slow down household debt, such as caps on the LTV ratio that would limit mortgages, would give central banks more space to stabilize the economy.¹⁶

Since 2000, many Asian economies have introduced caps on the LTV ratio to limit the growth in household debt (Figure 8.11). The PRC has been strengthening its implementation of various macroprudential measures since 2009. In 2015, it set new indicators for assets, leverage and debt, and strengthened the management of its cross-border capital flows; and in 2016, it imposed caps on the LTV for residential property. Macroprudential measures have also been in place for a long time in the ROK and have been gradually strengthened to include caps on the maximum LTV and DSTI ratios and on the maximum repayments-to-income ratio for mortgages, limits on the LTV ratio for commercial business, and limits on debt-to-service for the nonbanking sector. However, the PRC; India; Indonesia; the ROK; and Taipei, China have experienced increased household debt growth from 2014 to 2016. The notable increase in household debt over the past years has demonstrated that perhaps LTV tightening measures are insufficient to mitigate the problem.

The LTV ratio is the most effective policy tool that the financial regulation authority can use to dampen the mutually reinforcing dynamics of housing credit and prices. However, as this ratio can be underestimated, macroprudential authorities should implement complementary tools to enhance the effectiveness of macroprudential policies. With this in mind, Finland in 2018 introduced a new macroprudential tool, the maximum loan-to-collateral ratio, to be applied instead of the LTV ratio. The loan-to-collateral ratio differs from the LTV, as it takes



Source: IMF, Integrated Macropprudential Policy (iMaPP) Database: <https://www.elibrary-areaer.imf.org/Macropprudential/Pages/iMaPPDatabase.aspx>.

Figure 8.11 Average loan-to-value ratio (%)

into account the borrower's house collateral and all the other collateral accepted by the lender. This new macroprudential tool is effective in reducing growing household indebtedness by restricting the provision of mortgage loans relative to collateral. It should be considered as an alternative tool to be implemented in economies experiencing rapid growth in household debt.

The central bank of the Philippines (BSP) supervises the operations of banks and nonbank financial institutions performing quasi-banking functions and those performing similar functions. In particular, the BSP compiles a Manual of Regulations for Non-Bank Financial Institutions, which incorporates regulatory policies to align banking practices on risk management; good corporate governance; and capital adequacy, accounting and reporting using international standards.

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

The analysis of this chapter has shown that a rising household debt-to-GDP ratio boosts economic growth in the near term but increases the risk of low economic growth over the medium term. Using a sample of nine Asian economies, we find that an increase in the ratio of household debt increases real GDP by 0.5 percent, but this positive effect reverts after seven years to a decline of 1.5 percent. While a certain degree of heterogeneity is present, all nine economies are sensitive to changes in credit supply and house prices.

This study also gauges the vulnerability of household debt when the economy is subject to an unexpected decrease in income due to reduced working hours, furloughs, and outright unemployment during the COVID-19 pandemic and finds that in the PRC and in the ROK, the bottom 20 percent of the household income distribution is most likely to default on their mortgages. However, while the probability of default for the upper-income households is marginal in the ROK, findings indicate that in the PRC all income groups would be more likely to default, even if the probability decreases with higher income.

Household indebtedness has been on the rise in many Asian economies since 2010, jeopardizing future economic growth and the soundness of the financial system. Some central banks and policy makers have been raising concerns over high and/or rising levels of household debt, which is driven mostly by mortgages. Rising household debt has consequences for both economic and financial stability. On the one hand, economic stability can be compromised as interest rates have asymmetric effects on households with high debt levels. Indeed, the economic contraction resulting from an interest rate hike would be larger than the expansionary effect an interest rate cut would generate. On the other hand, financial stability can be compromised as some households, through loss of income, could limit their ability to pay off existing debts and thus find themselves in severe financial stress. The combination of these effects could put pressure on banks' balance sheets.

In terms of policy implications, households respond differently to shocks, depending on their savings and on the mortgage market, as well as on whether they have a fixed or variable mortgage rate, of which the latter makes them more vulnerable to interest rate hikes or changes in income. The macroeconomic effect, though, remains ambiguous, as some households can respond to negative shocks by cutting consumption or by borrowing more, unless their debt level is already too high.

Macroprudential tools can play a better role in preventing the accumulation of financial risks and strengthening the financial system's resilience if integrated with stricter loan

appraisal regulations. In addition, low-income households with bad credit or multiple loans (i.e., low credit ratings) shift their loan demands to the nonbanking sector that would then charge higher interest rates. To guarantee financial stability, it is very important to regulate nonbank financial institutions.

Fiscal policy can also play a role if combined with monetary and macroprudential policies. For instance, policies that aim to reduce the tax deductibility of mortgage interest rates and tighten regulatory LTV ratios would be far more effective in dampening household debt and thus reducing macroeconomic risks. Reducing tax deductibility of mortgage interest rates would lead to a decline in borrower mortgage demand and subsequently cause housing prices to fall. However, savers and high-income households could take advantage of lower housing prices, increasing their housing demand and returning housing values to where they were before the introduction of this fiscal policy.

Finally, communication strategies, timing and coordination are very important to mitigate the buildup of systemic risks. Timely coordination between macroprudential and monetary policy would benefit both macroeconomic and financial stability, as macroprudential tools in the short term would allow central banks to stabilize the economy in the medium term. Thus, macroprudential policies today can help monetary policy tomorrow, particularly in periods of low interest rate environment.

The household debt problem could be exacerbated in 2020 as personal income and business revenue suffer from the outbreak of the COVID-19 pandemic. Although policy makers have made extraordinary efforts to create a series of emergency credit facilities to support growth and provide relief for vulnerable groups, the COVID-19 pandemic and consequential lockdown will affect households through various direct and indirect channels. Lack of tourism, mobility restrictions, adverse health, seized working hours, furloughs, and outright unemployment will directly affect households through loss of income, limiting their ability to service existing debts and thus exacerbating the severity of their financial stress. Moreover, households may be forced to borrow more to survive the weaker and more protracted recovery, thus escalating the risk of financial instability in the future.

Many economists have described the COVID-19 pandemic as an “induced economic coma” and they expect to be looking at a V-shaped economic recovery. However, this line of thinking focuses only on the reopening of businesses without considering the impact on household debt and its negative spillover effect to the rest of the economy. Households are already falling behind on debt repayments and are cutting their consumption expenditure, contributing to a prolonged recession. However, debt service by borrowers is expected to improve in jurisdictions with adjustable mortgage rates, and persistent low interest rates will support the economic recovery, reducing the risk that income loss will be long-lasting.

It is important to coordinate some re-distributional intervention. For example, some losses from debt-repayment moratoriums occurring during the lockdown should be transferred from vulnerable households to banks or lenders. Alternatively, current debt burdens could eventually be transferred to future taxpayer generations by current government interventions aimed at alleviating low-income households’ balance sheets. In addition, it is important to temporarily relieve low-income households from financial burden by extending the repayment period and converting high-interest debt into lower interest.

Although there are no benchmark values to label an economy at risk based on household debt indicators, policy makers should carefully assess if the expansion in household debt is

supply- or demand-driven. This determination should inform the design of a well-coordinated mix of policies to mitigate over indebtedness in normal times. In difficult times, such as during the COVID-19 pandemic, many governments have introduced heavy fiscal stimulus packages for safeguarding households facing income loss such as unemployment benefits, salary subsidies, and delayed moratoriums on tax payment. However, particular attention should be given to households in the lowest-income quintile and risk assessment measures should be implemented by considering the borrowers' distribution in terms of their ability to service their debt.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent. The author thanks Benno Ferrarini, Marcelo Giugale, and Juan Pradelli for their insightful comments; Marco Battiato for his coding support in Matlab; and Anastasiia Hizenko for excellent research assistance.
2. See Valckx (2017).
3. Similarly, the level of debt as a percentage of GDP, borne by households in 2007 in Australia, New Zealand, and the United Kingdom has increased gradually to 110 percent, 91 percent and 92 percent, respectively, with an increase since 2000 of around 30–40 pp. Between 2000 and 2007, all these economies reached a much higher ratio than the average value within the euro area as well as the average value among advanced economies, which stood at 60 percent and 82 percent in 2007, respectively.
4. See Illing et al. (2018); Justiniano et al. (2019); Cecchetti and Kharroubi (2019); and Mian et al. (2020).
5. See Bernanke et al. (1999); Iacoviello (2005); and Iacoviello and Neri (2010).
6. The dataset is an unbalanced panel data. For instance, observations on household debt-to-GDP for the PRC and Malaysia start from 2006, and for India the sample starts from 2007.
7. Plagborg-Møller and Wolf (2019) have proved that local projections and VARs estimate similar impulse response functions.
8. Similar results are found in Park et al. (2018).
9. Mian et al. (2017) showed that increasing household debt is associated with increasing consumption-to-GDP ratio, a rise in imports of consumption goods, but no change in the investment-to-GDP ratio.
10. Chapter 7 finds that corporate debt increases tend to reduce output growth, contributing to financial deterioration. Exceptions are the PRC, the ROK, Japan, and Malaysia, whereas output growth accelerates when corporate debt-to-output ratio increases.
11. According to Mian and Sufi (2018), banking deregulation is assumed to be unrelated to variations in GDP or households' income.
12. The China Family Panel Studies contains information pertaining to 26 683 households that participated in surveys conducted in 2014 and 2016, while KLIPS contains information pertaining to a total of 28 102 households over the period 2015–2018.
13. The use of nonhousing assets as a proxy for liquid assets could overestimate households' liquid assets (for example, some nonhousing assets, such as cars, are less liquid and subject to higher haircuts in liquidation); and hence, households could actually start to default before they deplete all their nonhousing assets.
14. Kim et al. (2016) found that in 2014 the default rate by income quintile was 3.5 percent, 3.7 percent, 3.3 percent, 2.7 percent, and 1.4 percent, indicating that high-income groups tend to have lower default rates and better credit scores.
15. See Giordana and Ziegelmeier (2020).
16. Some studies analyze boom and bust phases of credit cycles and find that peaks and troughs can be contained if macroprudential policies are properly introduced (Dell'Ariccia et al. 2012). Claessens et al. (2013) and Cerutti et al. (2017) showed that borrower-based measures, such as maximum LTV and debt-to-service income (DSTI) ratios, can contain asset and leverage growth in good times, but they do not limit the cost of busts. Kuttner and Shim (2016) found that a lower DSTI

ratio reduces the real credit growth rate by 4–6 pp over four quarters, and Richter et al. (2019) found that tightening the maximum LTV ratio leads to a reduction in output. Wong et al. (2011) showed how higher LTV caps in Hong Kong, China could have contributed to the decrease of the mortgage debt-to-GDP ratio in the 1990s and 2000s. Tillmann (2015) found that limits to LTV and DSTI can have substantial effects on the ROK's household credit growth.

REFERENCES

- Baba, C., S. Dell'Erba, E. Detragiache, O. Harrison, A. Mineshima, A. Musayev and A. Shahmoradi. 2020. How Should Credit Gaps Be Measured? An Application to European Countries. *IMF Working Paper*. No. 20/6. Washington, DC: International Monetary Fund (IMF).
- Bernanke, B.S., M. Gertler and S. Gilchrist. 1999. The Financial Accelerator in a Quantitative Business Cycle Framework. In J.B. Taylor and M. Woodford (eds), *Handbook of Macroeconomics*. 1. Chapter 21. pp. 1341–93. Amsterdam: Elsevier.
- Cecchetti, S.G. and E. Kharroubi. 2019. Why Does Credit Growth Crowd Out Real Economic Growth?. *The Manchester School*. 87, pp. 1–28.
- Cecchetti, S.G., M.S. Mohanty and F. Zampolli. 2011. The Real Effects of Debt. *BIS Working Paper*. No. 352. Basel: Bank for International Settlements (BIS).
- Cerutti, E., S. Claessens and L. Laeven. 2017. The Use and Effectiveness of Macroprudential Policies: New Evidence. *Journal of Financial Stability*. 28, pp. 203–24.
- Claessens, S., S.R. Ghosh and R. Mihet. 2013. Macro-Prudential Policies to Mitigate Financial System Vulnerabilities. *Journal of International Money and Finance*. 39, pp. 153–85.
- Dell'Ariccia, M.G., M.L. Laeven, J. Vandenbussche, D. Igan, M.B.B. Bakker and H. Tong. 2012. Policies for Macroeconomic Stability: How to Deal with Credit Booms. *IMF Staff Discussion Note*. No. SDN12/06. Washington, DC: IMF.
- European Systemic Risk Board (ESRB). 2016. Warning of the European Systemic Risk Board of 22 September 2016 on Medium-Term Vulnerabilities in the Real Estate Sector of Luxembourg. ESRB/2016/09. Accessed at: https://www.esrb.europa.eu/pub/pdf/warnings/161128_ESRB_LU_warning.en.pdf?8b66a6785ab61433becd2478eda7deb1.
- Funke, M., S. Rongrong and Z. Linxu. 2018. The Credit Risk of Chinese Households: A Micro-Level Assessment. Mimeo.
- Giordana, G. and M. Ziegelmeyer. 2020. Stress Testing Household Balance Sheets in Luxembourg. *The Quarterly Review of Economics and Finance*. 76, pp. 115–38.
- Han, M.F., M.E.M. Jurzyk, W. Guo, Y. He and M.N. Rendak. 2019. Assessing Macro-Financial Risks of Household Debt in China. *IMF Working Paper*. No. 19/258. Washington, DC: IMF.
- Iacoviello, M. 2005. House Prices, Borrowing Constraints, and Monetary Policy in the Business Cycle. *American Economic Review*. 95(3), pp. 739–64.
- Iacoviello, M. and S. Neri. 2010. Housing Market Spillovers: Evidence from an Estimated DSGE Model. *American Economic Journal: Macroeconomics*. 2(2), pp. 125–64.
- Illing, G., Y. Ono and M. Schlegl. 2018. Credit Booms, Debt Overhang and Secular Stagnation. *European Economic Review*. 108, pp. 78–104.
- International Monetary Fund (IMF). 2017. Household Debt and Financial Stability. Chapter 2 in *Global Financial Stability Report October 2017: Is Growth at Risk*. Washington, DC.
- Jordà, Ò. 2005. Estimation and Inference of Impulse Responses by Local Projections. *American Economic Review*. 95(1), pp. 161–82.
- Justiniano, A., G.E. Primiceri and A. Tambalotti. 2019. Credit Supply and the Housing Boom. *Journal of Political Economy*. 127(3), pp. 1317–50.
- Kim, Y.I., H.C. Kim and J.H. Yoo. 2016. Household Over-Indebtedness and Financial Vulnerability in Republic of Korea: Evidence from Credit Bureau Data. *KDI Journal of Economic Policy*. 38(3), pp. 53–77.
- Kuttner, K.N. and I. Shim. 2016. Can Non-Interest Rate Policies Stabilize Housing Markets? Evidence from a Panel of 57 Economies. *Journal of Financial Stability*. 26, pp. 31–44.

- Leigh, D., D. Igan, J. Simon and P. Topalova. 2012. Dealing with Household Debt. In International Monetary Fund. *World Economic Outlook: Growth Resuming, Dangers Remain*. Washington, DC. pp. 125–63.
- Mian, A. and A. Sufi. 2018. Finance and Business Cycles: The Credit-Driven Household Demand Channel. *Journal of Economic Perspectives*. 32(3), pp. 31–58.
- Mian, A., A. Sufi and E. Verner. 2017. Household Debt and Business Cycles Worldwide. *The Quarterly Journal of Economics*. 132(4), pp. 1755–817.
- Mian, A., A. Sufi and E. Verner. 2020. How Does Credit Supply Expansion Affect the Real Economy? The Productive Capacity and Household Demand Channels. *The Journal of Finance*. 75(2), pp. 949–94.
- Park, D., K. Shin and G. Tian. 2018. Household Debt, Corporate Debt, and the Real Economy: Some Empirical Evidence. *Asian Development Bank Economics Working Paper Series*. No. 567. Manila: Asian Development Bank.
- Plagborg-Møller, M. and C.K. Wolf. 2019. Local Projections and VARs Estimate the Same Impulse Responses. Unpublished paper: Department of Economics, Princeton University, 1.
- Richter, B., M. Schularick and I. Shim. 2019. The Costs of Macroprudential Policy. *Journal of International Economics*. 118, pp. 263–82.
- Schularick, M. and A.M. Taylor. 2012. Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870–2008. *American Economic Review*. 102(2), pp. 1029–61.
- Tillmann, P. 2015. Estimating the Effects of Macroprudential Policy Shocks: A Qual VAR Approach. *Economics Letters*. 135, pp. 1–4.
- Valckx, N. 2017. Rising Household Debt: What it Means for Growth and Stability. *International Monetary Fund Blog*. Washington, DC: IMF.
- Wong, T.C., T. Fong, K.F. Li and H. Choi. 2011. Loan-to-Value Ratio as a Macroprudential Tool – Hong Kong’s Experience and Cross-Country Evidence. *Working Papers* 1101. Hong Kong Monetary Authority.
- Zabai, A. 2017. Household Debt: Recent Developments and Challenges. *BIS Quarterly Review*. December. Basel: BIS.

PART II

The risks behind Asia's debt

9. Fiscal uncertainty: the thankless task of forecasting Asia's fiscal accounts

Ugo Panizza¹

1. INTRODUCTION

This chapter aims to describe and quantify fiscal risk in advanced and developing economies of the world and then examine its main drivers. To quantify fiscal risk, the chapter concentrates on three fiscal outcomes: (1) public debt-to-gross domestic product (GDP) ratio; (2) government budget balance-to-GDP ratio; and (3) primary budget balance-to GDP ratio.²

Fiscal risk is measured by comparing the outturn for these variables with the expectations 12 and 24 months before.³ The chapter does not focus on the sources of fiscal risk over the long term, such as climate change or unfunded pension liabilities.

Fiscal risk is normally defined as the possibility of deviations of fiscal outcomes from their expected values. As forecasts always contain a margin of error, a better definition of fiscal risk is the possibility of *large* or *systematic* deviations of fiscal outcomes from their expected values. There are four main sources of fiscal risk: (1) macroeconomic shocks (mostly GDP growth, exchange rate, inflation, and interest rates); (2) policy shocks (such as policy slippages or changes in government policies); (3) the realization of contingent liabilities; and (4) strategic forecasts (governments that prefer tighter fiscal conditions may use pessimistic forecasts, and the other way around). Some of these sources are easy to measure (for instance, GDP growth); others (such as contingent liabilities and policy slippages) are more difficult to identify and quantify without detailed country studies. In some cases, external factors such as commodity prices, remittances, trading partners growth, and grants from donor countries dictate the shocks; in other cases, the shocks' domestic origins are linked to bad policies or political shocks.

This chapter finds that fiscal risk is substantial especially in the world's emerging and developing economies. The distribution is heavily right skewed for the debt-to-GDP ratio and left skewed for the budget balance-to-GDP ratio, indicating that positive forecast errors for the debt ratio are more common than negative forecast errors, and negative forecast errors for the budget balance are more common than positive forecast errors.

Forecast errors in GDP growth explain about 40 percent of the variance of the forecast error of the debt-to-GDP ratio and budget balance-to-GDP ratio in advanced economies, but errors in growth forecasts explain less than 10 percent of the variance of the forecast error in low- and middle-income countries (a result which also holds for Asian Development Bank (ADB) regional members). A decomposition based on the standard debt-dynamic equation shows that forecast errors of GDP growth, interest rate bill, primary balance, and inflation in advanced

and developing economies contribute 20–48 percent of the average debt-to-GDP forecast errors. More than 50 percent of the forecast error is associated with what Campos et al. (2006) call “the unexplained part of debt”.

Fiscal risk is high especially in bad times, even when these times are expected, because of negative balance sheet effects in developing and emerging market economies and countercyclical policies in advanced economies. While currency depreciations are a large source of fiscal risk in developing and emerging economies, they have no effect on fiscal risk in advanced economies.

While the results of this chapter are based on International Monetary Fund (IMF) forecasts, they are likely to apply also to private sector forecasts as there is no evidence that these forecasts differ in accuracy (Independent Evaluation Office 2014).⁴

The analysis of this chapter focuses on the general government accounts without consolidating the accounts of the central bank. In recent years, nonstandard monetary policies led central banks in advanced economies to accumulate large amounts of government bonds. While consolidating the central bank balance sheet with that of the government would lead to lower “net” debt ratios, the implications of such consolidation for fiscal risk are unclear. The same applies for central banks in emerging market countries that accumulate large international reserves. Such reserve accumulation could counteract the fiscal risk associated with balance sheet effects linked to foreign currency debt because it would reduce the net foreign currency exposure of the consolidated government debt (for a discussion of these issues, see Hausmann and Panizza 2011).

The average values of the fiscal risk indicators of ADB regional members differ from averages for all developing and emerging economies because: (1) forecasts are less optimistic in the average ADB regional member than in other developing and emerging economies; (2) the volatility of forecast errors for the debt-to-GDP ratio in ADB regional members is similar to that for other developing and emerging market economies, but the standard deviation of the forecast error for the budget deficit is higher in ADB regional members; (3) ADB regional members are overrepresented among outliers for which outturns were better than expected. All ADB regional members in this group are Pacific developing member countries).

These findings suggest that fiscal risk in ADB regional members is driven by poor forecasting and data collection capacity by the intrinsic volatility of small economies and commodity exporters. In such a situation, investing in data collection and forecasting ability can give high returns. Countries that are subject to large shocks should instead make greater use of contingent debt instruments such as catastrophe bonds, GDP indexed bonds, or commodity-linked bonds (see Chapter 15 on fiscal insurance in this volume).

This chapter relates to a relatively small body of literature aimed at assessing fiscal risks and developing policies for mitigating these risks. It contributes to the literature by bringing new data to the analysis, studying the correlates of fiscal risk across groups of countries, and conducting a detailed analysis of episodes that have large deviations between fiscal forecasts and outturns.

Schick (1998) is probably the first comprehensive study of the links between fiscal risk and public debt management, and Brixi and Schick (2002) is an early collection of essays on fiscal risk with a particular focus on contingent liabilities.

Campos et al. (2006) do not focus on fiscal risk, but show that exchange rate shocks in the presence of foreign currency debt can play an important role in explaining debt explosions in

emerging and developing economies (on the drivers of debt explosions, see also Weber (2012) and Jaramillo et al. (2016)). This chapter corroborates the results of Campos et al. (2006) by showing that exchange rate volatility is an important driver of fiscal risk. While Campos et al. (2006) focus on debt explosions, Celasun et al. (2006) study the distribution of fiscal shocks and develop a fan-chart approach to evaluate fiscal risk in emerging market economies.

Cebotari et al. (2009) describe fiscal risk using a methodology similar to that used in this chapter (i.e., by comparing IMF World Economic Outlook (WEO) forecasts with outturns) and also provide an overview of fiscal risk management practices in several advanced and developing economies.⁵ These authors found that macroeconomic shocks (especially exchange rate shocks in the presence of foreign currency debt) and contingent liabilities in the banking system are important drivers of fiscal risk. This chapter updates the data used by Cebotari et al. (2009) and presents a detailed analysis of the correlates of fiscal risk.

Budina and Petrie (2013) provide a detailed discussion of fiscal risks and show that conventional cash-basis government accounting rules amplify fiscal risk because these rules do not allow for an adequate treatment of contingent liabilities. These authors studied the drivers of the increase in the debt and deficit-to-GDP ratio in the aftermath of the global financial crisis. While Budina and Petrie did not conduct a similar analysis for developing and emerging economies, they provide a detailed discussion on how macroeconomic risk should be incorporated in fiscal analysis and on how fiscal risk should be disclosed and mitigated (including a detailed discussion on risk allocation).

IMF (2016) presents a comprehensive analysis of best practices for analyzing and managing fiscal risk. It concludes that countries should aim at collecting “comprehensive, reliable, and timely fiscal data covering all public entities” and “make greater use of probabilistic forecasts methods when setting long-run objectives and medium-term targets for fiscal policy”. It also points out that conventional analyses tend to underplay the importance of fiscal risk, and that the balance of risks is skewed toward the downside because (1) forecasts often suffer from an optimist bias; (2) rare and hard-to-predict large negative events are more likely than equally large positive events; and (3) negative shocks are often correlated, with a bunching of contingent liability realizations in crisis periods. The IMF report also developed a methodology that emphasizes tail risks and that is thus suitable for applying the probabilistic approach to debt dynamics in low-income countries.

Part of the analysis of IMF (2016) is based on a novel dataset on the fiscal costs of contingent liabilities assembled by Bova et al. (2019). These authors studied 80 economies (34 advanced economies and 46 developing and emerging economies) over the period 1990–2014 and identified 192 contingent liability episodes. They found that, on average, the economies in their sample had a contingent liability realization with a cost of 6 percent of GDP once every 12 years. The most frequent episodes are associated with financial sector problems; these are also the episodes with the highest fiscal cost. The second most frequent category is disasters triggered by natural hazards, with an average cost of 1.6 percent of GDP. Next are episodes associated with state-owned enterprises, subnational governments, and legal liabilities. Bova et al. (2019) also found that contingent liabilities tend to materialize during periods of low growth and banking crises and that more transparent fiscal accounts and stronger governance indicators are negatively associated with the prevalence and cost of such episodes.

2. FISCAL RISK AROUND THE WORLD

To quantify fiscal risk, we downloaded different vintages of the IMF WEO dataset and compared outturns for the debt-to-GDP ratio, general government balance-to-GDP ratio, and primary balance-to-GDP ratio with their forecasts at time $t-1$ and $t-2$.

We measured the outturn using data from a WEO vintage issued at time $t+2$ (we do not use the latest available dataset to limit problems related to redefinition of variables).⁶ We adopted the same procedure for GDP growth, inflation, and interest payments.

This section describes the forecast errors for the debt-to-GDP ratio and the budget balance to-GDP ratio (Panizza 2020 reports additional data). It shows separate summary statistics for advanced economies, middle-income economies, and low-income economies as defined by the World Bank. In this chapter, we classify economies into the World Bank's six geographic regions: East Asia and Pacific, Eastern Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and sub-Saharan Africa (see Appendix Table 9A.5 for list of economies). We also present separate summary statistics for ADB regional members in the Asia and Pacific subregions: Central and West Asia, East Asia, South Asia, Southeast Asia, and the Pacific.

The main findings of this section are that forecast errors are large, skewed, and downward biased (that is, deficits and debt levels often turn out to be larger than expected). This downward bias tends to be larger in developing economies, but there is substantial variance across developing regions, with the average downward bias being smaller in developing Asia (and in ADB regional members) than in the rest of the developing world.⁷

2.1 Debt-to-GDP Ratio

Table 9.1 focuses on the debt-to-GDP ratio. The top panel compares outturns with 1-year ahead forecasts, and the bottom panel compares outturns with 2-year ahead forecasts. In the group of advanced economies (see Appendix Table 9A.5), average outturns for the debt-to-GDP are about 0.4 percent of GDP higher than forecasts at $t-1$ and $t-2$, but the distribution is right skewed with a large dispersion in outcomes.⁸

Fiscal risk is higher in middle-income economies, with outturns for the debt-to-GDP ratio which are on average 3.2 percent of GDP above the forecasts at $t-1$ (5.2 percent at $t-2$). In this case, the difference is also positive for the median country-year and the distribution is extremely right skewed.⁹ The situation for low-income economies is somewhere in between that of high- and middle-income economies.

Table 9.1 Debt-to-GDP ratio, outturn versus forecasts (%)

Group	Mean	Median	SD	P10	P25	P75	P90	Skew
Outturn - E_{t-1} (all available years)								
AE	0.36	-0.36	9.48	-7.87	-4.00	3.95	10.61	0.42
MIC	3.16	1.89	8.28	-4.18	-1.71	5.91	15.11	1.02
LIC	0.85	0.32	13.32	-11.59	-4.92	5.68	13.02	1.07
EAP	0.48	0.00	8.00	-6.90	-3.06	3.66	7.69	0.48
ECA	0.50	-0.38	9.53	-8.34	-4.15	4.17	10.50	1.04

Group	Mean	Median	SD	P10	P25	P75	P90	Skew
Outturn - E_{t-1} (all available years)								
LAC	1.25	1.10	11.97	-10.61	-3.68	6.08	12.52	0.17
MNA	3.25	2.06	10.54	-9.32	-2.52	8.37	18.69	0.41
SA	-1.23	0.84	13.77	-17.15	-1.34	4.07	9.63	-1.66
SSA	4.09	2.55	15.23	-12.42	-3.21	10.21	21.39	0.91
ADB	-0.23	-0.02	9.67	-8.04	-3.33	3.46	7.78	-0.81
Outturn - E_{t-2} (all available years)								
AE	0.4	-0.3	11.3	-12.1	-4.9	5.7	14.2	0.13
MIC	5.2	2.8	10.8	-5.4	-0.8	9.8	19.3	0.82
LIC	2.0	1.5	15.8	-12.7	-4.7	8.1	17.7	0.21
EAP	1.0	0.5	8.9	-8.1	-3.3	5.7	10.0	-0.02
ECA	1.2	0.2	11.9	-12.0	-5.0	6.6	15.1	0.65
LAC	1.9	1.9	14.6	-12.4	-4.0	8.2	17.6	-0.43
MNA	6.4	3.9	14.0	-8.9	-2.4	14.8	24.9	0.46
SA	-1.8	1.7	17.9	-18.7	-3.0	6.1	11.1	-1.84
SSA	6.5	5.0	17.6	-11.3	-2.8	14.7	27.9	0.30
ADB	-0.03	0.46	11.95	-10.74	-4.56	5.38	11.10	-1.42

Notes:

ADB = Asian Development Bank; AE = advanced economy; EAP = East Asia and Pacific; ECA = Eastern Europe and Central Asia; GDP = gross domestic product; LAC = Latin America and the Caribbean; LIC = low-income country; MNA = Middle East and North Africa; SA = South Asia; SSA = sub-Saharan Africa; WEO = World Economic Outlook.

See Appendix Table 9A.5 for a list of economies in various groups.

Source: Author's calculations based on different vintages of WEO data.

Within the group of developing economies in the World Bank regions, the average difference between outturns and forecasts is particularly large in sub-Saharan Africa and in the Middle East and North Africa, while East Asia and Pacific and Eastern Europe and Central Asia have values similar to those of the advanced economies (especially for forecasts at $t-1$). South Asia is the only region for which the average country has an outturn for the debt-to-GDP ratio which is lower than the forecast and for which the distribution is left skewed.

The data for ADB regional members are somewhere in between those of economies in the World Bank's East Asia and Pacific and South Asia. The average forecast error is negative, the median error is zero, and the distribution is right skewed. While these values suggest that downside fiscal risk is, on average, smaller within ADB regional members, the within-group variance tends to be large, with positive forecast errors in the World Bank's East Asia subregion and negative forecast errors in South Asia (Appendix Table 9A.1).

Focusing on 2020 data, we find very large differences between the WEO forecasts issued in October 2019 and in June 2020 (see Figure 1 in Panizza 2020). Differences are particularly large for advanced economies (17 percent of GDP on average) and slightly smaller for middle- and low-income economies (10 percent of GDP and 7 percent of GDP, respectively).

Among groups of developing economies (Appendix Table 9A.5), the average difference between outturns and forecasts is higher in Latin America, Eastern Europe and Central Asia, and the Middle East and North Africa, and much lower in East Asia and Pacific. The forecast

errors are also positive and large for all ADB regional members, and especially large for South Asia.

2.2 Budget Balance

Focusing on the budget balance (Table 9.2), we find that advanced economies had budget deficits which, on average, were 0.3 percent of GDP larger than expected one year before. However, the median country had a smaller deficit (or a larger surplus) than expected and the distribution of outcomes is only slightly left skewed.¹⁰

In the case of middle-income economies, the average outturn for the budget balance is nearly 1 percent of GDP below the 1-year ahead forecast (1.4 percent of GDP for 2-year ahead expectations). The distribution is heavily left skewed, with the value at the 10th percentile almost twice as large (in absolute value) as the value at the 90th percentile. As in the case of the debt-to-GDP ratio, the behavior of low-income countries is somewhere in between that for middle- and high-income economies.

Within the group of developing economies in the World Bank regions, we find that the average outturn in East Asia and Pacific was 0.75 percent of GDP above the expected 1-year ahead forecast and almost identical to two years ahead. In this region, we also find a right skewed distribution of the forecast error. However, there are large differences within the East Asia and Pacific region, with the deviation between outturns and 1-year ahead expectations ranging from -4.4 percent of GDP for the country-year at the 10th percentile of the distribution and 5 percent of GDP for the country-year at the 90th percentile of the distribution. In the Middle East and North Africa, on the other hand, deficits were on average much larger than expected, with a difference between outturn and 1-year ahead forecasts of 1.2 percent of GDP (1.8 percent of GDP for 2-year ahead expectations). There is also a large dispersion of outcomes in this case.

Table 9.2 Budget balance-to-GDP ratio, outturn versus forecasts (%)

Group	Mean	Median	SD	P10	P25	P75	P90	Skew
Outturn - E_{t-1} (all available years)								
AE	-0.28	0.22	3.21	-3.39	-1.16	1.31	2.51	-1.39
MIC	-0.90	-0.43	5.33	-5.58	-2.63	1.12	2.99	-1.16
LIC	-0.58	-0.21	4.90	-5.47	-2.20	1.41	3.82	-1.57
EAP	0.75	0.20	7.68	-4.40	-1.59	1.86	5.06	2.41
ECA	-0.33	0.24	3.36	-4.53	-1.50	1.44	2.77	-0.99
LAC	-0.42	-0.30	4.59	-4.79	-2.10	0.98	3.03	3.29
MNA	-1.22	-0.72	8.38	-9.40	-4.31	1.88	6.11	-0.84
SA	-0.32	-0.08	4.30	-3.97	-1.77	0.98	3.54	-0.21
SSA	-0.97	-0.52	5.57	-6.78	-3.12	1.42	4.73	-1.06
ADB	1.0	0.0	7.6	-4.6	-2.0	1.9	5.6	3.17

Group	Mean	Median	SD	P10	P25	P75	P90	Skew
Outturn - E_{t-2} (all available years)								
AE	-0.57	0.07	3.77	-5.24	-1.95	1.42	2.78	-1.06
MIC	-1.39	-0.76	6.30	-6.78	-3.13	0.79	3.24	-1.17
LIC	-0.99	-0.77	6.45	-6.23	-2.99	1.30	4.19	-1.15
EAP	-0.08	-0.05	9.77	-5.43	-2.14	1.90	4.89	-0.31
ECA	-0.63	0.01	3.73	-5.52	-2.14	1.42	2.97	-1.16
LAC	-0.57	-0.87	6.15	-5.85	-2.82	1.00	3.63	5.52
MNA	-1.83	-0.97	9.74	-12.25	-5.28	1.89	7.75	-0.75
SA	-0.75	-0.51	4.47	-5.59	-2.77	1.06	3.64	-0.15
SSA	-1.42	-1.13	6.46	-7.38	-3.76	1.03	4.92	-1.60
ADB	0.6	-0.2	8.6	-5.3	-2.4	2.0	5.8	1.62

Notes:

ADB = Asian Development Bank; AE = advanced economy; EAP = East Asia and the Pacific; ECA = Eastern Europe and Central Asia; GDP = gross domestic product; LAC = Latin America and the Caribbean; LIC = low-income country; MNA = Middle East and North Africa; SA = South Asia; SSA = sub-Saharan Africa; WEO = World Economic Outlook.

See Appendix Table 9A.5 for a list of economies in various groups.

Source: Author's calculations based on different vintages of WEO data.

The average for ADB regional members has a fiscal outturn which is a 1 percentage point of GDP above what was expected at $t-1$, and the median country has a forecast error which is close to zero. The strong performance of ADB regional members, however, is due to the behavior of a few outliers in the Pacific subregion (Appendix Table 9A.2). There are large positive values in some Pacific developing member countries (Kiribati, the Federated States of Micronesia, Nauru, Solomon Islands, and Tuvalu). On the other hand, the forecast errors are negative in Central and West Asia and in East Asia, and they are close to zero in South Asia and Southeast Asia. There are large negative values (below 1 percent of GDP) in India, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Papua New Guinea, Samoa, and Sri Lanka. Commodity-producing countries like Azerbaijan and Kazakhstan also have large swings in the difference between the expected and actual budget balances.

The overall pattern for the primary budget balance (Table 3 in Panizza 2020) is similar to that of the overall balance, but with larger negative values for advanced and low-income countries, indicating that in some of these countries, forecasts overstated real interest rate expenditures.

3. THE ROLE OF FORECAST ERRORS IN DEBT-DYNAMIC VARIABLES

The standard debt-dynamic equation expresses the change in the debt-to-GDP ratio as a function of the primary deficit, interest rates, inflation, and real GDP growth. This section studies how forecast errors in the debt-dynamic variables contribute to errors in debt-to-GDP ratio forecasts.

Before considering all these variables together, we first studied the role of forecast errors in GDP growth, because growth is a key component of fiscal risk.

3.1 Fiscal Risk and GDP Growth Forecast Errors

To study how forecast errors on GDP growth at time $t-1$ and $t-2$ affect fiscal risk, we first estimate the following regression:

$$d_{t,c} - E_{t-i}(d_{t,c}) = \alpha + \beta(g_{t,c} - E_{t-i}(g_{t,c})) + \varepsilon_{t,c} \quad (9.1)$$

Where $d_{t,c}$ and $g_{t,c}$ are the debt-to-GDP ratio and real GDP growth at time t in country c , and E_{t-i} denotes expectations taken at time $t-i$.

The first column of Table 9.3 shows that when growth of advanced economies is 1 percentage point lower than expected, the debt-to-GDP ratio grows 1.7 percentage points of GDP more than expected. Errors in growth forecasts explain 40 percent of the variance in errors of public debt-to-GDP forecasts. The second column of Table 9.3 estimates a model similar to that of column 1, but which also allows for country-specific fixed effects (i.e., it controls for the fact that certain economies may make systematic errors in their debt-to-GDP ratio forecasts). Controlling for fixed effects does not alter the correlation between errors in growth forecasts and errors in debt-to-GDP forecasts, and the fixed effects only explain 7 percent of the variance of debt-to-GDP forecast errors.

Table 9.3 Debt-to-GDP ratio and GDP growth, outturn versus forecasts (%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AE	AE	MIC	MIC	LIC	LIC	ADB	ADB
Outturn - E_{t-1}								
GR-E(GR)	-1.658*** (-16.27)	-1.648*** (-16.09)	-0.421*** (-5.85)	-0.720*** (-6.83)	-1.067*** (-6.31)	-0.904*** (-4.95)	-0.82*** (-4.94)	-1.02*** (-6.39)
Const.	-0.011*** (-2.932)	-0.011*** (-2.976)	0.024*** (5.295)	0.018*** (4.046)	-0.006 (-0.832)	-0.004 (-0.561)	-0.01* (-1.77)	-0.01** (-2.32)
N. Obs.	407	407	347	347	341	341	232	232
R ²	0.3953	0.4723	0.0904	0.2994	0.1051	0.3321	0.0963	0.3425
Country FE	NO	YES	NO	YES	NO	YES	NO	YES

Notes:
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
 ADB = Asian Development Bank; AE = advanced economy; GDP = gross domestic product; LIC = low-income country; MIC = middle-income country; WEO = World Economic Outlook.
 t-statistics in parentheses.
 See Appendix Table 9A.5 for a list of economies in various groups.
 Source: Author's calculations based on different vintages of WEO data.

In middle-income countries there is a much smaller correlation between errors in growth forecasts and errors in debt-to-GDP forecasts. In this sample of countries, when growth is 1 percentage point lower than expected, the debt-to-GDP ratio increases by 0.4 percentage point of GDP more than expected, and errors in growth forecasts explain less than 10 percent of the variance of debt-to-GDP forecast errors (column 3). Controlling for country-fixed effects increases the correlation between errors in growth forecasts and errors in debt-to-GDP from 0.4 to 0.7 and contributes to explaining 20 percent of the variance debt-to-GDP forecast errors

(column 4). In low-income economies (columns 5 and 6), a 1 percentage point forecast error in GDP growth is associated with a 1 percentage point error in the debt-to-GDP ratio. Also, in this case, country-specific effects explain most of the variance of the forecast errors. The last two columns show that ADB regional members are similar to the average middle-income country in terms of the share of variance explained by growth forecast errors but close to low-income countries in terms of point estimates.¹¹

Looking at World Bank regional subgroups, we find that forecast errors in GDP growth are an important driver of forecast errors for the debt-to-GDP ratio in Eastern Europe and Central Asia (the correlation between the two errors and the fit of the regression are similar to those of advanced economies), and that forecast errors in GDP growth are not a key driver of forecast errors in debt-to-GDP in East Asia and Pacific, Middle East and North Africa, and sub-Saharan Africa.

There are also large differences across ADB regional members in Asia and the Pacific. GDP growth forecast errors are important in South Asia, while they seem to matter less in East Asia and the Pacific. This is especially the case for 2-year forecasts. In this case, GDP growth forecast errors are not significantly correlated with debt-to-GDP forecasts in Central and West Asia, East Asia, and the Pacific.

Taken together, these results suggest that errors in growth forecasts play an important role (albeit not the most important) in explaining fiscal risk in advanced economies, but that country-specific idiosyncratic factors are more important drivers of fiscal risk in middle- and low-income economies.

3.2 Fiscal Risk and Debt Dynamics

It is possible to use the standard debt-dynamic equation to explore the relative contributions of forecast errors for the primary balance, interest rates, inflation, and GDP growth to forecast errors in the debt-to-GDP ratio.

Standard debt-dynamic accounting allows the debt-to-GDP ratio to be expressed as a function of its lagged value minus the primary balance over GDP, plus the interest rate bill, minus nominal GDP growth (given by real GDP growth plus inflation) multiplied by the lagged debt-to-GDP ratio, plus the stock flow reconciliation.¹² Formally:

$$d_t = d_{t-1}(1 + i - \pi - g) - pb + sf \quad (9.2)$$

Where d is the debt-to-GDP ratio, i the interest rate, g real GDP growth, π the inflation rate, pb the primary balance-to-GDP ratio, and sf the stock-flow reconciliation.

Taking expectations at time $t-1$ yields:

$$E_{t-1}d_t = d_{t-1}(1 + E_{t-1}i - E_{t-1}\pi - E_{t-1}g) - E_{t-1}pb + E_{t-1}sf \quad (9.3)$$

Subtracting (9.3) from (9.2) and dividing by d_{t-1} , we obtain:

$$\begin{aligned} \frac{d_t - E_{t-1}d_t}{d_{t-1}} = & (i - E_{t-1}i) - (\pi - E_{t-1}\pi) \\ & + (g - E_{t-1}g) - \frac{pb_t - E_{t-1}pb_t}{d_{t-1}} + \frac{sf_t - E_{t-1}sf_t}{d_{t-1}} \end{aligned} \quad (9.4)$$

As the only component of equation (9.4) which is not observable is the stock–flow reconciliation, this variable is obtained as a residual.

The four components in the right-hand side of equation (9.4) describe the relative contribution of measurement errors in the four elements of the debt-dynamic equation to forecast errors in the debt-to-GDP ratio as a proportion of the lagged debt-to-GDP ratio.

Table 9.4 shows that forecast errors in the primary balance of advanced economies account for approximately 19 percent of the forecast error in the debt-to-GDP ratio, growth shocks account for 8 percent, interest rate shocks for 3 percent, and inflation shocks for less than 1 percent. Much of the prediction error (72 percent) is not associated with the standard debt-dynamic components (a fact Campos et al. 2006 already show in a different setup), but with the residual stock–flow reconciliation. The second row of Table 9.4 shows a large variation in these shares.

Table 9.4 Debt-to-GDP ratio and GDP growth, decomposition of outturn versus forecasts (%)

	<i>pb</i>	<i>int</i>	<i>inf</i>	<i>gr</i>	ε
Outturn - E_{t-1}					
AE μ	18.6	3.1	-0.3	7.9	71.9
AE σ	56.7	14.4	26.1	25.6	81.2
MIC μ	21.7	2.8	1.8	7.8	76.2
MIC σ	77.3	14.9	28.8	25.6	96.7
LIC μ	12.9	1.8	0.7	4.1	82.9
LIC σ	63.7	11.2	26.9	21.5	75.8
EAP μ	20.7	2.6	1.3	3.8	75.4
EAP σ	78.5	12.4	24.4	22.7	100.1
ECA μ	22.8	3.0	-0.3	7.9	68.6
ECA σ	60.0	13.4	27.3	24.1	81.8
LAC μ	17.5	1.2	-1.4	3.4	79.9
LAC σ	63.0	14.4	31.2	27.9	82.3
MNA μ	23.7	2.5	-0.7	5.8	77.0
MNA σ	74.8	14.7	24.8	21.7	101.8
SAS μ	31.7	5.3	6.1	12.8	51.9
SAS σ	76.6	14.3	28.0	30.4	111.2

	<i>pb</i>	<i>int</i>	<i>inf</i>	<i>gr</i>	ε
Outturn - E_{t-1}					
SSA μ	10.4	2.2	0.2	3.2	87.8
SSA σ	55.5	9.2	26.2	21.1	71.6
ADB μ	23.3	2.7	3.4	7.1	59.8
ADB σ	126.5	12.7	30.6	23.7	137.6

Notes:

μ = mean; σ = standard deviation; ADB = Asian Development Bank; AE = advanced economy; EAP = East Asia and Pacific; ECA = Eastern Europe and Central Asia; GDP = gross domestic product; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SA = South Asia; SSA = sub-Saharan Africa; WEO = World Economic Outlook.

See Appendix Table 9A.5 for a list of economies in various groups.

Source: Author's calculations based on different vintages of WEO data.

The variation of the shares in middle-income economies is similar to advanced economies, but inflation shocks are more important contributors, and in low-income economies, primary balance and growth forecast errors are less important contributors to the debt-to-GDP ratio forecast error. More than 80 percent of this forecast error is associated with the unexplained residual.

Within the World Bank groups of developing economies, primary balance shocks are especially important in South Asia and in the Middle East and North Africa regions. South Asia also has the smallest unexplained component (which, however, still accounts for 50 percent of the debt-to-GDP forecast error) and the region where all types of shocks play an important role in explaining debt-to-GDP forecast errors.

In ADB regional members, on average nearly one-quarter of the forecast error in debt-to-GDP is explained by forecast errors in the primary balance and about 10 percent by forecast errors in nominal GDP growth (3 percent inflation and 7 percent real growth); and the unexplained residual is associated with 60 percent of the forecast errors (Table 9A.3). There are large variations among ADB regional members (Table 9A.4). Errors in the primary balance are particularly important in Central and West Asia (where they account for 60 percent of the forecast error in the debt-to-GDP ratio, and the unexplained part “only” accounts for 24 percent of the forecast error), but also in Southeast Asia and the Pacific.

The case of East Asia is interesting because this subregion is characterized by large forecast errors in the primary balance, but these errors go in the opposite direction with respect to other economies. East Asian economies have, on average, outturns for the budget deficit which are smaller than predicted at time $t-1$. There are also negative contributions from interest rates and inflation. The counterpart of these negative contributions is a large share for the unexplained part which, in these countries, amounts to 200 percent. In East Asia, fiscal forecasts are too conservative!

3.3 Budget Balance and Growth Forecast Errors

As GDP growth and the budget balance (especially the primary balance) are both important drivers of forecast errors in the debt-to-GDP ratio, it is interesting to explore the correlation between forecast errors in these two variables.

Table 9.5 reports the results of an exercise similar to that of Table 9.3, but focusing on forecast errors in the budget balance over GDP instead of the debt-to-GDP ratio. Columns 1 and 2 show that in advanced economies a 1 percent error in growth forecast is associated with a 0.7 percentage point error in budget balance forecast. The regressions also show that in advanced economies, errors in growth forecast explain more than 40 percent of the variance budget balance forecast errors, and country-fixed effects explain less than 5 percent of this variance.

Table 9.5 Budget balance-to-GDP ratio and GDP growth, outturn versus forecasts (%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AE	AE	MIC	MIC	LIC	LIC	ADB	ADB
Outturn - E_{t-1}								
GR-E(GR)	0.698*** (25.07)	0.713*** (25.48)	0.157*** (4.96)	0.162*** (4.90)	0.208*** (5.56)	0.190*** (5.12)	0.32*** (4.11)	0.26*** (3.87)
Const.	0.0014* (1.69)	0.002* (1.82)	-0.007*** (-3.08)	-0.006*** (-3.09)	-0.003 (-1.44)	-0.003* (-1.69)	0.01*** (3.62)	0.01*** (4.16)
N. Obs.	842	842	647	647	641	641	473	473
R ²	0.428	0.47	0.036	0.134	0.046	0.227	0.0346	0.3724
Country FE	NO	YES	NO	YES	NO	YES	NO	YES

Notes:

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

ADB = Asian Development Bank; AE = advanced economy; GDP = gross domestic product; LIC = low-income country; MIC = middle-income country; WEO = World Economic Outlook.
t-statistics in parentheses.

See Appendix Table 9A.5 for a list of economies in various groups.

Source: Author's calculations based on different vintages of WEO data.

The relationship between forecast errors in GDP growth and forecast errors in the budget balance is much weaker in middle-income economies. In this case, a 1 percentage point error in growth forecasts is associated with a 15–20 basis points error in budget balance forecasts (Table 9.5, columns 3–6). In middle-income economies, growth forecast errors explain less than 5 percent of the variance in budget balance forecast errors. The last two columns focus on ADB regional members. The share of variance explained by growth forecast errors is similar to that of middle-income economies, but the point estimates are larger than those in the full sample of middle-income economies, and they remain significant for 2-year ahead forecasts.¹³

As in the case of debt-to GDP ratio, we find that GDP growth shocks are an important factor in predicting forecast errors in the budget balance (and the primary budget balance) in Eastern Europe and Central Asia and that they are less important in South Asia (where the correlation is not even statistically significant), sub-Saharan Africa, and East Asia.

The main takeaway of this subsection is that forecast errors in GDP growth are important drivers of fiscal risk. In the average middle-income economy, they contribute about 8 percent to the debt-to-GDP ratio forecast error (Table 9.4). However, this is not their only contribution to fiscal risks as shocks to GDP growth are also strongly correlated with forecast errors in the primary balance which, in turn, explain 22 percent of the forecast errors in the debt-to-GDP ratio.

4. THE CORRELATES OF FISCAL RISK

This section studies which variables are correlated with fiscal risk. As before, we start with forecast errors in the debt-to-GDP ratio and then move to forecast errors in the budget balance. As Table 9.4 showed that forecast errors in GDP growth are a key driver of forecast errors in public debt-to-GDP, we start by unpacking equation (1) and estimate the following model:

$$d_{t,c} - E_{t-i}(d_{t,c}) = a_c + \beta g_{t,c} + \gamma E_{t-i}(g_{t,c}) + \varepsilon_{t,c} \quad (9.5)$$

Note that equation (9.1) is equivalent to estimating equation (9.5) together with the restriction that $\beta = -\gamma$.

The first four columns of Table 9.6 show that β is approximately equal to $-\gamma$ in developing and emerging economies but that in advance economies $\beta = -2\gamma$, and that γ is not even statistically significant (γ is only marginally significant in ADB regional members).

The point estimates suggest that in advanced economies, a 1 percentage point forecast error for GDP growth is associated with an 80 basis point increase in the debt-to-GDP ratio over and above what was expected, but that another 80 basis point surprise in the debt-to-GDP ratio is associated to the GDP growth outcome itself, irrespective to what expected growth was. The results indicate a systematic underestimation of countercyclical fiscal policy in debt-to-GDP forecasts in advanced economies, but not in developing and emerging economies. This result is likely to be due to the fact that countercyclical fiscal policies are not in place in the average developing and emerging economy.

Table 9.6 *Debt surprises and GDP growth*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GR	-0.957*** (0.0997)	-1.694*** (0.210)	-0.831*** (0.100)	-1.028*** (4.77)				
E(GR)	0.746*** (0.145)	0.865 (0.879)	0.694*** (0.141)	0.992* (1.982)	0.629*** (0.177)	0.765 (0.913)	0.561*** (0.183)	0.951* (1.89)
GRxGT					-0.549** (0.235)	-1.514*** (0.299)	-0.378 (0.269)	-0.568 (1.18)
GRxBT					-0.933*** (0.132)	-1.800*** (0.267)	-0.791*** (0.132)	-1.10*** (3.71)
BT					0.027** (0.011)	-0.001 (0.014)	0.033** (0.015)	0.027 (0.86)
N. Obs	1,697	317	1,380	232	1,697	317	1,380	232
N. Cy	190	26	164	31	190	26	164	31
Cy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Sample	All	AE	DEV&EM	ADB	All	AE	DEV&EM	ADB

Notes:

*** p < 0.01, ** p < 0.05, * p < 0.1.

ADB = Asian Development Bank; AE = advanced economy; DEV&EM = developing and emerging; GDP = gross domestic product; WEO = World Economic Outlook.

Robust standard errors in parentheses.

See Appendix Table 9A.5 for a list of economies in various groups.

Source: Author's elaborations based on different vintages of WEO data.

As a next step, we created “bad times” and “good times” dummy variables (the bad times dummy variable takes value 1 when GDP growth is below the country-specific median growth, the good times dummy is the opposite), and then we augmented equation (9.5) with this dummy and the interaction between each of the two dummies and realized GDP growth.

Column 6 shows that, conditional on GDP growth, in advanced economies there are no differences in debt-to-GDP forecast errors between good and bad times (the coefficient for the dummy is not statistically significant and with a point estimate close to zero), and the correlation between GDP growth and debt-to-GDP forecast errors tends to be higher during bad times. However, the difference in this correlation between good and bad times is small.

In developing and emerging economies, we also find that the correlation between GDP growth and debt-to-GDP forecast errors is higher during bad times (twice as high as in good times, column 7). However, controlling for GDP growth, the debt-to-GDP ratio forecast error increases by 3 percentage points during bad times. The results for ADB regional members are similar to those of developing and emerging economies (column 8). The Independent Evaluation Office (2014) found significant over prediction of GDP growth during recessions and crisis times; Table 9.8 shows that these biases extend to fiscal forecasts *even after controlling for the bias in GDP forecasts*.¹⁴

Table 9.7 studies the roles of exchange rate and inflation. It shows that exchange rate depreciations ($DXR < 0$) play no role in advanced economies (column 2), but they are an important determinant of fiscal risk in developing economies. The coefficient is particularly large in ADB regional members (columns 3 and 4). This result is likely because developing and emerging market economies tend to have part of their public debt denominated in foreign currency (Eichengreen et al. 2005; and Panizza and Taddei 2020). The point estimates of columns 3 and 4 indicate that a 10 percent currency depreciation is associated with a 2.5 percentage point unexpected increase in the debt-to-GDP ratio of developing and emerging economies and 4 percentage points in ADB regional members.

Inflation is associated with an unexpected increase in the debt-to-GDP ratio in advanced economies (column 6), but has no effect on public debt surprises in developing and emerging economies (columns 7 and 8).

Table 9.7 *Debt surprises, GDP growth, exchange rate, and inflation*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GRxGT	-0.420 (0.261)	-1.537*** (0.240)	-0.133 (0.291)	0.042 (0.11)	-0.429* (0.258)	-1.479*** (0.215)	-0.131 (0.288)	0.042 (0.115)
GRxBT	-0.493*** (0.166)	-2.099*** (0.496)	-0.382** (0.152)	-0.1950 (0.528)	-0.556*** (0.187)	-2.048*** (0.527)	-0.451** (0.176)	-0.191 (0.479)
BT	0.0230* (0.0135)	0.00353 (0.0113)	0.0343* (0.0177)	0.026 (0.93)	0.0241* (0.0137)	0.00241 (0.0110)	0.0364** (0.0180)	0.026 (0.869)
DXR	-0.203*** (0.0430)	-0.0212 (0.0524)	-0.242*** (0.0511)	-0.412*** (3.2819)	-0.209*** (0.0466)	-0.0430 (0.0548)	-0.250*** (0.0564)	-0.412*** (3.08)
INF					-0.0892 (0.0788)	0.987** (0.376)	-0.0886 (0.0893)	0.011 (0.041)
E(GR)	0.678**	0.936	0.673**	0.623	0.631**	0.646	0.621**	0.622

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(0.260)	(0.824)	(0.276)	(1.32)	(0.248)	(0.837)	(0.262)	(1.332)
N. Obs	1,507	291	1,216	201	1,504	291	1,213	201
N. Cy	189	26	163	31	189	26	163	31
Cy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	AE	DEV&EM	ADB	All	AE	DEV&EM	ADB

Notes:

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

ADB = Asian Development Bank; AE = advanced economy; DEV&EM = developing and emerging; GDP = gross domestic product; WEO = World Economic Outlook.

Robust standard errors in parentheses.

See Appendix Table 9A.5 for a list of economies in various groups.

Source: Author's elaborations based on different vintages of WEO data.

Table 9.8 augments the model of Table 9.7 with a set of fiscal indicators measured at time $t-1$. Columns 1–4 show that high debt-to-GDP ratios are associated with negative forecast errors (the coefficient, however, is only significant in advanced economies). When advanced economies observe growing debt ratios, they tighten policy more than anticipated. Columns 5–8 control for interest expenditure over GDP at time $t-1$ and show that this variable is negatively correlated with debt-to-GDP forecast errors, but the coefficient is only statistically significant in advanced economies. When we control interest expenditure, we find that the debt-to-GDP ratio is no longer associated with debt-to-GDP forecast errors. This finding is in line with the idea that interest expenditure over GDP is a better indicator of fiscal sustainability than the debt-to-GDP ratio.

Table 9.8 *Debt surprises, GDP growth, exchange rate and inflation*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GRxGT	-0.405 (0.260)	-1.46*** (0.234)	-0.105 (0.283)	0.057 (0.150)	-0.386 (0.270)	-1.45*** (0.214)	-0.0634 (0.293)	0.06 (0.13)
GRxBT	-0.66*** (0.200)	-1.80*** (0.493)	-0.55*** (0.194)	-0.176 (0.44)	-0.67*** (0.201)	-1.96*** (0.472)	-0.58*** (0.200)	-0.12 (0.32)
BT	0.027** (0.013)	0.0024 (0.011)	0.039** (0.017)	0.0246 (0.833)	0.0276** (0.013)	0.003 (0.011)	0.042** (0.018)	0.02 (0.71)
DXR	-0.21*** (0.045)	-0.039 (0.053)	-0.25*** (0.055)	-0.412*** (0.07)	-0.22*** (0.046)	-0.072 (0.051)	-0.25*** (0.056)	-0.42*** (3.03)
INF	-0.097 (0.074)	0.734 (0.430)	-0.095 (0.085)	0.006 (0.02)	-0.100 (0.076)	1.071** (0.460)	-0.105 (0.089)	-0.018 (0.07)
Debt/Y	-0.060* (0.035)	-0.060** (0.029)	-0.053 (0.061)	-0.103 (0.68)	-0.043 (0.035)	-0.0466 (0.0312)	-0.006 (0.063)	-0.09 (-0.67)
INT/Y					-0.991** (0.399)	-0.92*** (0.294)	-1.504 (1.145)	-2.75 (0.65)
E(GR)	0.473** (0.195)	0.244 (0.832)	0.483** (0.214)	0.5105 (1.0098)	0.488** (0.198)	0.657 (0.767)	0.492** (0.214)	0.39 (0.791)
N. Obs	1,497	290	1,207	201	1,463	287	1,176	197

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
N. Cy	188	26	162	31	182	26	156	29
Cy FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	AE	DEV&EM	ADB	All	AE	DEV&EM	ADB

Notes:

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

ADB = Asian Development Bank; AE = advanced economy; DEV&EM = developing and emerging; GDP = gross domestic product; WEO = World Economic Outlook.

Robust standard errors in parentheses.

See Appendix Table 9A.5 for a list of economies in various groups.

Source: Author's elaborations based on different vintages of WEO data.

Further regressions reported in Panizza (2020) show that these results do not change if one controls for lagged total government revenues over GDP or lagged tax revenues over GDP. The World Bank Control of Corruption indicator is not significantly correlated with fiscal risk. In fixed effects regression, there is a weak positive correlation between debt-to-GDP forecast errors and the open budget index (an indicator of budgetary transparency assembled by the International Budget Partnership; see Table 13 in Panizza 2020) in the full sample of developing and emerging economies. This result suggests that as economies adopt more transparent budgets, they tend to have debt outturn that is larger than expected. This is likely to be due to the fact that a more transparent budget does not allow “skeletons in the closet”.

Finally, there is no evidence that a more open capital account or higher credit ratings are associated with debt-to-GDP forecast errors in the average advanced economy and developing and emerging market economies (Tables 14–16 in Panizza 2020). However, there is some evidence that when ADB regional members open their capital account they tend to face lower fiscal risk.

Panizza (2020) repeats these exercises, focusing on forecast errors for the budget balance. While most of the results are similar to those described above, there are a few notable differences.

When studying the drivers of debt-to-GDP ratio forecast errors, we found that, controlling for GDP growth, debt tends to increase more than expected during bad times in developing countries, but there is no bad-times effect in advanced economies. We also found that the correlation between GDP growth and debt-to-GDP forecast errors is stronger (in absolute value) during bad times in both advanced and developing and emerging countries. Focusing on the budget balance, we find that deficits tend to be larger than expected during bad times in advanced economies, but we find no bad-times effect in developing and emerging market countries. Similarly, we find strong asymmetric effects (with a stronger correlation between GDP growth and deficits during bad times) in advanced economies but no asymmetry in developing and emerging economies (if anything the correlation is stronger during good times). The asymmetry, however, is still present if we focus only on ADB regional members.

These findings suggest that what we observed for the debt-to-GDP ratio is mostly due to procyclical balance sheet effects in developing and emerging market countries (hence, the effect is not reflected in the budget) and to countercyclical fiscal policy in advanced economies (with the effect reflected in the budget). The importance of balance sheet effects is also reflected by the role of the exchange rate which is statistically significant for debt-to-GDP

ratio forecast errors in developing and emerging market economies but does not have a statistically significant effect on budget balance forecast errors.

Another difference between the debt and budget balance regressions is that in the latter the lagged debt-to-GDP ratio remains statistically significant in advanced economies even after controlling for the interest rate bill. Moreover, while higher past debt ratios are associated with positive prediction errors for the budget balance (indicating a more-than-expected budget tightening after large debt realizations), we find that a higher interest rate bill is associated with negative forecast errors (suggesting larger deficits or smaller surpluses after high interest bill realizations).

5. LEARNING FROM OUTLIERS

To better understand the sources of large fiscal risk in ADB regional members, we first ranked all country-years by their 1-year ahead forecast error in terms of debt-to-GDP, deficit-to-GDP, and primary deficit-to-GDP and identified the top 10 and bottom 10 economies in each group.

In the list of episodes, fiscal outturns were much worse than expected in sub-Saharan Africa (57 percent of episodes), Latin America and the Caribbean (21 percent of episodes), and Middle East and North Africa (16 percent of episodes).

The list of episodes in which fiscal outturns were better than expected includes a large number of ADB regional members (48 percent of the total, the countries included in the list are ADB Pacific developing member countries), followed by countries in sub-Saharan Africa (33 percent of the total) and Latin America and the Caribbean (19 percent).

Next, we repeated the exercise by focusing only on ADB regional members and conducted a detailed analysis of IMF Article IV reports for the top- and bottom-ranked countries, to identify the causes of the forecast errors in the top 10 country-years that underperformed with respect to 1-year ahead forecasts (i.e., country-years with higher-than-expected debt and deficits) and the top 10 country-years that overperformed with respect to 1-year ahead forecasts (i.e., country-years with lower-than-expected debt and deficits).

Table 9.9 Outliers, countries with worse-than-expected outturn

Country	Year	Type of Slippage	Description or the Main Drivers of the Forecast Error
Azerbaijan	2016	D	Low oil prices; banking crisis, currency depreciation with FX debt, slow growth in trading partners.
Azerbaijan	2015	D	Low oil prices; currency depreciation with FX debt, slow growth in trading partners.
Vanuatu	2016	D	Cyclone Pam (2015), but most of the debt increase is related to concessional debt; very small economy subject to large external shocks and volatile grants.
Kyrgyz Republic	2015	D	Currency depreciation with FX debt, low gold prices, fiscal slippages linked to elections.
Lao PDR	2014	D	High initial debt levels and more-than-expected debt issuance to finance investment projects.

Country	Year	Type of Slippage	Description or the Main Drivers of the Forecast Error
India	2015	D	High debt levels, forecast errors are partly due to higher-than-expected real interest rates but no indication of other reasons for the forecast error in IMF Article IV.
Philippines	2017	D	The increase in gross debt was mostly associated with an increase in liquid assets held by the government; hence, net debt did not deviate much from what was forecasted in period $t-1$.
Tajikistan	2016	D, BB, PB	Article IV reports are not available for this period. Press releases on the IMF visits include the following statement: "Since late-2014, Tajikistan's economy has suffered from external shocks, which affected economic confidence, reduced fiscal space and external buffers, and increased vulnerabilities".
Kazakhstan	2015	D, BB, PB	Low oil prices, lower-than-expected revenues, exchange rate depreciation in the presence of FX debt.
Tuvalu	2016	D	Very small economy subject to large external shocks and volatile budget support from Australia, New Zealand, and the United Kingdom. Note that in 2016 fiscal indicators were improving, but were less than expected.
Mongolia	2016	BB, PB	Substantial loosening of fiscal policy and increase in interest rates; anemic growth linked to low commodity prices; judicial settlement with a mining company; currency depreciation.
Kazakhstan	2016	BB, PB	Lower-than-expected growth, as a consequence, the decrease of the primary deficit was slower than expected. Note that in this period fiscal indicators were improving, but were less than expected.
Papua New Guinea	2016	BB, PB	Drought and decrease in price of commodity exports led to a sharp growth slowdown and drop in revenues. Large recognition of contingent liabilities.
Viet Nam	2013	BB, PB	Tax revenues fell short because of low economic growth, tariff reductions, and new exemptions. Capital expenditure was higher than planned.
Solomon Islands	2017	BB, PB	Lower tax revenues and grants, development partners pulled out of financing an undersea fiber-optic cable.
Solomon Islands	2016	BB	Unexpected decrease in grants.
Nepal	2018	BB	Lower-than-expected grants and higher-than-expected primary expenditure.
Tajikistan	2017	BB, PB	Article IV reports are not available for this period. Besides that mentioned in 2017, press release on the IMF visits states: "There are downside risks to the fiscal outlook owing to infrastructure projects". Note that in this period fiscal indicators were improving, but were less than expected.
Maldives	2014	PB	Large increase of the primary deficit to higher expenditures for subsidies, public sector wages, and social welfare.
Maldives	2016	PB	Lower-than-expected revenues and large arrears clearance despite unchanged current spending.

Note: BB = budget balance; D = debt-to-GDP; FX = foreign currency; IMF = International Monetary Fund; Lao PDR = Lao People's Democratic Republic; PB = primary balance.

Source: Author's classification based on analysis of IMF Article IV reports.

Tables 9.9 and 9.10 summarize the outcome of this exercise. Although the maximum number of underperformers is 30 (10 country-years and three indicators), countries that in a given year underperform in one fiscal indicator often underperform in other indicators. Hence, the list

of underperformers (Table 9.9) contains only 20 observations. The same applies to the list of overperformers (Table 9.10).

Table 9.10 Outliers, countries with better-than-expected outturns

Country	Year	Type of Overperformance	Description or the Main Drivers of the Forecast Error
Bhutan	2015	D	Lower-than-expected public investment in hydropower investment projects. Debt was still increasing but it was less than expected.
Azerbaijan	2018	D	Increase in oil price and higher-than-expected growth.
Viet Nam	2018	D	High growth, tight fiscal policy.
Azerbaijan	2017	D	Debt was still growing but at a slower pace than expected because of lower contingent liabilities realization than expected.
Kyrgyz Republic	2017	D	Currency appreciation and debt relief from the Russian Federation; debt was still increasing but it was less than expected.
Myanmar	2014	D	Currency appreciation against a basket of currencies in which Myanmar's external debt is denominated.
Cambodia	2018	D	Higher-than-expected growth and lower-than-expected fiscal deficit.
Kiribati	2018	D	Strong fishing revenues and strong economic performance; very small economy subject to large external shocks and volatile grants.
Tuvalu	2018	D, BB, PB	Very small economy subject to large external shocks and volatile budget support from Australia, New Zealand, and the United Kingdom.
Kazakhstan	2011	D	High GDP growth linked to high commodity prices, small appreciation of the currency.
Tuvalu	2013	BB, PB	Very small economy subject to large external shocks and volatile budget support from Australia, New Zealand, and the United Kingdom.
Tuvalu	2015	BB	Very small economy subject to large external shocks and volatile budget support from Australia, New Zealand, and the United Kingdom.
Kiribati	2017	BB, PB	Fiscal indicators were deteriorating but were less than expected because of stronger-than-expected economic growth and fishing revenues. Very small economy subject to large external shocks and volatile grants. Grants did not decrease as much as expected.
Tuvalu	2017	BB, PB	Very small economy subject to large external shocks and volatile budget support from Australia, New Zealand, and the United Kingdom.
Kiribati	2016	BB, PB	Fishing revenues exceeded the budget projection by 25 percent leading to an unexpected budget surplus. Very small economy subject to large external shocks and volatile grants.
Federated States of Micronesia	2018	BB	Higher-than-expected economic growth, fishing license fees, corporate tax payment from investment companies domiciled in the islands, and foreign grants. Very small economy subject to large external shocks and volatile grants.

Country	Year	Type of Overperformance	Description or the Main Drivers of the Forecast Error
Vanuatu	2017	BB	Very small economy subject to large external shocks and volatile grants. The deficit was lower than expected because of a pickup in GDP growth and lower-than-expected public investment for reconstruction after Cyclone Pam.
Vanuatu	2018	BB, PB	Very small economy subject to large external shocks and volatile grants. The deficit was lower than expected because of a pickup in GDP growth and lower-than-expected public investment for reconstruction after Cyclone Pam.
Maldives	2017	BB, PB	Higher-than-expected growth and lower-than-expected primary expenditure (with revenues remaining constant).
Maldives	2013	PB	A rebound in growth improved the fiscal situation even though the fiscal deficit remains high.

Note: BB = budget balance; D = debt-to-GDP; GDP = gross domestic product; IMF = International Monetary Fund; Lao PDR = Lao People's Democratic Republic; PB = primary balance.

Source: Author's classification based on analysis of IMF Article IV reports.

The first two columns of Tables 9.9 and 9.10 report the countries and years with large forecast errors, the third column describes the fiscal indicators (D for debt-to-GDP, BB for budget balance, and PB for primary balance) with large forecast errors in a given country-year, and the last column provides a short description of the drivers of the forecast errors based on the analysis of Article IV reports. The tables order country-years on the basis of the size of the debt forecast errors, followed by a ranking first based on the size of the budget deficit forecast error, and then the primary deficit forecast error.¹⁵

While Tables 9.9 and 9.10 could include up to 40 countries (20 countries each), the tables include only 20 countries because a number of countries appear multiple times in each of the two tables, and seven countries (Azerbaijan, Kazakhstan, the Kyrgyz Republic, Maldives, Tuvalu, Vanuatu, and Viet Nam) appear in both lists. The data suggest that these countries have fiscal forecasts that are particularly noisy, with large overpredictions and underpredictions of fiscal outturns.

Moreover, Azerbaijan, Kazakhstan, Maldives, Solomon Islands, and Tajikistan appear twice in Table 9.9; Kiribati, Tuvalu, and Vanuatu appear twice in Table 9.10; and Azerbaijan and Maldives appear twice in Table 9.10. These 10 countries account for 75 percent of the observations included in Tables 9.9 and 9.10. Azerbaijan, Maldives, and Tuvalu alone account for 33 percent of observations.

Looking at the characteristics of the countries in the two lists, we find that in the list of underperformers eight entries are commodity producers, six entries are small island states, and only three entries are countries with a more diversified economy and a substantial manufacturing sector. Focusing on the list of overperformers, we find 13 entries for ADB Pacific developing member countries and four entries for commodity exporters.

Besides being grouped in a small number of countries, the observations of Tables 9.9 and 9.10 are also grouped in a small number of years. In Table 9.9, 65 percent of observations are for two years in which commodity prices were decreasing (nine observations for 2016 and four for 2015) and in Table 9.10, 65 percent of observations are for two years in which commodity process were increasing (seven observations for 2018 and 6 for 2017).

Tables 9.9 and 9.10 also show that for commodity exporters fiscal risk is mostly driven by volatility in commodity prices. In small island states, fiscal risk is driven by the volatile macro environment caused by the small size of the economy and by volatility in grants, tourism and fishing revenues. Currency depreciations in the presence of foreign currency debt are an important source of fiscal risk with respect to the debt indicator (40 percent of the debt surprises listed in Table 9.9 are associated with currency depreciations).

6. CONCLUSIONS

Forecasts always have a margin of error, but unbiased forecasts should be correct on average (that is the error should have a mean of zero). However, fiscal plans often go astray in a specific direction as larger-than-expected debt and deficits are much more likely than smaller-than-expected debt and deficits. It is probably for this reason that all the IMF documents reviewed for this chapter include the sentence, “Risks to the outlook are tilted to the downside”.

The concept of fiscal risk reflects the presence of large or systematic deviations of fiscal outcomes from their expected values. This chapter describes and quantifies fiscal risk focusing on public debt-to-GDP ratio and fiscal deficit (both overall and primary) to GDP ratio. The chapter finds that fiscal risk is substantial, especially in developing and emerging economies. In advanced economies about 40 percent of the variance of fiscal risks is explained by GDP growth shocks; in developing and emerging countries growth shocks explain less than 10 percent of the variance of fiscal risk. Focusing on the debt-to-GDP ratio, the chapter finds that it is difficult to explain forecast errors by simply focusing on forecast errors in the standard debt-dynamic variables equation. In both advanced and emerging economies, more than 50 percent of the forecast error is associated with a non-easily observable residual entity. Campos et al. (2006) call this “the unexplained part of debt”.

The chapter also finds that fiscal risk is especially high in bad times, even when there are no forecast errors for GDP growth. This finding is often due to fiscal slippages in advanced economies and the presence of negative balance sheet effects in developing and emerging market economies.

The average value for ADB regional members differs from those of developing countries as a whole. First, if we measure fiscal risk by the mean difference of outturn versus forecasts or by the skewedness of this difference, we find that forecasts are less optimistic in the average ADB regional member than in other developing and emerging economies. Second, the standard deviation of the forecast errors for the debt-to-GDP ratio in ADB regional members is similar to that for other developing and emerging market economies, but the standard deviation of forecast errors for the budget deficit is much higher in ADB regional members. Third, the analysis of outliers shows that ADB regional members are underrepresented among outliers for which fiscal outturns were worse than expected and overrepresented among outliers for which outturns were better than expected. And among these outliers, all ADB regional members are Pacific developing member countries.

These findings have important policy implications. When forecast errors are biased in one specific direction, the main policy priority should be to eliminate the source of this bias, especially if this bias leads to overly optimistic forecasts (see Beaudry and Willems forthcoming).

The results of this chapter suggest that this is less of a problem for the typical ADB regional member than for the typical developing and emerging country.

Forecast errors that are large but with no obvious bias could be driven by poor forecasting capacity or by the fact that an economy is subject to very large shocks. Small economies are likely to be subject to both of these problems as they are likely to have insufficient resources to invest in data collection and forecasting capacity which mostly involve fixed costs (the forecasts used in this chapter are by IMF economists but based on national data) and also tend to be less diversified and, hence, more volatile than larger economies.

Investing in better forecasting capacity can have high returns as there is evidence that better data quality and transparency is associated with lower spreads (Choi and Hashimoto 2017). For countries that are subject to large external shocks (both weather-related and linked to commodity price fluctuations) there is little that can be done in terms of baseline forecasts (countries can, however, incorporate uncertainty with a fan-chart approach that allows for tail events; see IMF 2016). Countries subject to large exogenous shocks can, however, increase resilience by issuing contingent debt instruments as discussed in Chapter 15 on fiscal insurance in this volume.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent. The author thanks Benno Ferrarini, Marcelo Giugale, Juan Pradelli, Andrea Presbitero, Hernán Seoane, and Reza Vaez-Zadeh for commissioning this chapter and providing helpful feedback, and Xi Kang for outstanding research assistance. The usual caveats apply. This chapter only reports a subset of the results included in the original study. For a full set of results, see Panizza (2020).
2. The government budget balance is defined as total government revenues minus total government expenditures. The primary budget balance is defined as the budget balance net of interest revenues and expenditure.
3. While it would have been interesting to also examine risks associated with different components of the government balance (government revenues, public sector wage bill, etc.), lack of systematic forecasts for these variables prevented such an exercise.
4. Evidence however shows that the optimism on these forecasts may depend on the characteristics of the economist in charge of a given country (Beaudry and Willems forthcoming).
5. Cebotari et al. (2009) use a panel of 27 advanced economies for 1995–2007 and 131 developing and emerging economies for 2002–2007.
6. For instance, we compare the outturn for the debt-to-GDP ratio in 2018 (using 2020 WEO data) with the WEO forecasts of Fall 2017 (for $t-1$ forecasts) and Fall 2016 (for $t-2$ forecasts). For 2019 and 2020, we measure the outturn using data for the June 2020 WEO and compare them with October 2017 and October 2018 for 2019 and October 2018 and October 2019 for 2020.
7. Developing economies and regions refer to the World Bank classification (see Appendix Table 9A.5). Developing Asia refers to developing economies in Asia, mostly South Asia and East Asia and Pacific (EAP) in the World Bank classification and ADB regional members.
8. The median country has an outturn which is lower than forecasted at $t-1$ and $t-2$, and the country at the 90th percentile of the distribution has a difference between outturn and forecast which is 3 percentage points of GDP larger (in absolute value) than the country at the 10th percentile of the distribution. The standard deviation is nearly 30 times the average value of the forecast error.
9. The country at the 90th percentile of the distribution has a difference between outturn and forecast which is 11 percent of GDP larger, in absolute value, than the country at the 10th percentile of the distribution.
10. The observation at the 10th percentile has an outturn which is 3.4 percent of GDP below expectations (5.2 percent of GDP for 2-year ahead forecasts) and the observations at the 90th percentile

have an outturn which is about 2.5 percent of GDP above expectations for both 1-year and 2-year forecasts.

11. The bottom panel of Table 9.2, which focuses on forecast errors with respect to time $t-2$, reports results that are similar to those of the top panel (the only difference is that for 2-year forecast errors there is a stronger correlation between advanced economies' GDP growth forecast errors and debt-to-GDP forecast errors).
12. As suggested by its name, the stock–flow reconciliation is a residual entity that reconciles the deficit, which is a “flow” variable, with the evolution of debt, which is a “stock” variable. Campos et al. (2006) call the stock–flow reconciliation “the unexplained part of public debt”.
13. We obtain similar results if, instead of focusing on the overall budget balance, we study the correlation between forecast errors in GDP growth and forecast errors in the primary balance. In this case, however, we find that the point estimates for ADB regional members are very close to those for advanced economies (the share of variance remains lower, however).
14. One possible explanation for this result is that fiscal consolidations during good times are easier to forecast than sudden deteriorations.
15. Note that the country-years included in the list of Table 9.9 did not necessarily face deteriorating fiscal conditions. In about 30 percent of cases, fiscal indicators were improving, but less than expected. The same applies to the list in Table 9.10, which includes four country-years with deteriorating fiscal indicators, but where the deterioration of these indicators was smaller than expected.

REFERENCES

- Beaudry, P. and T. Willems. Forthcoming. On the Macroeconomic Consequences of Over-Optimism. *American Economic Journal: Macroeconomics*.
- Bova, E., M. Ruiz-Arranz, F. Toscani and E. Ture. 2019. The Impact of Contingent Liability Realizations on Public Finances. *International Tax and Public Finance*. 26, pp. 381–417.
- Brixi, H. and A. Schick. 2002. *Government at Risk: Contingent Liabilities and Fiscal Risk*. New York: Oxford University Press.
- Budina, N. and M. Petrie. 2013. Managing and Controlling Fiscal Risk. In C. Cangiano and M. Lazare (eds), *Public Financial Management and Its Emerging Architecture*. International Monetary Fund (IMF), Washington DC.
- Campos, C., D. Jaimovich and U. Panizza. 2006. The Unexplained Part of Public Debt. *Emerging Markets Review*. 7, pp. 228–43.
- Cebotari, A., J. Davis, L. Lusinyan, A. Mati, P. Mauro, M. Petrie and R. Velloso. 2009. *Fiscal Risks, Sources, Disclosure, and Management*. Washington, DC: IMF.
- Celasun, O., X. Debrun and J. Ostry. 2006. Primary Surplus Behavior and Risks to Fiscal Sustainability in Emerging Market Countries: A Fan Chart Approach. *IMF Staff Papers*. 53, pp. 401–425.
- Choi, S. and Y. Hashimoto. 2017. The Effects of Data Transparency Policy Reforms on Emerging Market Sovereign Bond Spreads. *IMF Working Paper*. No. 17/74. Washington, DC: IMF.
- Eichengreen, B., R. Hausmann and U. Panizza. 2005. The Pain of Original Sin. In B. Eichengreen and R. Hausmann (eds), *Other People's Money*. Chicago, IL: University of Chicago Press.
- Hausmann, R. and U. Panizza. 2011. Redemption or Abstinence? Original Sin, Currency Mismatches and Counter Cyclical Policies in the New Millennium. *Journal of Globalization and Development*. 2(1), pp. 1–35.
- Independent Evaluation Office. 2014. *IMF Forecasts: Process, Quality, and Country Perspectives*. Washington, DC: IMF.
- International Monetary Fund (IMF). 2016. *Analyzing and Managing Fiscal Risk: Best Practices*. Washington, DC: IMF.
- Jaramillo, L., C. Mulas-Granados and E. Kimani. 2016. The Blind Side of Public Debt Spikes. *IMF Working Paper*. No. 16/202. Washington, DC: IMF.
- Panizza, U. 2020. Fiscal Risk and its Drivers: An Empirical Analysis. *IHEID Working Papers*. 17–2020. Economics Section, The Graduate Institute of International Studies.

- Panizza, U. and F. Taddei. 2020. Local Currency Denominated Sovereign Loans – A Portfolio Approach to Tackle Moral Hazard and Provide Insurance. *IHEID Working Papers*. 09–2020. Economics Section, The Graduate Institute of International Studies.
- Schick, A. 1998. *A Contemporary Approach to Public Expenditure Management*. Washington, DC: The World Bank.
- Weber, A. 2012. Stock-Flow Adjustments and Fiscal Transparency: A Cross-Country Comparison. *IMF Working Paper*. No. 12/39. Washington, DC: IMF.

APPENDIX 9.1

Table 9A.1 Debt-to-GDP ratio, outturn versus forecasts, ADB regional members (%)

Group	Mean	Median	SD	P10	P25	P75	P90	Skew
Outturn – E_{t-1} (all available years)								
All	–0.23	–0.02	9.67	–8.04	–3.33	3.46	7.78	–0.81
CWA	0.08	0.54	8.17	–8.28	–5.25	2.98	7.78	0.24
SA	–2.12	0.74	15.39	–23.31	–2.48	4.74	10.00	–1.35
SEA	–0.36	0.06	5.57	–6.34	–3.78	3.33	6.70	–0.47
EA	6.40	3.17	9.70	–3.85	–1.80	15.20	19.85	0.33
PA	0.01	–1.00	8.75	–8.82	–3.25	2.63	7.27	1.84
Outturn – E_{t-2} (all available years)								
All	–0.03	0.46	11.95	–10.74	–4.56	5.38	11.10	–1.43
CWA	1.24	1.84	10.23	–11.84	–3.55	7.65	12.95	–0.03
SA	–3.59	0.69	19.69	–36.81	–7.03	5.03	12.63	–1.51
SEA	–0.25	0.47	6.70	–8.91	–4.60	5.36	7.88	–0.66
EA	10.72	13.16	11.71	–5.60	–0.11	21.37	22.56	–0.22
PA	–0.08	–1.80	9.33	–8.83	–3.92	1.93	14.63	1.23

Notes:

ADB = Asian Development Bank; CWA = Central and West Asia; EA = East Asia; GDP = gross domestic product; PA = Pacific; SA = South Asia; SEA = Southeast Asia; WEO = World Economic Outlook.

For a list of ADB regional members, see ADB. Regional Members: <https://www.adb.org/about/members>.

Source: Author's calculations based on different vintages of WEO.

Table 9A.2 Budget balance-to-GDP ratio, outturn versus forecasts, ADB regional members (%)

Group	Mean	Median	SD	P10	P25	P75	P90	Skew
Outturn – E_{t-1} (all available years)								
All	0.99	0.00	7.60	–4.57	–2.01	1.93	5.57	3.17
CWA	–0.70	–0.23	4.05	–5.28	–3.06	1.70	3.39	–0.06
SA	–0.09	–0.03	4.79	–4.07	–1.87	1.45	4.55	–0.27
SEA	0.17	0.24	2.18	–2.48	–1.06	1.48	2.58	–0.17
EA	–0.91	–0.78	4.65	–5.85	–3.74	0.61	2.00	0.64
PA	4.34	1.41	12.53	–6.02	–2.08	5.07	21.97	1.89
Outturn – E_{t-2} (all available years)								
All	0.61	–0.17	8.58	–5.30	–2.40	1.97	5.78	1.62
CWA	–1.27	–0.89	4.58	–6.80	–3.73	1.21	4.98	–0.80
SA	–0.57	–0.41	5.03	–5.93	–3.10	1.46	5.10	–0.22
SEA	0.15	0.01	2.28	–2.91	–0.96	1.22	3.25	0.16
EA	–1.25	–1.02	5.43	–9.51	–3.22	0.30	5.00	0.61
PA	3.87	0.61	14.48	–5.08	–2.11	4.63	23.82	0.66

Table 9A.3 Debt-to-GDP ratio and GDP growth, outturn versus forecasts, ADB regional members (%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	ADB	ADB	CWA	CWA	SA	SA	SEA	SEA	EA	EA	PA	PA
Outturn - E_{t-1}												
G-E(G)	-0.82*** (-4.94)	-1.02*** (-6.39)	-0.97*** (-3.31)	-1.19*** (-3.75)	-1.43*** (-2.79)	-1.75*** (-3.96)	-0.7*** (-2.82)	-0.72*** (-2.82)	-0.64 (-0.29)	-0.64 (-0.29)	-0.47* (-1.91)	-0.55** (-2.19)
Const.	-0.01* (-1.77)	-0.01** (-2.32)	-0.007 (-0.73)	-0.009 (-0.91)	-0.05** (-2.05)	-0.05*** (-2.76)	-0.01 (-1.43)	-0.01 (-1.46)	0.06 (1.60)	0.06 (1.60)	-0.005 (-0.39)	-0.005 (-0.47)
N. Obs.	232	232	57	57	44	44	63	63	9	9	59	59
R2	0.0963	0.3425	0.1668	0.2651	0.1569	0.4842	0.1157	0.2297	0.0124	0.0124	0.0606	0.2559
Outturn - E_{t-2}												
G-E(G)	-0.82*** (-3.83)	-1.06*** (-5.53)	-0.49 (-1.30)	-0.69 (-1.62)	-1.98*** (-3.01)	-2.38*** (-5.06)	-0.67** (-2.23)	-0.68** (-2.20)	-1.87 (-0.81)	-1.87 (-0.81)	-0.35 (-1.17)	-0.45 (-1.61)
Const.	-0.01 (-1.296)	-0.01* (-1.97)	0.006 (0.39)	0.003 (0.22)	-0.07** (-2.38)	-0.08*** (-3.84)	-0.008 (-0.97)	-0.009 (-1.00)	0.08 (1.73)	0.08 (1.73)	-0.005 (-0.38)	-0.006 (-0.53)
N. Obs.	201	201	50	50	38	38	56	56	8	8	49	49
R2	0.0687	0.4389	0.0342	0.1286	0.2011	0.6805	0.0844	0.2219	0.0991	0.0991	0.0288	0.3872
C. FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES

Notes:

*** p < 0.01, ** p < 0.05, * p < 0.1,

ADB = Asian Development Bank; CWA = Central and West Asia; GDP = gross domestic product; SA = South Asia; SEA = Southeast Asia; EA = East Asia; PA = Pacific; WEO = World Economic Outlook.

t-statistics in parentheses.

For a list of ADB regional members, see ADB. Regional Members. <https://www.adb.org/about/members>.

Source: Author's elaborations based on different vintages of WEO data.

Table 9A.4 Debt-to-GDP ratio and GDP growth, decomposition of outturn versus forecasts, ADB regional members (%)

	<i>pb</i>	<i>int</i>	<i>inf</i>	<i>gr</i>	ε
Outturn – E_{t-1}					
ADB μ	23.25	2.71	3.35	7.12	59.81
ADB σ	126.54	12.65	30.55	23.70	137.61
CWA μ	60.34	2.34	2.27	7.01	23.83
CWA σ	113.01	8.69	27.08	21.95	143.17
SA μ	5.71	6.86	3.41	17.12	72.85
SA σ	98.28	17.58	29.60	34.70	135.75
SEA μ	16.06	2.11	10.45	2.48	69.77
SEA σ	83.97	10.73	35.35	15.73	82.84
EA μ	–35.51	–4.38	–8.64	2.00	208.45
EA σ	154.95	9.37	19.22	5.85	145.09
PA μ	20.24	0.84	–1.34	5.40	50.25
PA σ	203.95	12.71	29.93	23.07	189.09

Notes:

μ = mean; σ = standard deviation; ADB = Asian Development Bank; CWA = Central and West Asia; GDP = gross domestic product; SA= South Asia; SEA = Southeast Asia; EA = East Asia; PA = Pacific; WEO = World Economic Outlook.

For a list of ADB regional members, see ADB. Regional Members; <https://www.adb.org/about/members>.

Source: Author's calculations based on different vintages of WEO data.

Table 9A.5a World Bank classification of economies

Advanced Economies	Low Income		Middle Income	
Australia	Afghanistan	Liberia	Albania	Kosovo
Austria	Bangladesh	Madagascar	Algeria	Lebanon
Belgium	Benin	Malawi	Angola	Libya
Canada	Bhutan	Mali	Argentina	Malaysia
Cyprus	Burkina Faso	Mauritania	Armenia	Maldives
Denmark	Burundi	Federated States of Micronesia	Azerbaijan	Marshall Islands
Finland	Cabo Verde	Moldova	Belarus	Mauritius
France	Cambodia	Mongolia	Belize	Mexico
Germany	Cameroon	Mozambique	Bolivia	Montenegro, Rep. of
Greece	Central African Republic	Myanmar	Bosnia and Herzegovina	Morocco
Iceland	Chad	Nepal	Botswana	Namibia
Ireland	Comoros	Nicaragua	Brazil	Nauru
Israel	Congo, Dem Rep	Niger	Bulgaria	Nigeria
Italy	Congo, Republic of	Papua New Guinea	People's Republic of China	North Macedonia
Japan	Cote d'Ivoire	Rwanda	Colombia	Pakistan
Korea, Republic of	Djibouti	Sao Tome and Principe	Costa Rica	Paraguay
Luxembourg	Eritrea	Sierra Leone	Dominica	Peru
Malta	Eswatini	Solomon Islands	Dominican Republic	Philippines
Netherlands	Ethiopia	Somalia	Ecuador	Romania
New Zealand	Gambia, The	South Sudan	Egypt	Russian Federation
Norway	Ghana	Sudan	El Salvador	Samoa
Portugal	Guinea	Syria	Equatorial Guinea	Senegal
Singapore	Guinea-Bissau	Tajikistan	Fiji	Serbia
Spain	Haiti	Tanzania	Gabon	South Africa
Sweden	Kiribati	Timor-Leste	Georgia	Sri Lanka
Switzerland	Kyrgyz Republic	Togo	Guatemala	Suriname
United Kingdom	Lao People's Democratic Republic	Uganda	Honduras	Thailand
United States	Lesotho	Vanuatu	India	Tonga
		West Bank and Gaza	Indonesia	Tunisia
		Yemen	Iran	Turkey
		Zambia	Iraq	Turkmenistan
		Zimbabwe	Jamaica	Tuvalu
			Jordan	Ukraine
			Kazakhstan	Uzbekistan
			Kenya	Venezuela
				Viet Nam

Table 9A.5b *World Bank classification of economies*

East Asia and Pacific	Eastern Europe and Central Asia	Latin America and the Caribbean
Brunei Darussalam	Albania	Antigua and Barbuda
Cambodia	Armenia	Argentina
People's Republic of China	Azerbaijan	Aruba
Fiji	Belarus	Bahamas, The
Indonesia	Bosnia and Herzegovina	Barbados
Kiribati	Bulgaria	Belize
Lao People's Democratic Republic	Croatia	Bolivia
Malaysia	Czech Republic	Brazil
Marshall Islands	Estonia	Chile
Federated States of Micronesia	Georgia	Colombia
Mongolia	Hungary	Costa Rica
Myanmar	Kazakhstan	Dominica
Nauru	Kosovo	Dominican Republic
Palau	Kyrgyz Republic	Ecuador
Papua New Guinea	Latvia	El Salvador
Philippines	Lithuania	Grenada
Samoa	Moldova	Guatemala
Solomon Islands	Montenegro, Rep. of	Haiti
Thailand	North Macedonia	Honduras
Timor-Leste	Poland	Jamaica
Tonga	Romania	Mexico
Tuvalu	Russian Federation	Nicaragua
Vanuatu	Serbia	Panama
Viet Nam	Slovak Republic	Paraguay
	Slovenia	Peru
	Tajikistan	St. Kitts and Nevis
	Turkey	Suriname
	Turkmenistan	Trinidad and Tobago
	Ukraine	Uruguay
	Uzbekistan	Venezuela

Table 9A.5c World Bank classification of economies

Middle East and North Africa	South Asia	Sub-Saharan Africa	
Algeria	Afghanistan	Angola	Liberia
Bahrain	Bangladesh	Benin	Madagascar
Djibouti	Bhutan	Botswana	Malawi
Egypt	India	Burkina Faso	Mali
Iran	Maldives	Burundi	Mauritania
Iraq	Nepal	Cabo Verde	Mauritius
Jordan	Pakistan	Cameroon	Mozambique
Kuwait	Sri Lanka	Central African Republic	Namibia
Lebanon		Chad	Niger
Libya		Comoros	Nigeria
Malta		Congo, Dem Rep	Rwanda
Morocco		Congo, Republic of	Senegal
Oman		Cote d'Ivoire	Seychelles
Qatar		Equatorial Guinea	Sierra Leone
Saudi Arabia		Eritrea	Somalia
Syria		Eswatini	South Africa
Tunisia		Ethiopia	South Sudan
United Arab Emirates		Gabon	Sudan
West Bank and Gaza		Gambia, The	Sao Tome and Principe
Yemen		Ghana	Tanzania
		Guinea	Togo
		Guinea-Bissau	Uganda
		Kenya	Zambia
		Lesotho	Zimbabwe

10. Fiscal space: Asia's fiscal safety net has shrunk

Andrea F. Presbitero¹

1. INTRODUCTION

The COVID-19 pandemic hit developing Asian countries (henceforth, developing Asia), causing the first recession in nearly 60 years: the Asian Development Bank (ADB) (ADB 2020a) projected gross domestic product (GDP) growth at -0.7 percent in 2020, with much sharper contractions in South Asia (-6.8 percent) and the Pacific (-6.1 percent). The recovery is expected to be gradual and highly contingent on the development of the pandemic and on the global outlook, which would drive global import demand and capital flows to the region. The COVID-19 crisis is putting public finance under severe stress and has come when debt vulnerabilities have increased substantially in recent years—several countries were already at high risk of debt distress even before the pandemic (UNCTAD 2019; IMF 2020d; World Bank 2020a; Chapter 4 in this volume; Kose et al. 2020). In addition, progress to achieve the Sustainable Development Goals (SDGs) in developing Asia have been so far lower than expected (ADB 2020b), and countries also have to invest massively in infrastructure—the latest estimates of the infrastructure investment gap in developing Asia are close to \$1.7 trillion per year (ADB 2017).

Given the importance of investment spending especially in infrastructure, not only for achieving the SDGs but also to promote inclusive and sustainable growth and mitigate climate change (Thacker et al. 2019), governments should make efforts to preserve investment spending to the extent possible, given the current circumstances. If anything, the case for public investment in developing countries is stronger in crisis and uncertain times when public investment multipliers are likely to be higher (Izquierdo et al. 2019; IMF 2020b). The International Monetary Fund (IMF) recently showed that public investment can help the recovery by sustaining employment, fostering economic activity, and facilitating the transformation to a post-pandemic economy (IMF 2020b).

However, the fiscal response has to take into account the risks that an increase in public investment could pose to debt sustainability, especially for countries that already had limited fiscal space even before the crisis. In addition, limited market access and high borrowing costs (especially for countries with foreign-currency-denominated debts) have constrained the capacity of many developing countries to expand investment. The most recent data show that, on the back of continued decline in global interest rates and the deployment for the first time of unconventional monetary policies by central banks, financial conditions for most emerging and developing economies (EMDEs) have eased after the COVID-19 shock. However, in many emerging markets sovereign bond spreads are still above the pre-COVID-19 levels (and

financing conditions more generally are still tighter), reflecting a deterioration in domestic economic activity (IMF 2020c; World Bank 2020b). Thus, developing countries have to carefully balance the fiscal response to the crisis between the need to preserve social spending and public investment, which serves longer-term targets, and the risks of endangering debt sustainability.

Against this background, this chapter looks at the size of the COVID-19 shock and at fiscal space in developing Asia and other EMDEs to discuss how countries are dealing with the crisis and which policy options protect social and investment spending.² We start by discussing the importance of public investment for growth and development, with a focus on infrastructure spending. We then argue that public investment could deliver large economic effects, especially under certain macroeconomic conditions, although there are caveats which have to be kept in mind when scaling up investment programs. We also discuss new evidence based on ADB investment projects showing pervasive time delays and cost overruns and that projects are likely to absorb more resources than expected when they are undertaken in periods of high growth in public investment. Consistent with the evidence, the literature highlights the risks for debt sustainability of front-loading investment plans, while arguing for a more gradual scaling up.

Section 3 describes in detail the size of the economic shock due to the COVID-19 global crisis, looking both at revisions in economic growth and in the fiscal stance and comparing developing Asia with other developing countries. The response to the shock is not only a function of the size of the economic contraction, but critically depends also on the fiscal conditions in which countries entered the crisis. Hence, we look at different measures of fiscal space, which can be thought of as “the room in a government’s budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position [, market access] or the stability of the economy” (Heller 2005). First, we consider the evolution of the overall fiscal balance and public debt since the early 2000s, and then we compute the fiscal sustainability gap (Kose et al. 2017), which measures the fiscal balance required to achieve a given debt target, given the existing macroeconomic environment. We show that, on average, developing countries have to deal with the current crisis from a weaker fiscal position than the one they had before the global financial crisis (GFC). However, we also find that developing Asia was in a better position before the COVID-19 shock than other developing countries, because of a more prudent fiscal policy in recent years. The current crisis (with declining growth and worsening fiscal balances) and trends in development finance (with expected large declines in remittances and private capital inflows) are exacerbating the limited fiscal space already faced by many developing countries (OECD 2020). This trend has important consequences for the capacity to implement countercyclical fiscal policy and for debt sustainability, as we find that limited initial fiscal space is associated with a sharper increase in sovereign bond spreads after the COVID-19 shock.

Then, section 4 delves into the policy response to COVID-19, discussing preliminary evidence and data on discretionary fiscal spending. As expected, we find that countries with more fiscal space have been able to further expand their discretionary fiscal spending. However, there are large differences across countries, both in terms of the envelope of the response and in its composition, especially between above- and below-the-line measures. Second, we look at public investment. In this case, data limitations are more severe, but some preliminary evidence suggests a reduction in budgeted investment, although countries in developing Asia

seem to be better able to insulate public investment from the shock than other developing countries. Finally, an important legacy of the crisis is growing public debt burdens, which could act as an important constraint, especially for low-income economies.

Section 5 moves from these considerations to discuss policy options in light of the SDGs. Given the large financing needs and the infrastructure investment gap, countries have to scale up investment, mobilizing both public and private resources. In the short term, authorities have to prioritize the health crisis, protecting health and social expenditures until the end of the pandemic. In the medium term, priorities should shift back to the original plans, but with the additional constraint of a reduced fiscal space. This would require stronger involvement by the international community, through direct and indirect mobilization of resources and, especially in the case of low-income countries, through a more upfront plan to deal with public debt overhang. The current response is treating the shock as a liquidity crisis, which is dealt with by suspending debt service payments. While this can provide some liquidity support and relax financing conditions, it is likely to be insufficient going forward. As the crisis becomes an issue of solvency, full debt relief should be discussed to increase fiscal space and reduce the debt overhang. Less-indebted countries have more space to borrow and already invest in the short term to improve living standards and to be able to achieve the SDGs. In doing so, the increasing availability of non-concessional sources of financing and the rise of new lenders pose both opportunities and risks. Hence, strengthening the macroeconomic policy framework, developing a sound and prudent debt management strategy (including improving the transparency of government balance sheets), and exploiting capacity building and technical assistance provided by international financial institutions (IMF 2017b) are priorities that would allow the development of a sustainable financing mix (see Chapter 14 in this volume). In this respect, greater reliance on innovative state-contingent debt instruments and a further shift toward local currency and longer-term borrowing could help mitigate vulnerabilities. Finally, the private sector should play a key role in financing the infrastructure gap, and multilateral development institutions can contribute by mobilizing private sector financing and assisting countries in improving project selection, execution, and capacity building.

2. THE CASE FOR SCALING UP INFRASTRUCTURE INVESTMENT

This section provides a short overview of the importance of infrastructure investment for economic development, while also providing some caveats about the risk of scaling up investment programs too fast. There are two main motives for the case for public investment. First, developing countries have to fill a large infrastructure gap to achieve the targets of the 2030 Development Agenda (Gurara et al. 2018; UNCTAD 2014). While the COVID-19 shock will be likely to impose a halt to investment plans, especially in countries with no fiscal space, it is important to minimize long-term consequences. Second, public investment does not only contribute to long-term sustainable development, but could also help the recovery phase—a recent analysis shows that public infrastructure investment has a strong potential to create jobs also in developing countries (IMF 2020b). In particular, other than having traditional Keynesian demand effects, infrastructure investment has the additional advantage that it can change the path of potential output. If a short-run increase in government spending also raises the stock of productive public capital or long-run total factor productivity, then government spending

provides two benefits: Keynesian demand stimulus in the short run and neoclassical supply stimulus in the long run (see Ramey 2020).

The literature on fiscal multipliers suggests that an investment push in the current macroeconomic environment is likely to have large economic dividends. Public investment multipliers, in fact, are higher in recessions (Auerbach and Gorodnichenko 2012; Fatás and Summers 2018; IMF 2020a), when monetary policy is loose (Christiano et al. 2011; Ramey and Zubairy 2018), and in periods of high uncertainty (IMF 2020b). Moreover, as countries with a low initial stock of public capital have significantly higher public investment multipliers, public investment in developing countries is likely to carry high returns (Izquierdo et al. 2019). Two potential concerns are that investment multipliers are likely to be lower when the fiscal position is weaker and public debt higher (Huidrom et al. 2019; Ilzetzki et al. 2013) and when public investment efficiency is low.³ Hence, the case for public investment would critically depend on the fiscal stance and require upfront policies to restore fiscal space before planning to increase investments.

2.1 Long-Term Effect of Infrastructure Investment

Infrastructure investment is a key component of the 2030 Development Agenda.⁴ However, the interest around infrastructure is not new (Rosenstein-Rodan 1943) and, over the last two decades, a large body of literature has analyzed the potential development gains from investing in infrastructure. Improvements in infrastructure could raise productivity, stimulate private investment (Cavallo and Duade 2011), and facilitate domestic and international trade (Bougheas et al. 1999), thereby promoting sustainable growth (Esfahani and Ramirez 2003; Agenor 2010; Calderon and Servén 2010). In particular, Calderon et al. (2015) estimate that a 10 percent increase in infrastructure provision increases output per worker by about 1 percent in the long run. Closer to the recent developments in Asia, Yang et al. (2020) show that the Belt and Road Initiative (BRI) could spur regional growth and development by promoting infrastructure investment.

Recent work done with granular data on transportation networks finds positive long-run effects on economic activity. Jedwab and Storeygard (2021) study transportation investments in Africa since 1960 and show that increased market access enhances city growth, favoring urbanization. The historical experience of colonial Africa and India sheds light on how infrastructure investment shapes economic activity. The analysis of railroads in Ghana and Kenya shows that infrastructure investment can produce long-term economic gains by reducing trade costs and integrating markets, potentially transforming the economic landscape in poor, remote regions with high trade costs (Jedwab and Moradi 2016; Jedwab et al. 2017). Similar findings have been shown for colonial India, where railroads decreased trade costs and interregional price gaps and increased interregional and international trade as well as real income level (Donaldson 2018). Recently, the BRI represents a good setup to assess how transport infrastructure could promote growth. De Soyres et al. (2020) calibrate a structural general equilibrium model and show that transport projects, by reducing trade costs, could increase GDP by up to 3.4 percent.

But the gains from infrastructure investment are not always spread equally. While increased access to essential services could reduce inequality, foster inclusion, and support poverty reduction efforts (Calderon and Chong 2004; Calderon and Servén 2010), micro-level evi-

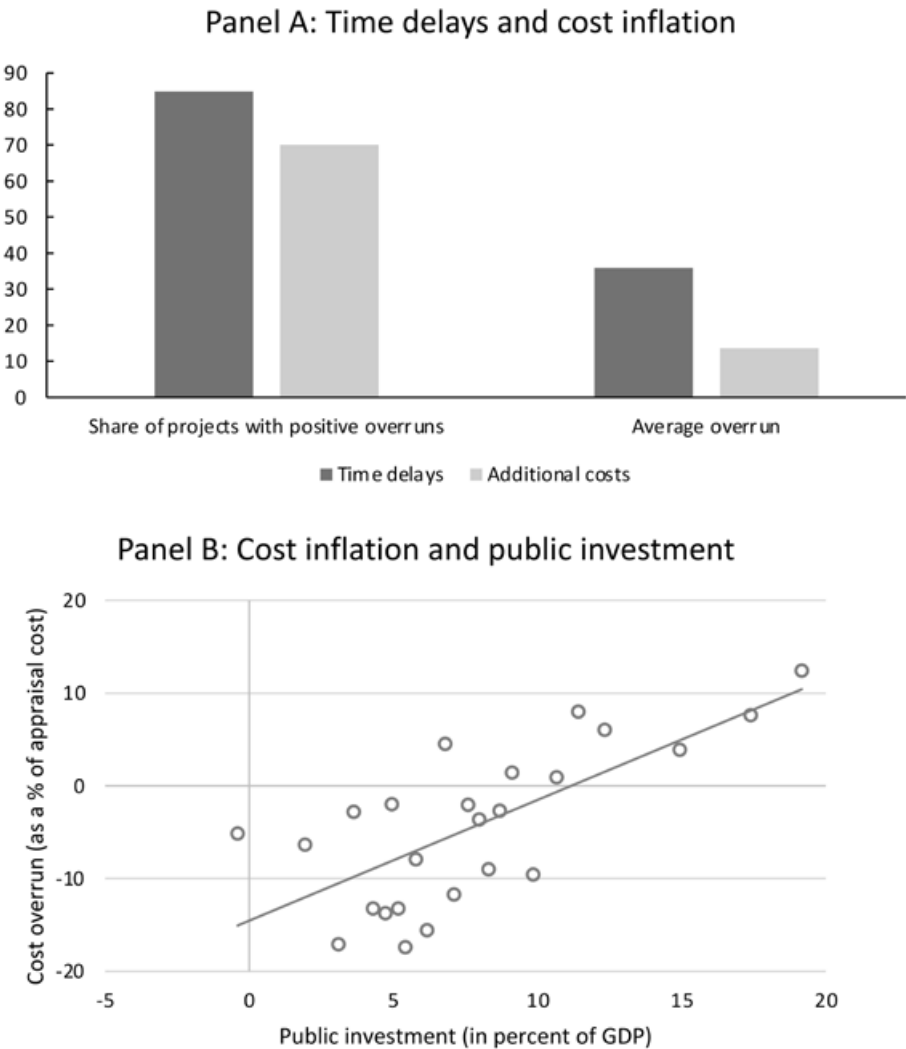
dence shows that the distributional effect of infrastructure investment could vary. For instance, Khandker et al. (2009) look at road improvement projects in Bangladesh and find overall positive effects on output and poverty reduction; they also show that the poorest households are those benefiting the most. Similarly, Jedwab and Storeygard (2021) find evidence of heterogeneous effects of transportation investments in Africa, which seem to favor small and remote cities. The extensive highway network built in the People's Republic of China (PRC) since the 1990s has also differentiated spatial effect on economic activity, with winners and losers. Large cities in the center of a dense regional highway network grow faster and specialize in business services and manufacturing, while the hinterlands grow more slowly and become relatively more specialized in agriculture (Baum-Snow et al. 2017). Similar concerns are raised by the analysis of the BRI, whose gains, although positive on aggregate, are unevenly distributed across countries, with some economies potentially losing from the infrastructure investment (De Soyres et al. 2020). These findings point to the importance of anticipating distributional effects of infrastructure projects and planning offsetting measures if such effects are expected to be negative.

2.2 Inefficiencies and Capacity Constraints

While a large body of empirical studies suggests that investment in infrastructure could deliver long-term gains, the historical analysis of previous episodes of investment scaling up suggests some caution. For example, in the 1980s, a wave of public-financed infrastructure investment delivered poor results in terms of short- and long-run economic growth, mostly because of cost overruns, corruption, and poor maintenance (Arezki et al. 2017; Warner 2014). After this negative experience, the private sector started playing a more prominent role in financing infrastructure investment, partly through public-private partnership. However, this shift ended up generating an increase in construction and maintenance costs in several developing countries (Estache and Fay 2007).

Understanding what drives the outcome of individual projects is a daunting task, and the evidence indicates that most of the variation in the data is due to project characteristics (Denizer et al. 2013). In particular, measures of project preparation and planning are generally associated with better project outcomes. However, the quality of local institutions and macro-economic conditions matter, too, and contribute to explain the poor records of public investment booms. In particular, projects are less likely to be successful when undertaken in periods of rapid scaling up of public investment (Isham and Kaufmann 1999; Presbitero 2016), as it could be in a scenario needed to meet the infrastructure investment gap, which is estimated at 2.4 percent of GDP in developing Asia (ADB 2017).

To better understand why projects could turn out less successful than expected, some studies have documented the pervasiveness of delays in project execution and of cost inflation and have looked at the factors which may explain these patterns (Flyvbjerg 2009; Ahsan and Gunawan 2010; Serebrisky et al. 2017; IMF 2020b). A recent analysis of World Bank investment projects (IMF 2020b) shows that more than 40 percent of projects cost more than estimated and about three-quarters are completed in a longer-than-expected time frame. In addition, project delays and cost increases are more severe for projects that are approved and undertaken when public investment is significantly scaled up.



Notes:
GDP = gross domestic product.
Panel A reports the share of investment projects that are completed with time delays and costs higher than those estimated at appraisal. For projects with time delays and additional costs, the columns on the right-hand side report the average time delay and cost overrun. Time delay is the difference between the final length of the project and the estimated one, divided by project length. Cost overrun is the difference between actual and estimated costs divided by the estimated cost. Panel B is a binned scatterplot. A regression of cost overrun against public investment as share of GDP, controlling for per capita GDP (in logs), real GDP growth, log of population, a measure of public investment efficiency, a large set of project-level characteristics, and year and sector fixed effects, gives a coefficient on the public investment variable of +1.23 (p-value = 0.00). To generate the binned scatterplot, starting from the sample of 262 projects, the cost overruns (y-axis) and the public investment variable (x-axis) are regressed against controls and fixed effects. The x-residuals are grouped into 25 equal-sized bins, then the charts plot for each bin, the mean of the cost overrun within each bin, holding the controls constant. The solid line is the linear fit of the Ordinary Least Squares (OLS) regression of the y-residuals on the x-residuals.

Sources: ADB project level data; and IMF World Economic Outlook.

Figure 10.1 Time delays and cost inflation in investment projects

Data from a sample of projects financed by ADB in the region between 1986 and 2016 show a similar picture. First, the majority of projects are completed later than planned and the delay is often substantial: almost three-quarters of projects are completed with a 50 percent increase on the original time frame. Data on cost overruns, available for a smaller set of projects, indicate that about two-thirds of projects cost more than estimated at appraisal, although the magnitude of the cost increase is relatively small (Figure 10.1, panel A). In addition, there is a strong positive association between cost overruns and the share of public investment over GDP (Figure 10.1, panel B), even taking into account the effect of project-level and macroeconomic characteristics. In particular, cost overruns tend to be large when public investment is above 10 percent of GDP. This result is consistent with a study on the unit costs of infrastructure projects, which shows that they increase when public investment is close to 10 percent of GDP (Gurara et al. 2020).

This body of evidence suggests that scaling up public investment too much and too fast can lead to absorptive capacity constraints and cost inflation, undermining the returns from public investment (Buffie et al. 2012; Berg et al. 2013; Presbitero 2016). Thus, while an investment push could stimulate the economy, help the recovery from the pandemic crisis, and make progress toward the SDGs, any plan has to be carefully designed and implemented. Focusing on maintenance spending and on existing projects that can be executed quickly and with limited administrative costs could provide immediate benefits in terms of jobs and growth. At the same time, planning a gradual scale-up over the medium term by identifying a pipeline of projects and a set of areas where investment is needed to help the transition to a more inclusive and resilient economy could minimize the potential effects of absorptive capacity constraints and make the investment plan fiscally viable.

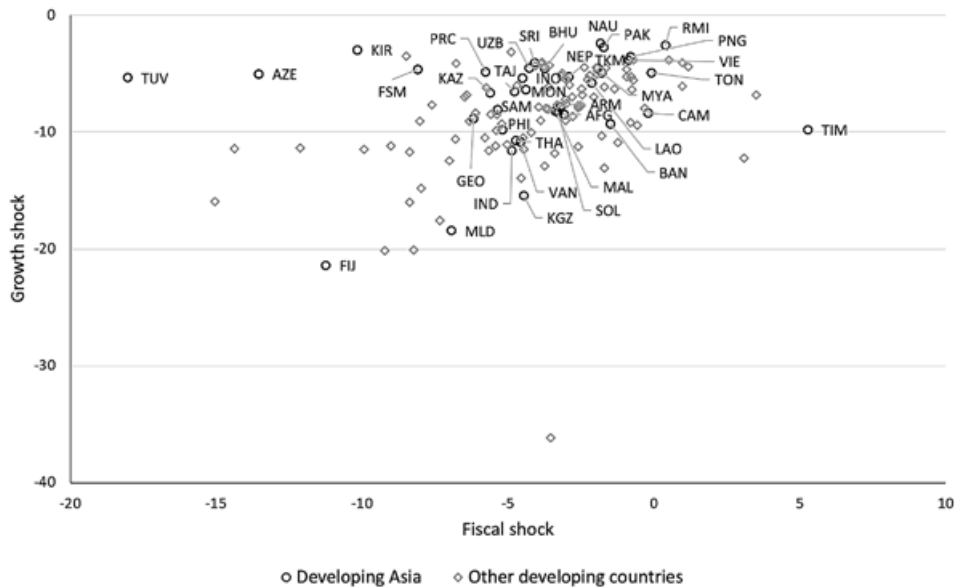
3. THE COVID-19 SHOCK AND FISCAL SPACE

Not all countries have enough fiscal space to undertake a large expansion of public investment. Budgetary constraints are expected to become more critical because of the COVID-19 outbreak, which is severely affecting the countries in the region through multiple contemporaneous domestic and external shocks—other than the immediate health shock, economies are hit by commodity price shocks, tighter financial conditions, capital flow reversals, and possible reduction in donors' aid budgets. While the case for infrastructure investment is strong for achieving the SDGs and coping with the ongoing crisis, limited fiscal space is likely to constrain the way in which governments can deal with the COVID-19 shock. Not only could this have short-term implications, but also longer-term effects if investment programs are curtailed or delayed.

3.1 The Extent of the Economic and Fiscal Shock

We measure the extent of the macroeconomic shocks due to COVID-19 by comparing the IMF projections from the October 2019 vintage (pre-COVID-19) with those released in June 2020. We look at changes in real GDP growth and in the fiscal balance (measured as a share of GDP). On average, the economic contraction due to the COVID-19 shock in developing Asia is about 7.4 percentage points, smaller than in non-Asian countries, where the GDP growth revision is −9.7 percentage points, on average. However, the fiscal shock has also been

smaller, 5.4 percent versus 6.1 percent of GDP. Figure 10.2 plots the size of the fiscal and growth shocks and points out that, while developing Asian countries seem to behave in line (if not better than other countries) in terms of growth, the fiscal shock has been particularly large, especially in a few countries.⁵ In the following, we provide measures of initial fiscal conditions and we discuss the preliminary evidence about the fiscal reaction to the crisis, to understand what the implications and the priorities for the 2030 Development Agenda could be.



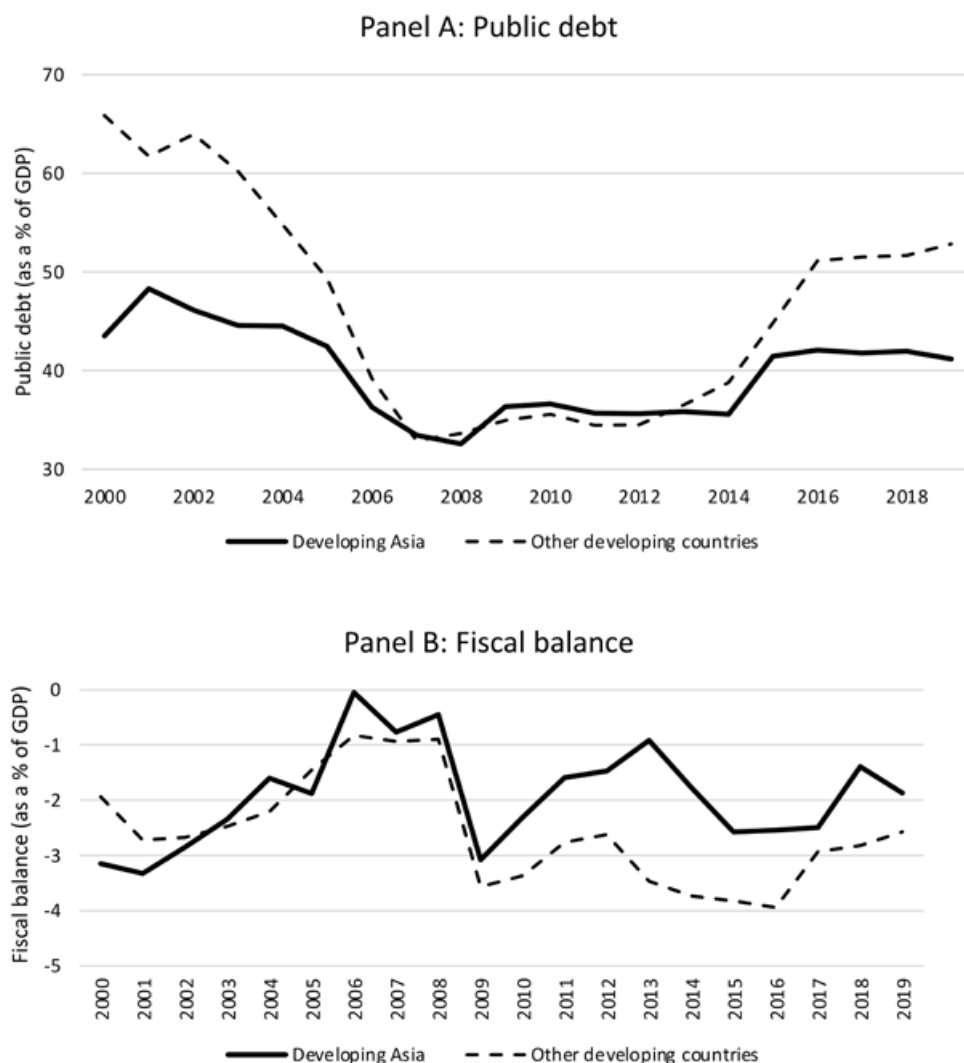
Notes:
GDP = gross domestic product; IMF = International Monetary Fund; WEO = World Economic Outlook.
The chart plots the COVID-19 growth and the fiscal shocks separately for Asian and non-Asian countries. Shocks are computed as differences in the 2020 real GDP growth rate and the fiscal balance (as a share of GDP) between the IMF WEO forecasts published in June 2020 (post-COVID-19) and October 2019 (pre-COVID-19). Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Sources: IMF World Economic Outlook, different vintages.

Figure 10.2 The COVID-19 shock in developing countries

3.2 Fiscal Space

To understand how countries can cope with the negative COVID-19 shock, and especially whether they can protect investment and social spending, it is crucial to look at the macroeconomic conditions before the shock. In this context, a key concept to measure the capacity of countries to mitigate the impact of an adverse shock is fiscal space. This is a multidimensional concept, which is difficult to operationalize in just one indicator or in a common threshold. As noted in the Introduction, a simple and clear definition is that fiscal space measures “the room in a government’s budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position [, market access] or the stability of the economy” (Heller 2005). In practice, discretionary fiscal policy could take the form of either

an outright fiscal stimulus or a slower pace of fiscal consolidation, and having fiscal space implies that such policy change neither undermines debt sustainability nor triggers a negative response by financial markets.



Notes:

GDP = gross domestic product; IMF = International Monetary Fund; WEO = World Economic Outlook.

The charts show the median public debt-to-GDP ratio (panel A) and overall fiscal balance over GDP (panel B) for two group of countries: developing Asia and other EMDEs.

Source: IMF World Economic Outlook.

Figure 10.3 *Fiscal stance*

At first approximation, public debt can be taken as a proxy for fiscal space. From the viewpoint of this analysis, which looks at the capacity to invest, large public debt stocks could have three main adverse effects on the economy. First, as shown in the early contributions on debt overhang (Krugman 1988; Sachs 1989), high public debt could depress investment decisions, as agents anticipate that future returns will be used to serve the debt. Second, a high public debt limits the capacity to undertake countercyclical fiscal policy and run large primary balances (Bohn 1998; Laubach 2009). Third, a high—and increasing—public debt is a source of vulnerability and risk, making countries more exposed to financial crisis and undermining debt sustainability, especially in EMDEs which borrow in foreign currency (Kraay and Nehru 2006; Manasse and Roubini 2009; Bassanetti et al. 2018). In particular, a higher (and increasing) public debt is associated with a sharper increase in borrowing costs in response to domestic and global shocks (Presbitero and Wiriadinata 2020), exposing countries to a higher likelihood of adverse dynamics of the interest rate–growth differential, which affects debt sustainability.

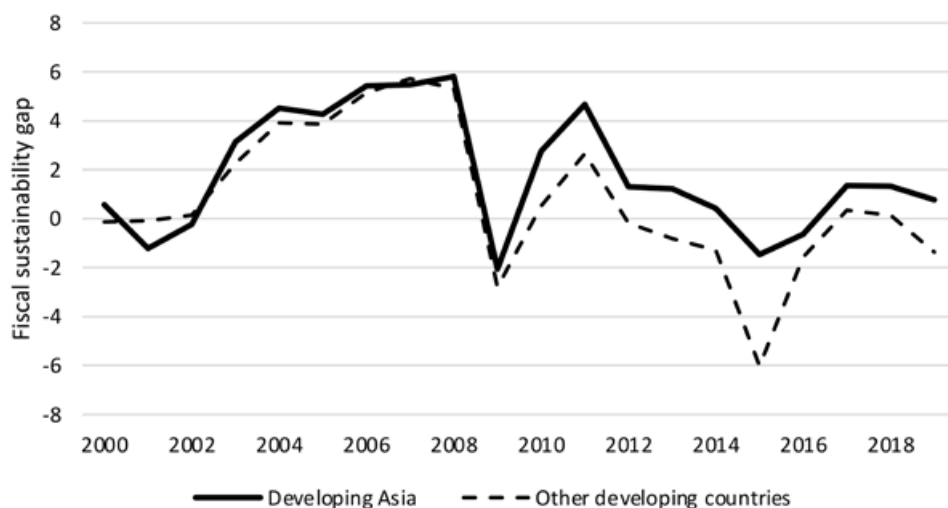
These results are relevant in the current context, in which public debt has been rising, especially in some countries (e.g., Armenia, Maldives, and Pakistan, among others). Overall, developing Asian countries are better positioned than other EMDEs. In fact, while public debt for the median country was close to 35 percent of GDP in both groups from the GFC until 2014, in the most recent years the increase in public debt has been much sharper outside developing Asia, with public debt in 2019 being 53 percent of GDP in the median non-Asian country and 41 percent in the median developing Asian country (Figure 10.3, panel A).⁶ This trend reflects differences in the fiscal stance: the overall fiscal deficit in (the median) developing countries outside Asia ranged between 2.6 percent and 4 percent of GDP in the post-GFC period, while (the median country in) developing Asia managed to keep the deficit between 1 percent and 2.5 percent of GDP (Figure 10.3, panel B).

To look more carefully at the capacity to use the fiscal level to mitigate negative shocks, we follow Kose et al. (2017) and we use the fiscal sustainability gap (*FS GAP*) as a key measure of fiscal space. The fiscal sustainability gap is the difference between the overall fiscal balance (*FB*) and the one required to stabilize the debt-to-GDP ratio (*DEBT*) at a given target. More formally:

$$FS\ GAP = FB - \left(\frac{-g}{1+g} \right) DEBT^* \quad (10.1)$$

where g is the growth rate of nominal GDP. This indicator is constructed using the (yearly) observed values of the fiscal balance and growth, plus a public debt target, which—in line with Kose et al. (2017)—we define as the long-run average computed separately for advanced and emerging markets, and developing economies. As such, the fiscal sustainability gap provides a simple snapshot of the adjustments that may be needed to reach a given debt target, depending on macroeconomic conditions. Looking at the period around the GFC, as well as years around financial crises, Kose et al. (2017) show that the fiscal sustainability gap, as well as other indicators of fiscal space, improved in many EMDEs over the years prior to the crisis, but deteriorated during and after the crisis, because of increasing public debts, widening deficits, and slowing growth.

In line with those trends, Figure 10.4 shows that fiscal sustainability improved, for both Asian and other EMDEs, in the run-up to the GFC and sharply deteriorated thereafter. By contrast, the trend has reversed in recent years. After a quick rebound after the GFC, the fiscal sustainability gap started declining—and henceforth the fiscal position became less sustainable—especially in EMDEs outside developing Asia. As a result, many countries entered the COVID-19 crisis not from a strong and improving fiscal position, but from a weak and worsening one. That said, it is worth noting that developing Asia had a *positive* (although decreasing) gap between 2017 and 2019.

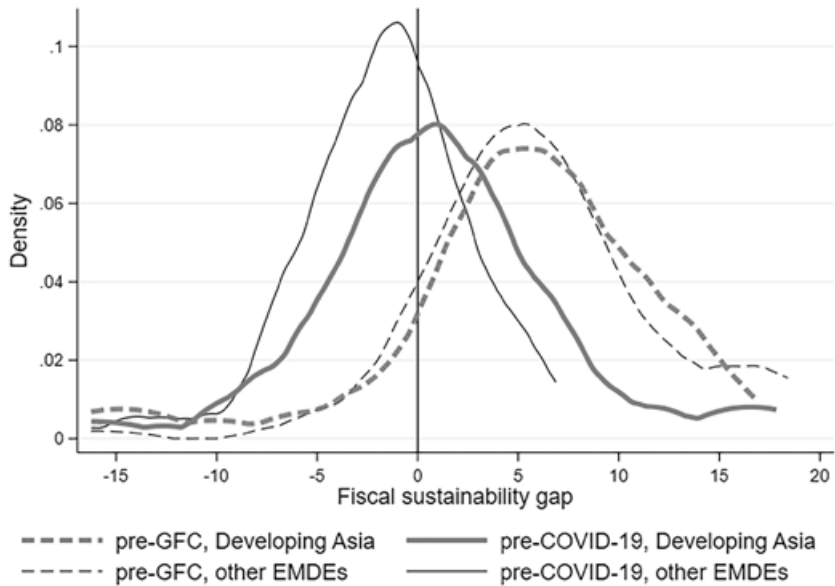


Notes: The chart shows the median fiscal sustainability gap for two groups of countries: developing Asia and other EMDEs. The fiscal sustainability gap is computed as in Kose et al. (2017); see main text for details.

Sources: IMF World Economic Outlook; and Kose et al. (2017).

Figure 10.4 Fiscal sustainability gap

Figure 10.5 plots the distribution of the fiscal sustainability gap before the COVID-19 pandemic (as of the end of 2019) to before the GFC (as of the end of 2007), separately for countries in developing Asia and for the other EMDEs. The figure shows that the distribution shifted considerably to the left between 2007 and 2019, especially for non-Asian developing countries. Before the GFC, 93 percent of countries had fiscal space (e.g., a positive gap) and more than half of the sample had a gap larger than 5 percent of GDP. Instead, in 2019 the share of countries with a positive gap more than halved to 44 percent—meaning that the majority of countries had no fiscal space—and those with a gap larger than 5 percent of GDP declined to 10 percent.



Notes:
EMDEs = emerging and developing economies; GFC = global financial crisis.
The chart plots the distribution of the fiscal sustainability gap separately for developing Asia and other emerging and developing countries, both in 2007 (pre-GFC) and 2019 (pre-COVID-19). The fiscal sustainability gap is computed as in Kose et al. (2017). See main text for details.
Sources: IMF World Economic Outlook; and Kose et al. (2017).

Figure 10.5 Fiscal sustainability gap before crises

Thus, EMDEs as a group have to face the COVID-19 shock starting from a significantly weaker fiscal position than at the time of the GFC. However, unlike that crisis, developing Asia now looks to be in a relatively better position than other EMDEs, mostly because several countries have run smaller fiscal deficits in recent years (Figure 10.3, panel B).

To give more granularity to the analysis, we split the sample of developing Asian countries into three groups based on the value of the fiscal sustainability gap in 2019. Countries in which the gap is below -2 percent of GDP are labeled as no fiscal space countries, while those with a gap above 2 percent of GDP are labeled as high fiscal space countries. Those in between are countries with limited fiscal space.⁷ Table 10.1 lists these countries, together with selected summary statistics. Differences in the fiscal balance and public debt between country groups are large: in the run-up to the crisis (taking the 2017–2019 average), those with no fiscal space have an average public debt at 49 percent of GDP and run a deficit of 5.8 percent of GDP, while those with high fiscal space have a public debt at 36 percent of GDP and run a surplus of 4.2 percent of GDP (Figure 10.6). In interpreting these data, one should keep in mind the limitation of the fiscal sustainability gap. While this indicator provides a good approximation of the degree of fiscal space in the aggregate, it could be affected by country-specific factors, which make its interpretation at the country level less straightforward. First, the gap is

computed based on a given debt target, common for a large set of countries, meaning that the resulting gap could be biased for countries with an equilibrium debt level far from the target. Second, some countries—such as some Pacific islands (Chapter 5, this volume)—face liquidity problems, more than solvency issues, which are not reflected in the fiscal sustainability gap.

Table 10.1 Fiscal space in developing Asia

		Public Debt (% GDP)	Fiscal Balance (% GDP)	GDP Growth (%)
Country	FS Gap 2019	Average Over 2017–2019		
		High Fiscal Space		
Armenia	3.0	51.7	−2.5	6.8
Azerbaijan	9.3	19.7	4.2	1.3
Cambodia	4.3	29.0	0.1	7.2
Kazakhstan	2.7	20.1	−0.8	4.2
Kiribati	9.5	21.6	6.4	1.8
Marshall Islands	5.1	25.3	3.0	4.3
Federated States of Micronesia	17.8	20.3	18.6	1.4
Mongolia	4.8	69.5	0.2	5.9
Nauru	15.3	57.5	23.3	0.4
Samoa	4.1	49.6	0.2	0.8
Tonga	3.8	43.6	2.4	1.5
Turkmenistan	4.2	29.4	−1.1	6.3
Uzbekistan	6.9	23.3	1.2	5.2
Vanuatu	6.0	50.9	3.9	3.5
		Limited Fiscal Space		
Afghanistan	1.3	7.3	0.0	2.6
Bangladesh	−0.8	34.5	−4.4	7.8
Bhutan	0.6	106.3	−2.5	4.6
Georgia	−0.2	46.6	−1.0	4.9
Indonesia	0.8	30.0	−2.2	5.1
Kyrgyz Republic	0.9	55.9	−1.5	4.2
Myanmar	−0.8	37.6	−3.1	6.2
Nepal	−1.0	28.8	−4.8	7.3
Philippines	1.3	39.1	−1.3	6.4
Tajikistan	1.8	47.6	−3.6	7.3
Thailand	0.8	41.6	−0.4	3.5
Viet Nam	0.3	44.5	−2.9	7.0
		No Fiscal Space		
People’s Republic of China	−2.8	49.8	−5.0	6.6
Fiji	−4.9	45.6	−4.1	2.6
India	−4.4	70.2	−6.7	5.8
Lao People’s Democratic Republic	−2.6	57.9	−5.1	6.1

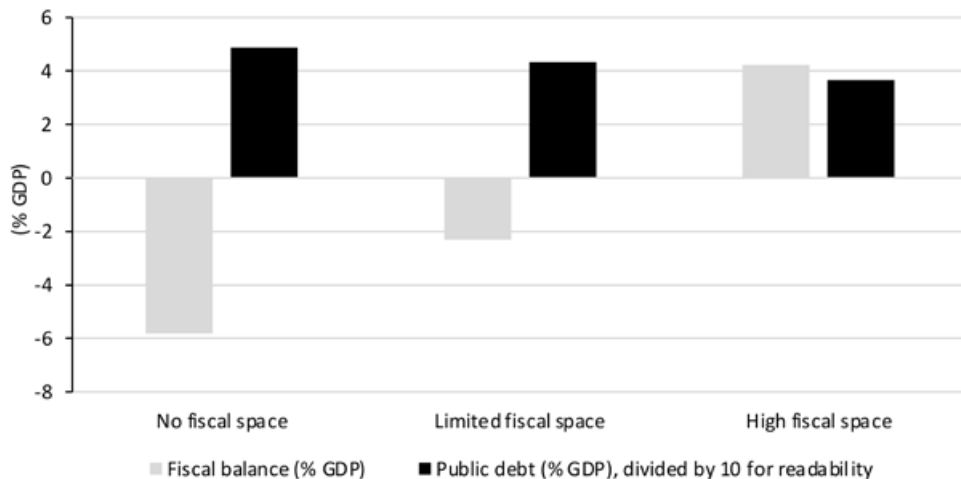
Country	FS Gap 2019	Public Debt	Fiscal Balance	GDP Growth
		(% GDP)	(% GDP)	(%)
		Average Over 2017–2019		
Malaysia	–2.0	55.7	–3.0	5.0
Maldives	–2.1	66.6	–5.7	6.4
Pakistan	–9.1	74.1	–7.0	4.2
Papua New Guinea	–2.3	35.9	–3.1	2.5
Solomon Islands	–2.0	9.9	–2.2	3.5
Sri Lanka	–6.7	82.8	–5.9	3.1
Timor-Leste	–16.2	7.3	–31.2	–0.5
Tuvalu	–7.3	29.2	8.9	4.8

Notes:

FS = fiscal sustainability; GDP = gross domestic product.

The table reports the fiscal sustainability gap in 2019, computed as in Kose et al. (2017) and the average of public debt as a share of GDP, fiscal balance as a share of GDP, and real GDP growth over the period 2017–2019 for developing Asian countries. Countries are split into three groups depending on the 2019 fiscal sustainability gap. See text for details. Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

Sources: IMF World Economic Outlook; and Kose et al. (2017).



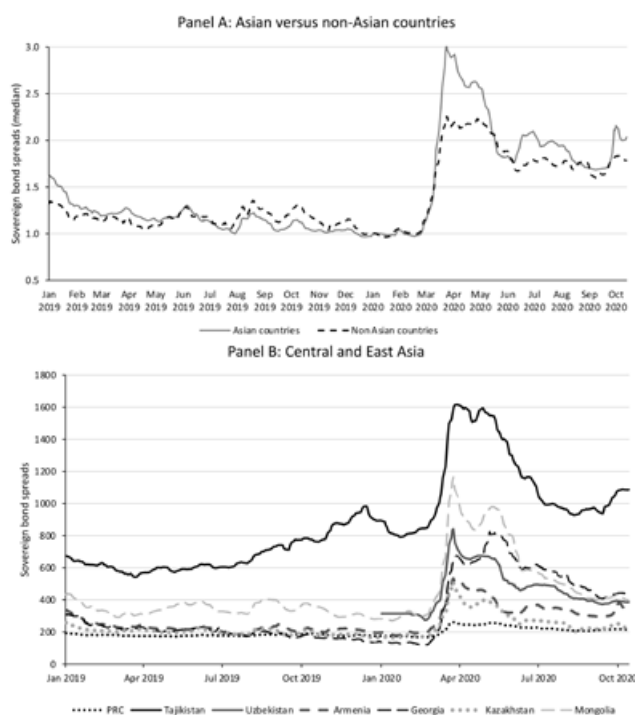
Notes:

GDP = gross domestic product; IMF = International Monetary Fund.

The chart plots the mean of fiscal balance (as a share of GDP) and of public debt (as a share of GDP and divided by 10 to improve readability) for three groups of countries with no, limited, or high fiscal space, measured by the fiscal sustainability gap. The sample includes developing Asian countries. The fiscal sustainability gap is computed as in Kose et al. (2017) and refers to 2019. Country-level values for public debt and fiscal balance are averages over the period 2017–2019. See main text for details.

Sources: IMF World Economic Outlook; and Kose et al. (2017).

Figure 10.6 Fiscal space in developing Asia ahead of the COVID-19 shock



Notes:

PRC = People's Republic of China.

Panel A plots daily values of the median sovereign bond spreads for 15 developing Asian countries and 54 other EMDEs, separately. Panel B plots daily values of the median sovereign bond spreads for selected developing Asian countries. Sovereign bond spreads are 7-day moving averages.

Source: Bloomberg.

Figure 10.7 Sovereign bond spreads

Another indicator of fiscal space is market access, as it provides daily information on market sentiment and on the sovereign's capacity to tap international capital markets. Sovereign bond spreads increased sharply in March 2020 when WHO declared COVID-19 a pandemic and, even after a rapid decline started in April, they stabilized at a level significantly larger than pre-COVID-19. The increase in borrowing costs has been more severe for developing Asia than for other EMDEs—possibly reflecting the fact that the pandemic started in Asia—although by the summer, the gap in the median spread between the two country groups narrowed significantly (Figure 10.7, panel A). Also, even across developing Asia there is large variation across countries: while spreads in the PRC increased from about 180 basis points (bps) to a maximum of 260 bps and then declined to around 210 bps, the increase in India has been larger (from 120 bps to a peak of more than 400 bps), and spreads reached values close or above 1000 bps in Papua New Guinea, Tajikistan, Uzbekistan and Pakistan (Figure 10.7, panel B). What is more interesting, though, is that the increase in sovereign bond spreads following the COVID-19 shock has been stronger in countries starting from a weaker fiscal stance, consistent with the

existing evidence that borrowing costs increase more in response to a global shock in countries with higher public debt ratios (Presbitero and Wiriadinata 2020). The change in sovereign bond spreads between early April 2020 (at the peak of the increase) and 4 February 2020 (when the WHO Director-General asks the United Nations (UN) Secretary-General to activate the UN Crisis Management Policy in response to the virus), in fact, is positively correlated with the ex-ante level of the public debt-to-GDP ratio (Figure 10.8, panel A) and negatively correlated with the ex-ante fiscal sustainability gap (Figure 10.8, panel B).

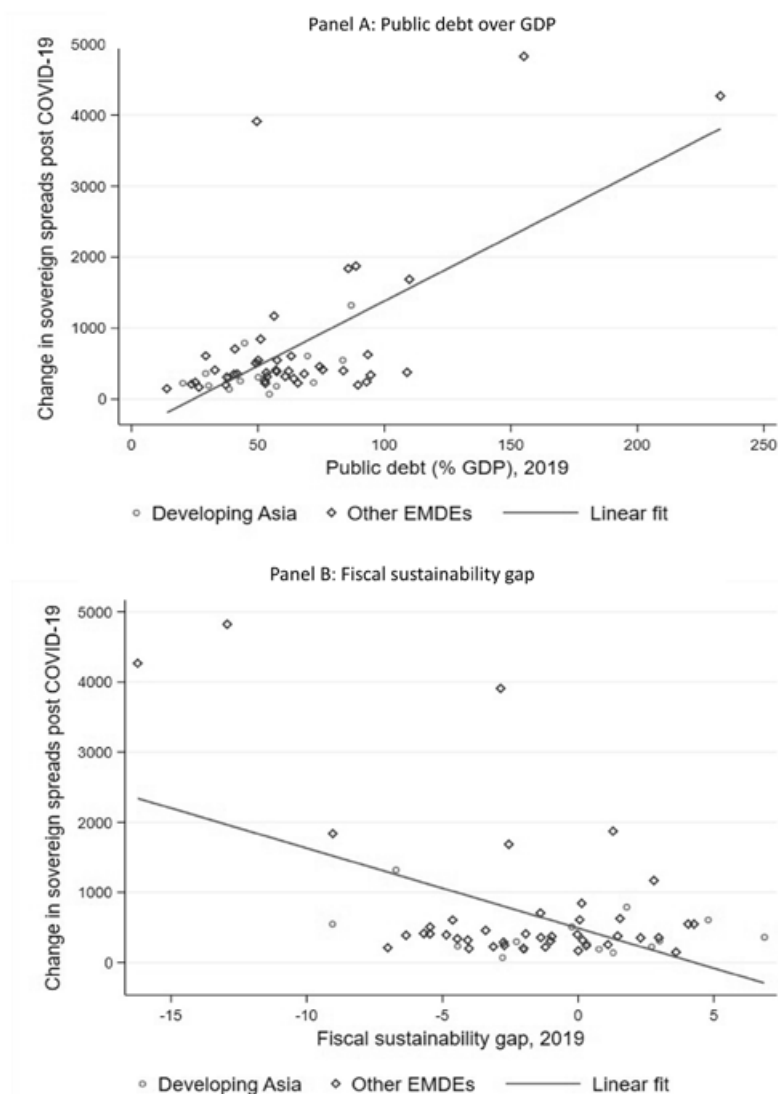
4. PRELIMINARY EVIDENCE OF THE FISCAL RESPONSE

The severity of the economic and fiscal shocks due to COVID-19 is likely to affect investment plans set up to achieve the SDGs. The need to protect social spending to attenuate the effect of the pandemic and the lack of fiscal space might imply a cut back on public investment, with potential long-term consequences. At the same time, at least in the short term, access to emergency financing from the IMF and debt service relief—granted from the IMF and also from official bilateral creditors through the Debt Service Suspension Initiative (DSSI)—provides liquidity to meet urgent spending in health and social programs. Between April 2020 and October 2020, the IMF has provided \$489 million in debt service relief to 29 countries and approved \$102 billion of emergency financing to 82 countries, using the Rapid Credit Facility and the Rapid Financing Instrument.⁸ In addition, bilateral official creditors have granted debt service suspension for about \$12 billion to developing countries through the DSSI.⁹

Discretionary fiscal spending increased in the region, at levels slightly higher than in other developing countries. According to recent data collected by IMF (2020b), while the global response to the shock has been close to 12 percent of GDP, equally split between additional spending (or forgone revenues) and liquidity support, including contingent liabilities, these numbers are lower in EMDEs. The median (average) fiscal response in EMDEs has been 3.8 percent (5.7 percent) of GDP. The median (average) country in developing Asia increased spending by 4.5 percent (5.4 percent) of GDP, although there is large variation across countries (Figure 10.9).¹⁰

For instance, Thailand's response is close to 12.5 percent of GDP, split between additional spending in health, transfers to those affected by COVID-19, a stimulus package for the tourism sector, tax reliefs, and guarantees and subsidized loans for small and medium-sized enterprises. On the other hand, Viet Nam increased spending by only 1.7 percent of GDP through quasi-fiscal operations—directed at reducing energy prices and the cost of credit—cash transfers to the poor and workers who lost their job, and tax and fee rebates to firms.¹¹ The fiscal response of the PRC and India has been of 5.9 percent and 7 percent, respectively. However, while the PRC's additional spending is mostly above the line, India's discretionary measures have been concentrated in equity infusions to small and medium-sized enterprises and credit guarantees.

Interestingly, and in line with expectations, the size of the discretionary fiscal response is indeed correlated with the conditions in which countries entered the COVID-19 pandemic. For the 20 developing Asian countries for which data are available there is a positive correlation between the fiscal sustainability gap and the amount of discretionary fiscal spending as a share of GDP (Figure 10.10), confirming the importance of prudent and sound fiscal policy in tranquil times to be able to mitigate adverse shocks.



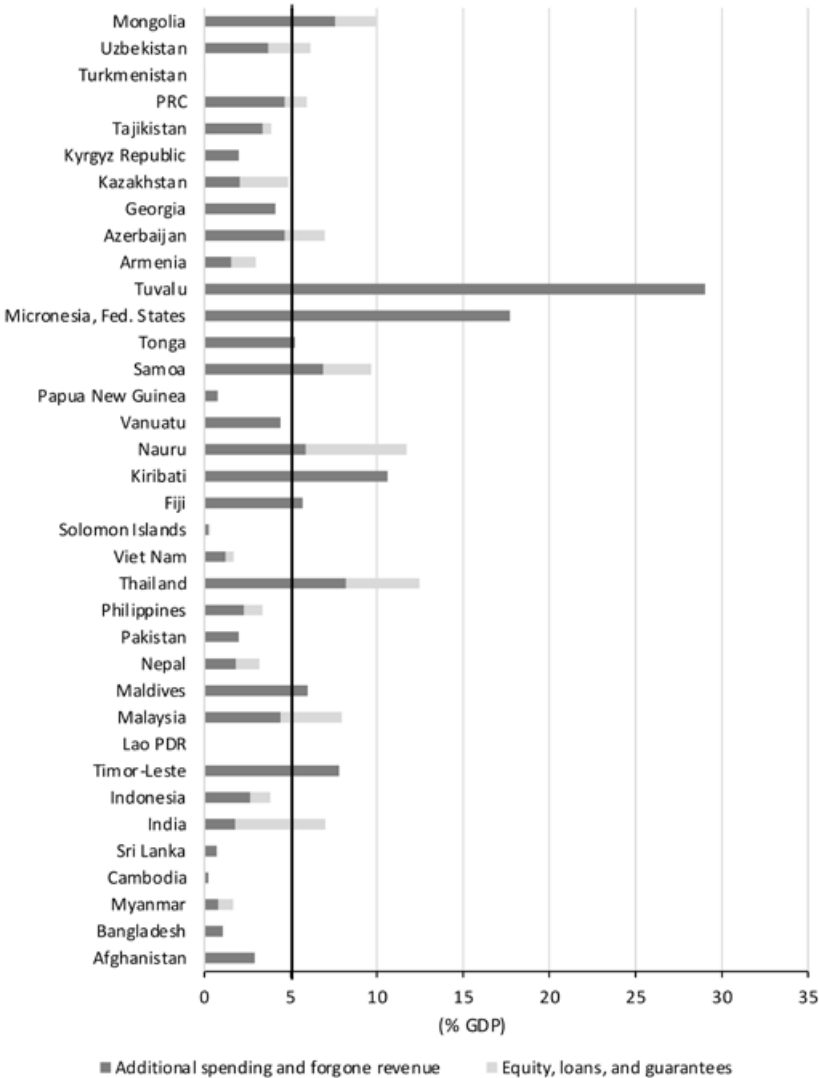
Notes:

EMDEs = emerging and developing economies; GDP = gross domestic product; IMF = International Monetary Fund.

The charts plot the change in sovereign bond spreads after the COVID-19 shock against public debt over GDP in 2019 (panel A) and the fiscal sustainability gap in 2019 (panel B), computed as in Kose et al. (2019). See the main text for details. The change in sovereign bond spreads (7-day moving averages) is computed between 3 April 2020 and 4 February 2020. The World Health Organization Director-General asked the UN Secretary-General on 4 February to activate the UN Crisis Management Policy in response to the virus. Results are robust to alternative dating choices.

Sources: Bloomberg; IMF World Economic Outlook; and Kose et al. (2017).

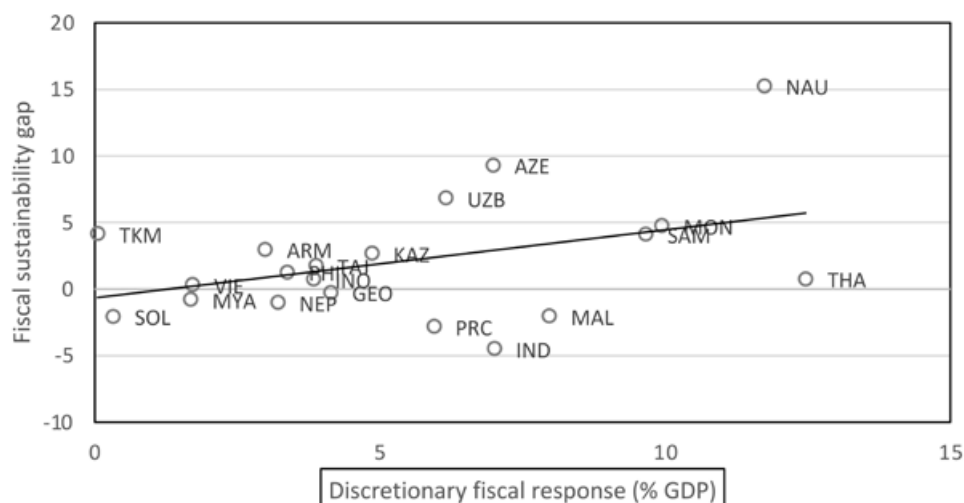
Figure 10.8 Sovereign bond spreads post-COVID-19 and initial fiscal space



Notes:
GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; PRC = People's Republic of China. The discretionary fiscal spending includes additional spending and forgone revenues, as well as loan, equity and guarantees, put in place after the COVID-19 shock. Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.
Source: IMF (2020b). Data available at: <https://www.imf.org/en/Publications/FM/Issues/2020/09/30/october-2020-fiscal-monitor>.

Figure 10.9 Discretionary fiscal spending after COVID-19

For instance, countries with the highest gap (e.g., more fiscal space), such as Nauru, the Federated States of Micronesia, Azerbaijan, and Uzbekistan are among those that have been able to deploy a larger discretionary fiscal response. By contrast, countries with a negative gap (e.g., no fiscal space such as Pakistan, Papua New Guinea, Bangladesh, and Nepal) reacted to the shock with a very small discretionary fiscal stimulus.



Notes:

ARM = Armenia; AZE = Azerbaijan; PRC = People's Republic of China; GDP = gross domestic product; GEO = Georgia; IND = India; INO = Indonesia; KAZ = Kazakhstan; MON = Mongolia; MYA = Myanmar; MAL = Malaysia; NAU = Nauru; NEP = Nepal; PHI = Philippines; SAM = Samoa; SOL = Solomon Islands; TAJ = Tajikistan; THA = Thailand; TKM = Turkmenistan; UZB = Uzbekistan; VIE = Viet Nam.

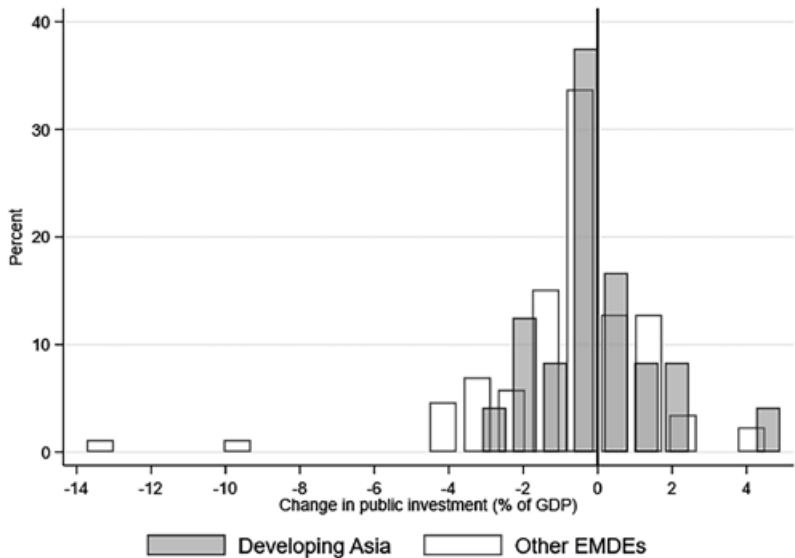
The fiscal sustainability gap is computed as in Kose et al. (2017) and refers to 2019. The discretionary fiscal spending includes additional spending and forgone revenues, as well as loan, equity and guarantees, put in place after the COVID-19 shock, as shown in Figure 10.9. Data for Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.

Sources: IMF (2020b); IMF World Economic Outlook; and Kose et al. (2017).

Figure 10.10 Fiscal gap and discretionary fiscal spending

Turning to capital spending, since we lack comprehensive data on actual investment programs (especially in infrastructure) post-COVID-19, we rely on a systematic review of the most recent data published by the IMF in its country reports and on the data on gross fixed public capital formation published in the October 2019 and October 2020 vintages. We use the October 2020 data as they are the latest observation, while the October 2019 data are the last observations before the COVID-19 crisis. Figure 10.11 plots the distribution of these revisions, separately for developing Asia and the other EMDEs. These preliminary data indicate that in 15 out of 24 countries in developing Asia (for which data are available) public investment in 2020 is expected to contract with respect to the pre-COVID-19 projections. In the median country the downward revision is only 0.2 percent of GDP and only four countries have recorded a large downward revision (Cambodia, Sri Lanka, Tajikistan, and Viet Nam—three of which had

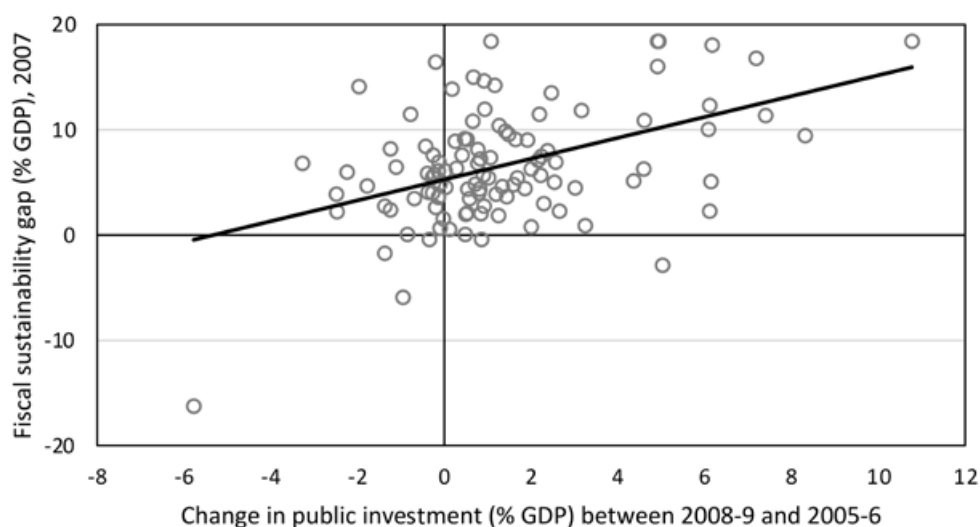
limited or no fiscal space in 2019, see Table 10.1). By contrast, in some countries (including the PRC), public investment levels are expected to be higher than projected in the fall of 2019. Consistent with our discussion on fiscal space, the outlook in developing Asia is better than in other EMDEs, where almost 70 percent of the countries revised public investment spending downward, with a median decline of 0.6 percent of GDP and large contractions in several countries (e.g., Bolivia, Burkina Faso, Dominica, Niger, Suriname, Uganda, and Zambia, all beyond a revision of –3 percent of GDP).



Notes:
EMDEs = emerging and developing economies; GDP = gross domestic product; IMF = International Monetary Fund.
The chart plots the change in public investment over GDP in 2020 between what was published in the October 2020 and the October 2019 vintages of the IMF World Economic Outlook.
Source: IMF World Economic Outlook, different vintages.

Figure 10.11 Public investment around the COVID-19 shock

To complement this preliminary evidence, we look at the experience around the GFC to understand how public investment reacted to the global crisis, depending on the initial level of fiscal space. In this case, we average public investment (as a share of GDP) between 2005 and 2006 (pre-GFC) and between 2008 and 2009 (post-GFC) and compute the change in public investment between the post- and pre-GFC averages. Figure 10.12 plots this change against the fiscal sustainability gap in 2007 (pre-GFC) and shows a strong and positive association between the two variables, suggesting that entering the crisis with a weaker fiscal position is associated with a lower level of public investment (compared with the precrisis level). This piece of evidence, together with the observation that countries start, on average, from a weaker fiscal position than before the GFC, suggests that the COVID-19 crisis could result in lower public investment in the years to come, undermining the progress toward the SDGs.



Notes:

EMDEs = emerging and developing economies; GDP = gross domestic product; GFC = global financial crisis.

The chart plots the financial sustainability gap in 2007 against the change in public investment over GDP between 2008–2009 and 2005–2006 for 108 EMDEs.

Sources: IMF World Economic Outlook; and Kose et al. (2017).

Figure 10.12 Public investment and discretionary fiscal spending around the GFC

5. POLICY OPTIONS

The evidence discussed in this chapter, while based on preliminary data and therefore not conclusive, indicates that developing countries have been hit by the COVID-19 pandemic in a macroeconomic context which is characterized by (1) weaker fiscal stance than before the GFC, with a number of countries already at risk of debt distress; and (2) large financing needs to fund infrastructure and social spending to achieve the SDGs by 2030. As expected, there is an association between (limited) fiscal space and a country's borrowing costs and its capacity to respond to the shock through discretionary fiscal expenditures. Moreover, the experience of the GFC indicates that a weaker initial fiscal position is likely to translate into a larger decline in public investment and, more generally, a weak fiscal position is likely to reduce the returns from public investment.

Moving from this evidence and looking forward, it would be critical to assess the medium-term implications of the shock on public sector finances, to ensure that the appropriate policies are put in place to restore debt sustainability—if this has been undermined—and to scale up investment to meet the targets set by the 2030 Development Agenda. Also, for countries with sufficient fiscal space, there is an opportunity to take advantage of the low global interest rate environment to undertake public investment projects to mitigate the effect of the shock, as fiscal multipliers are likely to be higher than in normal times. However, as multipliers are sensitive to the fiscal stance (Huidrom et al. 2019; Ilzetzki et al. 2013), preserving long-term debt sustainability remains a priority also for these countries, given the uncertainty

on the recovery and the risks of tightening global financial conditions (IMF 2020a). There are three main issues which deserve scrutiny.

First, in the immediate, *rising government debts* need to be addressed. This issue is at the center of the policy discussion. The international community has so far provided debt service suspension—through the IMF debt service relief and the G20 DSSI—which can liberate resources to use for mitigating the effect of the crisis and reducing sovereign bond spreads, with potential positive effects on external financing (Lang et al. 2020). A debt moratorium is the right response to a liquidity crisis and, in this respect, the DSSI has been successful, although so far it has seen limited participation by the PRC (the country with the largest debt service due) and no participation at all by private creditors, which in some countries hold a nontrivial share of external public debt. However, as the crisis continues and the recovery lags, the effects on potential output become more likely and severe; in which case a liquidity crisis could translate into a solvency one. Even in a world of low interest rates, which are also compressed by the expansionary unconventional monetary policy in both advanced and emerging markets (see IMF 2020c; and World Bank 2020b), debt sustainability could become an issue if economic growth stagnates. The short-run contraction has been unprecedented and the shape of the recovery remains highly uncertain. Among low-income countries, many were already at high risk of debt distress (IMF 2020d; World Bank 2020a) and more moved from moderate to high risk recently as the pandemic has affected liquidity and solvency indicators.¹² Similar patterns can emerge also among middle-income countries. In this context, debt service relief will not be enough and debt stock will need to be reduced to mitigate the debt overhang and restore fiscal space, in order to create room to scale up public investment.

Unlike in past experiences, we confront a truly exogenous shock in this case, rather than of domestic macroeconomic policies, which could make the case for debt relief stronger, politically more feasible, and less subject to moral hazard. Moreover, debt restructuring should be faster and more inclusive than in the past, to avoid another “lost decade” in development (Bulow et al. 2020). The current discussion led by the G20 is going in that direction,¹³ following numerous calls by academics, practitioners and policy makers, although several challenges have to be addressed, notably the change in the creditor composition, with a large and dominant share (in some countries) held by emerging donors (e.g., the PRC) and commercial creditors.

The second key issue is the choice of *financing options*. Given the large investment gap and the limited amount of aid, countries need to diversify their funding sources. Aiming primarily for debt sustainability, country authorities should assess the benefits and costs of different options. The financing mix would depend on investment needs, fiscal space and access to international capital markets. On the one hand, the low global interest rate environment can allow for relatively cheap borrowing in countries with sound fundamentals and better prospects for recovery, but a weak fiscal position would caution against a large fiscal expansion, at least for some countries; and for them, international assistance and an expansion of grants and concessional lending would be a fundamental countercyclical source of external financing to balance the drop in government revenue and external private finance inflows. However, notwithstanding political commitment in support of a global sustainable recovery, budgets in donor countries are also under pressure and this could translate into a decline of foreign aid (OECD 2020). In this respect, multilateral institutions should step up their lending capacity. While progress has been made—the IMF, for instance, has so far approved more than \$100 billion in lending in response to the pandemic crisis—the large financing needs and the rapid

depletion of foreign exchange reserves in many countries call for bolder interventions. In this sense, a new special drawing rights allocation, as proposed by many commentators, would allow developing countries to have access to hard currencies at a much lower interest rate than borrowing on international markets (Gallagher et al. 2020; Plant 2020). Multilateral development banks could also play a key role by catalyzing private sector lending and mitigating risks and paving the way for other investors to enter new markets (World Bank 2018). A recent analysis based on syndicated lending—including loans for infrastructure projects—shows that for each US dollar lent by multilateral development banks, private creditors (i.e., commercial banks) can lend up to \$7.00 (Broccolini et al. 2020).

Debt management and financing strategies should take into consideration the sources of risks and vulnerabilities (see Kose et al. 2020, among others, for an extensive discussion of the main issues). Relying heavily on instruments denominated in domestic currency can reduce the exposure to global shocks and limit the changes in debt stocks and repayment flows due to exchange rate movements. However, as countries are slowly graduating from the original sin, one should not dismiss risks coming from local currency bonds (Du and Schreger 2016; Griffiths et al. 2020). A second shift should go toward greater reliance on domestic and longer-term debt, although one has to balance the risks in terms of crowding out of private sector credit (if banks end up being the largest holders of domestic debt) with the benefit of a lower exposure to foreign, more volatile, creditors. Moreover, the deepening of domestic financial markets necessary to absorb an increase in domestic debt requires time and a strengthening of institutions to improve regulation and supervision of financial markets (see Chapter 14, this volume). Finally, state-contingent debt instruments could play a much larger role in the stock of sovereign debt. The academic and policy discussion on these instruments is not new and has pointed out the potential benefits as a countercyclical and risk-sharing tool, even though the take-up so far has been limited (Borensztein and Mauro 2004; Ferrarini 2008; IMF 2017a). For instance, the COVID-19 crisis, at least at the beginning, had the effects of a liquidity crisis and could have been dealt with by using bonds with a floating grace period (Cohen et al. 2008), which would give to the debtor the right to postpone debt repayments for a specific period in case an adverse shock hits the economy. Such instruments would allow for a sort of “automatic restructuring”, without the need for debt negotiation, which is often long and costly.

The final point relates to the design of *investment plans*. We argue that the case for public investment is still relevant, even in crisis time, as it could help the recovery. The timing, composition and size of the investment plan critically depend on the country-specific fiscal space and access to domestic and external financing. A common theme is that the evidence reviewed in this chapter, as well as data on ADB-financed projects, shows that scaling up of public investment should be gradual to avoid absorptive capacity constraints that lead to cost inflation and time delays in project execution, affecting the likelihood of project success and, more generally, reducing the growth dividend of public investment. Hence, country authorities should carefully design investment plans that, in the short term, prioritize maintenance and the termination of existing projects or the implementation of those already in the pipeline. In the medium term, existing evidence shows that a front-loaded public investment surge can induce debt sustainability risks (Buffie et al. 2012). Again, the timing and size of these plans will depend on the degree of fiscal space, with some countries prioritizing the reduction of debt vulnerabilities. A common recommendation for developing countries and the interna-

tional community (bilateral and multilateral donors as well as the private sector) is that more resources for public (infrastructure) investment are a priority and an opportunity to promote inclusive development, achieve the SDGs, and facilitate the digital and climate transformation. In this respect, the scaling up of investment should be gradual and go together with capacity building and improvements in project selection and execution and in the efficiency of public investment.

6. CONCLUSIONS

The COVID-19 pandemic crisis hit developing Asian countries, causing the first recession in nearly 60 years. This unprecedented shock is putting public finance under severe stress and comes during a time when debt vulnerabilities have increased substantially in recent years, and at a point where several countries were already at a high risk of debt distress even before the pandemic. In addition, progress to achieve the SDGs in developing Asia has so far been lower than expected, and countries also have to invest massively in infrastructure.

Given the importance of investment spending to promote inclusive growth and sustain the recovery, governments should make efforts to preserve public investment to the extent possible, given the current conjuncture. At the same time, the fiscal response to the crisis has to consider the risks that an increase in public investment could pose to debt sustainability, especially for countries which already had limited or no fiscal space even before the crisis.

Our analysis shows that developing countries have to deal with the current crisis starting from a weaker fiscal position than they had before the GFC. However, Asian developing countries are in a better position than other developing countries, thanks to a more prudent fiscal policy in recent years. The current crisis and trends in development finance could further reduce fiscal space, weakening the capacity to implement countercyclical fiscal policy and undermining debt sustainability.

Policy options would depend on the extent of fiscal space. In developing countries with no fiscal space, debt relief and increased concessional lending by multilateral and bilateral donors could contribute to reduce the debt overhang and rebuild fiscal space in the short run, to allow investment to pick up in the recovery phase. Countries with fiscal space could instead develop a prudent borrowing strategy to preserve public investment plans also in the short term, by diversifying their financing sources. In this respect, a shift toward state-contingent debt instruments and an increase in long-term and local currency debt could mitigate the future vulnerability to external shocks.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent. The author thanks Benno Ferrarini, Marcelo Giugale, and Juan Pradelli for commissioning this chapter and giving helpful feedback; and Nicolas Depetris-Chauvin and Ugo Panizza for helpful comments. The usual disclaimers apply.
2. In particular, we collect data on 38 countries in developing Asia (based on the classification specified in ADB 2020a). Appendix Table 10A.1 lists the 38 countries covered in the analysis, together with the 93 non-Asian EMDEs (according to the IMF income classification). In the following we use the expression “other EMDEs” and “other developing countries” interchangeably.

Macroeconomic data are collected primarily from the IMF World Economic Outlook, but also from other sources, listed in the notes to each chart.

3. However, Berg et al. (2019) show that the potential negative effect of low efficiency on the growth dividend of public investment can be offset by the positive effect due to capital scarcity, providing an argument against any blank recommendation to reduce public investment in low-efficiency countries.
4. This section draws on Gurara et al. (2018).
5. The visual impression is confirmed by the fact that the correlation between the fiscal and the growth shocks (equal to 0.46) is significantly lower (and equal to 0.13) in Asian countries.
6. Computing averages across groups show even larger differences, as public debt in 2019 is 60 percent of GDP in non-Asian countries and 42 percent in developing Asia.
7. Formally, all countries with a negative gap have no fiscal space. However, as our measure is a function of $DEBT^*$, which is a (non-observable) target, it is hard to interpret the precise values of the index. Also, to take into account that yearly data may be volatile and since we care about significant deviation, in both directions, from the zero, we take two extreme groups and consider all countries for which the gap is moderate (in both ways) as countries with limited fiscal space.
8. See the most recent information at IMF. IMF Financing and Debt Service Relief. <https://www.imf.org/en/Topics/imf-and-covid19/COVID-Lending-Tracker> (accessed 15 December 2020).
9. See the most recent information at The World Bank. COVID 19: Debt Service Suspension Initiative. <https://www.worldbank.org/en/topic/debt/brief/covid-19-debt-service-suspension-initiative> (accessed 15 December 2020).
10. The most recent ADB estimates (as of 2 November 2020) of the size of the total policy packages in response to the COVID-19 pandemic—including government support to income, credit creation, liquidity and equity support, and direct lending—are at \$3.7 trillion in developing Asia, which amounts to about 15 percent of GDP, about half the size of the response in advanced economies (estimated at 32 percent of GDP). While these estimates include both fiscal and monetary policy interventions, they confirm the smaller response in developing Asia compared with advanced economies.
11. These numbers have to be interpreted with caution. The ADB COVID-19 Policy Database (available at <https://covid19policy.adb.org>), for instance, indicates a similar fiscal response for Thailand (\$44 million, while the IMF reports \$45 million, excluding contingent liabilities), but a larger package in Viet Nam (\$13 million versus \$6 million).
12. See Pazarbasioglu (2020).
13. See the IMF position at Pazarbasioglu (2020) and the G20 Statement of 13 November 2020. <https://www.sciencespo.fr/psia/sovereign-debt/2020/11/13/document-g20-common-framework/> (accessed 15 December 2020).

REFERENCES

- Agenor, P.R. 2010. A Theory of Infrastructure-Led Growth. *Journal of Economic Dynamics and Control*. 34, pp. 932–50.
- Ahsan, K. and I. Gunawan. 2010. Analysis of Cost and Schedule Performance of International Development Projects. *International Journal of Project Management*. 28, pp. 68–78.
- Arezki, R., P. Bolton, S. Peters, F. Samama and J. Stiglitz. 2017. From Global Savings Glut to Financing Infrastructure. *Economic Policy*. 32(90), pp. 221–61.
- Asian Development Bank (ADB). 2017. *Meeting Asia's Infrastructure Needs*. Manila.
- Asian Development Bank (ADB). 2020a. *Asian Development Outlook 2020 Update: Wellness in Worrying Times*. Manila.
- Asian Development Bank (ADB). 2020b. *Fast-Tracking the SDGs: Driving Asia-Pacific Transformations*. Manila.
- Auerbach, A. and Y. Gorodnichenko. 2012. Measuring the Output Responses to Fiscal Policy. *American Economic Journal*. 4, pp. 1–27.
- Bassanetti, A., C. Cottarelli and A.F. Presbitero. 2018. Lost and Found: Market Access and Public Debt Dynamics. *Oxford Economic Papers*. 71(2), pp. 445–71.

- Baum-Snow, N., J. Vernon Henderson, M.A. Turner, Q. Zhang and L. Brandt. 2017. Does Investment in National Highways Help or Hurt Hinterland City Growth? *Journal of Urban Economics*. 115, 103124.
- Berg, A., R. Portillo, S. Yang and L.F. Zanna. 2013. Public Investment in Resource Abundant Developing Countries. *IMF Economic Review*. 61(1), pp. 92–129.
- Berg, A., E. Buffie, C. Pattillo, R. Portillo, A.F. Presbitero and L.F. Zanna. 2019. Some Misconceptions About Public Investment Efficiency and Growth. *Economica*. 86, pp. 409–430.
- Bohn, H. 1998. The Behavior of US Public Debt and Deficits. *Quarterly Journal of Economics*. 113(3), pp. 949–63.
- Borensztein, E. and P. Mauro. 2004. The Case for GDP-Indexed Bonds. *Economic Policy*. 19(38), pp. 166–216.
- Bougheas, S., P.O. Demetriades and E.L.W. Morgenroth. 1999. Infrastructure, Transport Costs and Trade. *Journal of International Economics*. 47, pp. 169–89.
- Broccolini, C., G. Lotti, A. Maffioli, A.F. Presbitero and R. Stucchi. 2020. The Mobilization Effects of Multilateral Development Banks. *World Bank Economic Review*. Forthcoming.
- Buffie, E., R. Portillo, L.F. Zanna, C. Pattillo and A. Berg. 2012. Public Investment, Growth, and Debt Sustainability: Putting Together the Pieces. *IMF Working Paper*. No. 12/144. Washington, DC: IMF.
- Bulow, J., C. Reinhart, K. Rogoff and C. Trebesch. 2020. The Debt Pandemic. *Finance & Development*. Fall 2020 Issue.
- Calderon, C. and A. Chong. 2004. Volume and Quality of Infrastructure and the Distribution of Income: An Empirical Investigation. *Review of Income and Wealth*. 50, pp. 87–105.
- Calderon, C. and L. Servén. 2010. Infrastructure and Economic Development in Sub-Saharan Africa. *Journal of African Economies*. 19(s1), pp. i13–i87.
- Calderon, C., E. Moral-Benito and L. Servén. 2015. Is Infrastructure Capital Productive? A Dynamic Heterogeneous Approach. *Journal of Applied Econometrics*. 30, pp. 177–98.
- Cavallo, E. and C. Duade. 2011. Public Investment in Developing Countries: A Blessing or a Curse? *Journal of Economic Dynamics and Control*. 39, pp. 65–81.
- Christiano, L., M. Eichenbaum and S. Rebelo. 2011. When is the Government Spending Multiplier Large? *Journal of Political Economy*. 119, pp. 78–121.
- Cohen, D., H. Djoufelkit-Cottenet, P. Jacquet and C. Valadier. 2008. Lending to the Poorest Countries: A New Counter-Cyclical Debt Instrument. *OECD Development Centre Working Paper*. No. 269. Paris: OECD Development Centre.
- De Soyres, F., A. Mulabdic and M. Ruta. 2020. Common Transport Infrastructure: A Quantitative Model and Estimates from the Belt and Road Initiative. *Journal of Development Economics*. 143, 102415.
- Denizer, C., D. Kaufmann and A. Kraay. 2013. Good Countries or Good Projects? Macro and Micro Correlates of World Bank Project Performance. *Journal of Development Economics*. 105, pp. 288–302.
- Donaldson, D. 2018. Railroads of the Raj: Estimating the Impact of Transportation Infrastructure. *American Economic Review*. 108(4–5), pp. 899–934.
- Du, W. and J. Schreger. 2016. Local Currency Sovereign Risk. *Journal of Finance*. 71(3), pp. 1027–70.
- Esfahani, H.S. and M.T. Ramirez. 2003. Institutions, Infrastructure, and Economic Growth. *Journal of Economic Development*. 70, pp. 443–77.
- Estache, A. and M. Fay. 2007. Current Debates on Infrastructure Policy. *Policy Research Working Paper*. No. 4410. Washington, DC: World Bank.
- Fatás, A. and L.H. Summers. 2018. The Permanent Effects of Fiscal Consolidations. *Journal of International Economics*. 12, pp. 238–50.
- Ferrarini, B. 2008. Proposal for a Contingency Debt Sustainability Framework. *World Development*. 36(12), pp. 2547–65.
- Flyvbjerg, B. 2009. Survival of the Unfittest: Why the Worst Infrastructure Gets Built—and What We Can Do about it. *Oxford Review of Economic Policy*. 25(3), pp. 344–67.
- Gallagher, K., J.A. Ocampo and U. Volz. 2020. IMF Special Drawing Rights: A Key Tool for Attacking a COVID-19 Financial Fallout in Developing Countries. Future Development Blog. Washington, DC: Brookings Institution. Accessed at: <https://www.brookings.edu/blog/future-development/2020/03/26/imf-special-drawing-rights-a-key-tool-for-attacking-a-covid-19-financial-fallout-in-developing-countries/>.

- Griffiths, J., U. Panizza and F. Taddei. 2020. Reducing Low-Income Country Debt Risks: The Role of Local Currency-Denominated Loans from International Institutions. ODI Briefing Note. May. London: Overseas Development Institute.
- Gurara, D., V. Klyuev, N. Mwase and A.F. Presbitero. 2018. Trends and Challenges in Infrastructure Investment in Developing Countries. *International Development Policy*. 10.1.
- Gurara, D., K. Kpodar, A.F. Presbitero and D. Tessema. 2020. On the Capacity to Absorb Public Investment: How Much is Too Much?. *IMF Working Paper*. No. 20/48. Washington, DC: IMF.
- Heller, P. 2005. Understanding Fiscal Space. *IMF Policy Discussion Paper*. No. 05/4. Washington, DC: IMF.
- Huidrom, R., A. Kose, J. Lim and F. Ohnsorge. 2019. Why Do Fiscal Multipliers Depend on Fiscal Positions? *Journal of Monetary Economics*. 114. pp. 109–125.
- Ilzetzki, E., E. Mendoza and C. Vegh. 2013. How Big (Small?) Are Fiscal Multipliers? *Journal of Monetary Economics*. 60, pp. 239–54.
- International Monetary Fund (IMF). 2017a. State-Contingent Debt Instruments for Sovereigns. *IMF Policy Paper*. May. Washington, DC.
- International Monetary Fund (IMF). 2017b. The Medium-Term Debt Management Strategy: An Assessment of Recent Capacity Building. *IMF Policy Paper*. July. Washington, DC.
- International Monetary Fund (IMF). 2020a. *World Economic Outlook: The Great Lockdown*. Washington, DC.
- International Monetary Fund (IMF). 2020b. *Fiscal Monitor: Policies for the Recovery*. October. Washington, DC.
- International Monetary Fund (IMF). 2020c. *Global Financial Stability Report: Bridge to Recovery*. October. Washington, DC.
- International Monetary Fund (IMF). 2020d. The Evolution of Public Debt Vulnerabilities in Lower Income Economies. *IMF Policy Paper*. No. 20/003. Washington, DC.
- Isham, J. and D. Kaufmann. 1999. The Forgotten Rationale for Policy Reform: The Productivity of Investment Projects. *The Quarterly Journal of Economics*. 114(1), pp. 149–84.
- Izquierdo, A., R. Lama, J.P. Medina, J. Puig, D. Riera-Crichton, C. Vegh and G. Vuletin. 2019. Is the Public Investment Multiplier Higher in Developing Countries? An Empirical Exploration. *NBER Working Paper*. No. 26478.
- Jedwab, R. and A. Moradi. 2016. The Permanent Effects of Transportation Revolutions in Poor Countries: Evidence from Africa. *Review of Economics and Statistics*. 98(2), pp. 268–84.
- Jedwab, R. and A. Storeygard. 2021. The Average and Heterogeneous Effects of Transportation Investments: Evidence from Sub-Saharan Africa 1960–2010. *Journal of the European Economic Association*.
- Jedwab, R., E. Kerby and A. Moradi. 2017. History, Path Dependence, and Development: Evidence from Colonial Railroads, Settlers, and Cities in Kenya. *Economic Journal*. 603. pp. 1467–94.
- Khandker, S.R., Z. Bakht and G.B. Koolwal. 2009. The Poverty Impact of Rural Roads: Evidence from Bangladesh. *Economic Development and Cultural Change*. 57(4), pp. 685–722.
- Kose, A., S. Kurlat, F. Ohnsorge and N. Sugawara. 2017. A Cross-Country Database of Fiscal Space. *Policy Research Working Paper*. No. 8157. Washington, DC: World Bank. Accessed at: <http://documents1.worldbank.org/curated/en/601211501678994591/pdf/WPS8157.pdf>.
- Kose, A., P. Nagle, F. Ohnsorge and N. Sugawara. 2020. *Global Waves of Debt: Causes and Consequences*. Washington, DC: World Bank.
- Kraay, A. and V. Nehru. 2006. When is External Debt Sustainable? *World Bank Economic Review*. 20, pp. 341–65.
- Krugman, P. 1988. Financing Versus Forgiving a Debt Overhang. *Journal of Development Economics*. 29(3), pp. 253–68.
- Lang, V., D. Mihalyi and A.F. Presbitero. 2020. Borrowing Costs After Debt Relief. Manuscript. Accessed at: https://papers.ssrn.com/sol3/Papers.cfm?abstract_id=3708458.
- Laubach, T. 2009. New Evidence on the Interest Rate Effects of Budget Deficits and Debt. *Journal of the European Economic Association*. 7(4), pp. 858–85.
- Manasse, P. and N. Roubini. 2009. “Rules of Thumb” for Sovereign Debt Crises. *Journal of International Economics*. 78, pp. 192–205.

- Organisation for Economic Co-operation and Development (OECD). 2020. *The Impact of the Coronavirus (COVID-19) Crisis on Development Finance*. Paris: OECD Publishing.
- Pazarbasioglu, C. 2020. Current Sovereign Debt Challenges and Priorities in the Period Ahead. IMF Views & Commentaries. <https://www.imf.org/en/News/Articles/2020/11/16/vc111620-current-sovereign-debt-challenges-and-priorities-in-the-period-ahead> (accessed 15 December 2020).
- Plant, M. 2020. Making the IMF's Special Drawing Rights Work for COVID-19 Economic Relief. *CGD Notes*. 6 May. Washington, DC: Center for Global Development.
- Presbitero, A.F. 2016. Too Much and Too Fast? Public Investment Scaling-Up and Absorptive Capacity. *Journal of Development Economics*. 120, pp. 17–31.
- Presbitero, A.F. and U. Wiriadinata. 2020. Public Debt and r-g at Risk. Working Paper. Accessed at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3710776.
- Ramey, V. 2020. The Macroeconomic Consequences of Infrastructure Investment. In E. Glaeser and J. Poterba (eds), *Economic Analysis and Infrastructure Investment*. Chicago, IL: University of Chicago Press.
- Ramey, V.A. and S. Zubairy. 2018. Government Spending Multipliers in Good Times and in Bad: Evidence from US Historical Data. *Journal of Political Economy*. 126(2), pp. 850–901.
- Rosenstein-Rodan, P.N. 1943. Problems of Industrialization of Eastern and South-Eastern Europe. *Economic Journal*. 53, pp. 202–211.
- Sachs, J. 1989. The Debt Overhang of Developing Countries. In G.A. Calvo, R. Findlay, P. Kouri and J. Braga de Macedo (eds), *Debt Stabilization and Development*. Oxford: Basil Blackwell.
- Serebrisky, T., A. Suarez-Aleman, C. Pastor and A. Wohlhueter. 2017. *Increasing the Efficiency of Public Infrastructure Investment Delivery*. Washington, DC: Inter-American Development Bank.
- Thacker, S., D. Adshead, M. Fay, S. Hallegatte, M. Harvey, H. Meller, N. O'Regan et al. 2019. Infrastructure for Sustainable Development. *Nature Sustainability*. 2, pp. 324–31.
- United Nations Conference on Trade and Development (UNCTAD). 2014. *World Investment Report 2014*. Geneva.
- United Nations Conference on Trade and Development (UNCTAD). 2019. *Trade and Development Report 2019*. Geneva.
- Warner, A. 2014. Public Investment as an Engine of Growth. *IMF Working Paper*. No. 14/148. Washington, DC.
- World Bank. 2018. Mobilization of Private Finance by Multilateral Development Banks and Development Finance Institutions 2017. June. Washington, DC.
- World Bank. 2020a. *Global Economic Prospects, January 2020: Slow Growth, Policy Challenges*. Washington, DC.
- World Bank. 2020b. *Global Economic Prospects, June*. Washington, DC.
- Yang, G., X. Huang, J. Huang and H. Chen. 2020. Assessment of the Effects of Infrastructure Investment under the Belt and Road Initiative. *China Economic Review*. 60, 10141.

APPENDIX 10.1

Table 10A.1 Economies covered in the analysis

Developing Asia		
Azerbaijan	Kyrgyz Republic	Sri Lanka
Afghanistan	Malaysia	Tajikistan
Armenia	Maldives	Thailand
Bangladesh	Marshall Islands	Timor-Leste
Bhutan	Federated States of Micronesia	Tonga
Cambodia	Mongolia	Turkmenistan
People's Republic of China	Myanmar	Tuvalu
Fiji	Nauru	Uzbekistan
Georgia	Nepal	Vanuatu
India	Pakistan	Viet Nam
Indonesia	Papua New Guinea	
Kazakhstan	Philippines	
Lao People's Democratic Republic	Samoa	
Kiribati	Solomon Islands	
Other (Non-Asian) Emerging Markets and Developing Economies		
Albania	Eswatini	Mozambique
Algeria	Ethiopia	Namibia
Angola	Gabon	Nicaragua
Belarus	The Gambia	Niger
Belize	Ghana	Nigeria
Benin	Grenada	North Macedonia
Bolivia	Guatemala	Paraguay
Bosnia and Herzegovina	Guinea	Peru
Botswana	Guinea-Bissau	Romania
Brazil	Guyana	Russian Federation
Bulgaria	Haiti	Rwanda
Burkina Faso	Honduras	Sao Tome and Principe
Burundi	Iran Islamic Rep.	Senegal
Cabo Verde	Iraq	Serbia
Cameroon	Jamaica	Sierra Leone
Central African Rep.	Jordan	South Africa
Chad	Kenya	South Sudan
Colombia	Kosovo	St Lucia
Comoros	Lebanon	St Vincent and the Grenadines
Congo, Dem. Rep.	Lesotho	Sudan
Congo, Rep.	Liberia	Suriname

Other (Non-Asian) Emerging Markets and Developing Economies		
Costa Rica	Libya	Tanzania
Cote d'Ivoire	Madagascar	Togo
Djibouti	Malawi	Tunisia
Dominica	Mali	Turkey
Dominican Republic	Mauritania	Uganda
Ecuador	Mauritius	Ukraine
Egypt Arab Rep.	Mexico	West Bank and Gaza
El Salvador	Moldova	Yemen Rep.
Equatorial Guinea	Montenegro	Zambia
Eritrea	Morocco	Zimbabwe

Source: Authors.

Note: Data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting both countries.

11. Contingent liabilities: monitoring exposures that are difficult to measure

Timothy C. Irwin¹

1. INTRODUCTION

Contingent liabilities matter for debt sustainability because their realization can cause debt to increase sharply and suddenly. Thus, even countries with apparently sound public finances can have debt-sustainability problems if their contingent liabilities are troublesome. Indonesia and Thailand, for example, entered the Asian financial crisis of 1997–1998 with low public debt and having recently run moderate budget deficits or even surpluses, but their public finances were quickly undermined by the realization of explicit and implicit contingent liabilities (Brix and Gooptu 2002, p. 251). Iceland and Spain had a similar experience during the global financial crisis of 2008. More generally, Bova et al. (2019, p. 381) find that the realization of contingent liabilities after the global financial crisis accounted for “as much as one-third” of the subsequent increases in public debt. And studies of the causes of the long-term growth of public debt have found that traditionally measured deficits, growth rates, and interest rates have less explanatory power than might be expected, while factors that increase debt without showing up in the traditionally measured deficit are crucial; perhaps the most important such factor is the depreciation of the local currency in the presence of foreign-currency debt, but another is the realization of contingent liabilities (Kharas and Mishra 2001; Campos et al. 2006; Jaramillo et al. 2017).

Contingent liabilities and the surprises they create cannot be eliminated. Even if a government avoids explicitly underwriting any risks, it will almost certainly underwrite some implicitly, as the risk-bearer of last resort. As someone once said of deposit insurance: there are two types of government—those that offer it and those that think they don’t.² Surprises are of course inevitable. Yet they can be amplified by the opacity of many contingent liabilities, especially the implicit ones; by inadequacies in governments’ monitoring of even the explicit ones; and the tendency of governments to assume obligations in a form that does not immediately increase the reported level of public debt. As Buchheit and Gulati (2014, p. 241) write,

It is a truth universally acknowledged, that a sovereign borrower in possession of an uncomfortably large stock of debt, must be in want of camouflage. And since the commencement of the financial crisis in 2008, many sovereigns seem to have found it—in the form of contingent sovereign liabilities.

Contingent liabilities are by no means new. Livy and Suetonius write of the Roman Republic and Empire offering guarantees in contracts with military suppliers (Irwin 2007, pp. 12–13),

and in the nineteenth century, governments around the world encouraged the building of railways by guaranteeing investors a minimum rate of return (Eichengreen 1996; Irwin 2007, pp. 14–15). The economic literature on contingent liabilities is also old, if not as ancient as the liabilities themselves. Mann (1947), for example, defended the United States (US) government's use of guarantees in the first decades of the twentieth century. Merton (1977) influentially pointed out that government guarantees have the same kind of payoffs as put options, and their costs can therefore be estimated using the techniques of option pricing. Baldwin et al. (1983) and Phaup (1985) drew attention to the failure of budgetary accounting in Canada and the US, respectively, to recognize these costs. Work by international organizations on contingent liabilities (and the broader issue of fiscal risk) took off in the 1990s and has continued apace, spurred on by the Asian and the global financial crises (e.g., Towe 1991; Irwin et al. 1997; Polackova 1998; Brixi and Schick 2002; Hemming et al. 2006; Cebotari 2008; IMF 2008, 2016; Kopits 2014).

The effect of the novel coronavirus (COVID-19) on public finances in Asia makes a review of contingent liabilities timely. The region appears, at the time of writing, in late 2020, to be weathering the pandemic better than most, but growth has slowed, and public debt has increased (see Chapter 1, this volume). Countries such as Japan and the Republic of Korea (ROK) have also responded to the pandemic by incurring new contingent liabilities.³

This chapter therefore takes a fresh look at contingent liabilities in Asia (ADB's developing members and Japan) and the ways they can be monitored. The contingent liabilities it examines are the direct liabilities of entities other than the central government that may become liabilities of the central government if the other entities become financially distressed. Those entities include subnational governments, state-owned enterprises, banks and other financial institutions, firms involved in public–private partnerships (PPPs), and any entity that benefits from an explicit government guarantee. Excluded from the analysis are certain other contingent liabilities, such as those arising from lawsuits against the government; certain direct obligations of the central government that are sometimes described as contingent liabilities, such as obligations to pay pensions (e.g., Towe 1991); and obligations that are especially difficult to value, which accountants sometimes call contingent liabilities.⁴

One entity's direct liabilities may become the government's contingent liabilities when the government signs a contract to guarantee them, but, as indicated above, this is not the only way. A contingent liability may arise from a letter of comfort, in which the government makes a softer but possibly still significant commitment; or from a law, such as one guaranteeing bank deposits. Alternatively, officials may imply with a series of nods and winks that the government stands behind an entity's liabilities (Buchheit and Gulati 2014), or the extent of the government's involvement in the entity's activities may by itself suggest that it will do so, as in the case of many state-owned enterprises and the “government-sponsored” entities Fannie Mae and Freddie Mac (Phaup 2009; Frame et al. 2015). Finally, the government may sometimes be expected to conclude, irrespective of any of its prior words or actions, that the costs of letting the entity default on its liabilities are greater than the costs of bailing it out—as with the US government's 2009 rescue of General Motors (Goolsbee and Krueger 2015).

As the last example illustrates, some entities' liabilities may become the government's liabilities only during an economy-wide crisis: in better times, the US government might have allowed General Motors to fail. More generally, because many contingent liabilities do not arise from clear-cut laws or contracts, whether the government would assume the

liabilities may be unknown. National governments seldom allow subnational governments or state-owned enterprises to default on their debts, but occasionally they do, as in the People's Republic of China (PRC), where some state-owned enterprises have defaulted on their debts, and in the US, where some subnational governments have done so. Thus, many of the liabilities discussed in this chapter are best described as *possible* contingent liabilities.

The chapter first examines the available evidence on the gross magnitude of the possible contingent liabilities of the central governments of the region's five largest economies: the PRC, India, Indonesia, Japan and the ROK. Together, these countries account for 92 percent of the region's public debt and no doubt a large share of its contingent liabilities.⁵ The analysis focuses on data in cross-country databases because these data tend to be at least partly standardized and thus more nearly comparable between countries, and because they are what are most suitable to the international monitoring of debt sustainability. Nevertheless, some attention is paid to country-specific information.

The chapter aims to answer both a first-order question about the size of the possible contingent liabilities in the five countries and a second-order question about the availability of cross-country information on the issue. On the second-order question, it finds that, even for these large, globally important, middle- or high-income countries, the cross-country databases have major gaps. To take a striking example, one of the databases provides for information on governments' explicit contingent liabilities, including government guarantees of debt, but each value is missing for each of the five countries. In other areas, information is available for some countries but not others. Notably scarce are data on India and, especially, the PRC. Given the gaps in the data for these five large countries, it seems safe to assume that the region's smaller, poorer countries also have major gaps in their data. Nevertheless, some of the databases were developed only in the last few years, so there is room for optimism.

The answer to the first-order question is necessarily limited by the gaps in the data, but there are clearly large differences in the gross size of the different types of possible contingent liabilities among the five countries. For example, the Indonesian government's possible contingent liabilities related to subnational governments appear to amount to about 0.3 percent of GDP, while those of its Japanese counterpart are two orders of magnitude larger. All the countries have significant possible contingent liabilities related to state-owned enterprises, but those of Indonesia are, again, the smallest, at 6–12 percent of GDP (depending on the data source), and those of the PRC the largest, with some estimates (not in the databases) putting them at more than 100 percent of GDP. Possible contingent liabilities arising from PPPs in infrastructure seem relatively small in the countries for which data are available, ranging from less than 1 percent of GDP in the PRC to just over 5 percent in India. Public and private banks are generally the largest source of contingent liabilities, though the data on them are far from complete.

The chapter ends by sketching three strategies for monitoring possible contingent liabilities. It does not consider the details of monitoring, which necessarily differ from one kind of contingent liability to another, but instead looks at some high-level aspects of measurement and control that are common to the monitoring of all the possible contingent liabilities considered. The first strategy is to monitor the gross amount of contingent liabilities, as many Asian governments do with explicit government guarantees. A second strategy, seemingly less popular in Asia, addresses an obvious weakness in the first strategy: that it takes no account of the probabilities that contingent liabilities will be realized. It is to monitor some probability-dependent measure such as the contingent liabilities' market value or expected cost. The third strategy is,

essentially, to redefine the government's debt to treat many would-be contingent liabilities as ordinary liabilities and monitor this broader measure of debt.

2. CONTINGENT LIABILITIES IN ASIA'S FIVE LARGEST ECONOMIES

The first task in monitoring contingent liabilities is to determine their gross amount. To do this, we need to measure the size of the liabilities explicitly guaranteed by central government, as well as those of entities that are likely to benefit from some degree of implicit government guarantee, including subnational governments; state-owned enterprises, public banks, and other public corporations; private companies involved in PPPs; and private banks and other private financial corporations. How, then, should the size of these liabilities be measured?

The first question is which obligations to count (Dippelsman et al. 2012; Irwin 2015). A natural approach is to count only loans and debt securities (*traditionally defined debt*). But accountants and statisticians typically aim to record a wider range of liabilities, including, for example, accounts payable and the obligations associated with pensions. A second option is to count all these obligations other than equity claims (*nonequity liabilities*). A third option is to count only what statisticians define as *debt instruments*, which includes all nonequity liabilities except, curiously, those arising from financial derivatives; see the System of National Accounts 2008 (European Commission et al. 2009, paragraph 26.103).

Another question is how to value the chosen set of obligations. Traditionally defined debts are often measured at their face value, but since loans can be made at a concessional interest rate, and bonds can be issued at a premium or discount to their face value, this method is rather arbitrary (Irwin 2019). Traded debt securities are often measured at their market value, which is sometimes useful, but at other times has consequences that can seem perverse: the market value of a debt falls in value as the debtor's creditworthiness diminishes, so the gross amount of a government's contingent liabilities could decline as the probability of their realization increased. Debts are also sometimes measured at their amortized cost (the amount of money raised at the time of borrowing reduced by repayments and the amortization of any issuance premium or discount); but this method, too, has elements of the arbitrary and perverse. The measurements presented below probably contain a mix of these valuation methods, and often it is unclear exactly which are used.

2.1 Explicit Debt Guarantees

Explicit government guarantees of the debts of other entities tend to be closely monitored, sometimes by the government's debt manager (see Chapter 14, this volume). Many governments disclose them. The Government of India, Ministry of Finance (2020a, p. 25), to take just one example, states that the stock of debt guaranteed on 31 March 2019 amounted to 2.35 percent of GDP.

But data like these do not appear to be commonly compiled in a cross-country database. There is space in the Government Finance Statistics Database of the International Monetary Fund (IMF) for the value of "explicit contingent liabilities" and for the part thereof created by "publicly guaranteed debt"; but values for the PRC, India, Indonesia, Japan, and the ROK are all missing.⁶

Buchheit and Gulati (2014, p. 244) succeed in getting information on 885 government-guaranteed bonds issued in 1965–2013, but their sources are not helpful in our context. They are not freely available and, in the authors' words, the bonds in their dataset "probably" constitute "both a small and biased ... subset of the universe of sovereign guaranteed bonds". And even a complete database of government-guaranteed bonds would tell us nothing about government-guaranteed loans, which in most developing countries are more important.

2.2 Subnational Governments

Let us look, then, at the size of various entities' liabilities that might be guaranteed, implicitly or explicitly by the central government, starting with those of subnational governments. Following the terminology and conceptual framework of national accounts and government-finance statistics (e.g., IMF 2014, Ch. 2), we take subnational governments to be the noncommercial (nonmarket) parts of local and state governments.

The IMF's Government Finance Statistics Database allows for detailed, standardized information on government finances, including those of subnational governments. The data are presented according to the framework set out in IMF (2014), which in turn is based on the *System of National Accounts 2008*. In principle, the database allows a choice among the three possible sets of liabilities (traditionally defined debt, debt instruments, and nonequity liabilities). Moreover, the data on liabilities can in principle be reconciled with data on deficits.

Table 11.1 gives the database's information on nonequity liabilities. There are no data at all on subnational liabilities in the PRC or India. Nevertheless, the available data imply that possible contingent liabilities related to subnational government are very small in Indonesia, at less than 0.5 percent of GDP; moderate in the ROK, at about 3 percent of GDP; and rather large in Japan, at about 33 percent of GDP.

Table 11.1 Liabilities of subnational government, 2018 (% of GDP)

Country	Local Government	State Government
PRC	...	n.a.
India	...	...
Indonesia	0.17	0.15
Japan	32.63	n.a.
ROK	3.17	n.a.

Notes:

GDP = gross domestic product; PRC = People's Republic of China; ROK = Republic of Korea.

"..." means that the values are missing and "n.a." means that they are not applicable (because the country has no states).

Source: IMF. Government Finance Statistics Database. Washington, DC. <https://data.imf.org/?sk=a0867067-d23c-4ebc-ad23-d3b015045405>. Data were downloaded on 16 September 2020 by going to the Archive tab; then "Query or Download Data", choosing the 2019 "Vintage Annual", and then performing a "Query" on "Integrated Balance Sheet (Stock Positions and Flows in Assets and Liabilities)".

The IMF's Global Debt Database provides a different perspective and adds information for India (Table 11.2).⁷ This database is much less detailed than the Government Finance Statistics Database, but it does report both the debt of central government and the debt of general gov-

ernment, the difference between them being, with one possible exception mentioned below, the debt of subnational government. The database aims to include all debt instruments (Mbaye et al. 2018), but sometimes has to settle for traditionally defined debt. In any case, for India, the database implies possible contingent liabilities associated with subnational government of about 24 percent of GDP. For Indonesia and the ROK, the values are similar to those from the Government Finance Statistics Database. The small differences might reflect differences in included liabilities or valuation methods, or the elimination upon consolidation of the claims internal to general government, such as debts owed by local governments to the central government. In the presence of such claims, the analysis of possible contingent liabilities should focus on the implied figure, to avoid a kind of double counting. Such factors might also explain the larger difference in the estimate for Japan, but the figure for the liabilities for Japan's central government may exclude liabilities related to social-security funds, as suggested by data for Japan in the Government Finance Statistics Database.

Table 11.2 Implied debt of subnational government, 2018 (% of GDP)

Country	Debt of Central Government	Debt of General Government	Implied Debt of Subnational Government
PRC	...	50.6	...
India	43.9	68.1	24.2
Indonesia	29.8	30.1	0.3
Japan ^a	198.4	237.1	38.7
ROK ^b	37.7	40.1	2.4

Notes:

... = data not available; GDP = gross domestic product; PRC = People's Republic of China; ROK = Republic of Korea.

^a For Japan, the debt of central government may exclude the liabilities of social-security funds, so the implied liabilities of subnational government may be overstated.

^b Data for the ROK are for 2017.

Source: Global Debt Database. <https://www.imf.org/-/media/Files/Publications/WP/2018/datasets/wp18111.ashx> (accessed 5 September 2020).

Neither database offers an estimate of the liabilities of local government in the PRC. The Global Debt Database does, however, provide an estimate of the debt of general government and thus an upper bound on the debt of local governments. Chapter 6 in this volume offers an estimate for 2019 of 21 percent of GDP.

2.3 Public Corporations

Public corporations are businesses that are controlled by units of general government and operate at least somewhat commercially. Statisticians have developed tests for determining whether a government-controlled business is sufficiently commercial to be deemed a public corporation and thus not part of general government, but the dividing line tends to be blurry or, if made precise, somewhat arbitrary. In practice, the great majority of government-controlled businesses in the region are probably treated in the databases as being outside general government. In line with the distinction in macroeconomic statistics between financial and nonfinancial corporations, public corporations are conventionally divided into financial public

corporations (public banks and other government-controlled financial institutions) and non-financial public corporations (state-owned enterprises, municipal enterprises, and the like). The central bank is a financial public corporation, though *sui generis*.

Table 11.3 shows estimates of the liabilities of nonfinancial public corporations from three sources: a recent issue of the IMF's *Fiscal Monitor* (IMF 2020); an IMF database of public-sector balance sheets, which, like the Government Finance Statistics Database, classifies total liabilities into components; and the World Bank's Quarterly Public Sector Debt Database, which, unlike the other two databases, has data for 2019.⁸ The estimates in the *Fiscal Monitor* for Indonesia, Japan, and the ROK appear to have been taken from the Public Sector Balance Sheet Database (one of its stated sources). The estimates from the Quarterly Public Sector Debt Database are lower for the two countries for which they are available, perhaps because of the passage of time or the counting of a narrower range of liabilities, or possibly differences in methods of valuation or the set of businesses included in the calculation.

Table 11.3 Liabilities of nonfinancial public corporations (% of GDP)

Country	<i>Fiscal Monitor</i>	PSBS Database	QPSD Database
	Debt	Nonequity Liabilities	Debt
	2016–2018	2016	2019
PRC	46.89	...	...
India	...	22.35	...
Indonesia	11.89	11.89	6.31
Japan	17.20	17.20	15.89
ROK	23.54	23.54	...

Notes:

... = data not available; GDP = gross domestic product; PRC = People's Republic of China; PSBS = Public Sector Balance Sheet; QPSD = Quarterly Public Sector Debt Database; ROK = Republic of Korea.

Sources: IMF (2020, Figure 3.18); IMF. Public Sector Balance Sheet Database. Washington, DC: <https://data.imf.org/?sk=82A91796-0326-4629-9E1D-C7F8422B8BE6>; and World Bank. QPSD: Quarterly Public Sector Debt. Table C1. Washington, DC: <https://datatopics.worldbank.org/debt/qpsd>.

The available data suggest that the liabilities of nonfinancial public corporations are significant in all five countries and especially large in the PRC. They are smallest in Indonesia, at about 6–12 percent of GDP (depending on the data source); somewhat larger in Japan, at about 16–17 percent of GDP; and somewhat larger still in the ROK, at about 24 percent of GDP. For the PRC, the only estimate in the cross-country databases is from the *Fiscal Monitor*, which reports “debt” of “state-owned enterprises” of 46.9 percent of GDP. Ferrarini and Hinojales (2018, p. 5), however, identify debt of state-owned enterprises in the PRC of 50.9 percent of GDP in 2016 and note that their “sample falls significantly short of total SOE debt”; they prefer an estimate due to Moody's of 115 percent of GDP. Lee and Naqvi (2020, pp. 192–3) report estimates of \$15.1 trillion–\$15.3 trillion in 2016, or about 135 percent of GDP.

The liabilities of *financial* public corporations are large in all countries for which data are available, especially in India and Japan. Table 11.4 reports three measures of the liabilities. The measures in the first two columns are from the IMF's Public Sector Balance Sheet Database, with the first column showing the traditionally defined debt of public financial corporations, including, it seems, each country's central bank; and the second column showing estimates of

their nonequity liabilities, including, among other things, the deposits held in public banks. The third column reports data from the World Bank's Quarterly Public Sector Debt Database (whether the estimates in this column include the central bank is unclear). For Japan, nonequity liabilities according to the Public Sector Balance Sheet Database are about 193 percent of GDP. Liabilities are also large in India and may not be as comprehensively defined. Liabilities in the ROK are also large, at a little more than 70 percent of GDP. They are rather lower in Indonesia, at about 34 percent of GDP.

Table 11.4 Liabilities of financial public corporations (% of GDP)

Country	PSBS Loans and Debt Securities 2016	PSBS Nonequity Liabilities 2016	QPSD Debt 2019
PRC	...	...	...
India	...	73.14	...
Indonesia	3.44	33.77	26.42
Japan	48.61	193.30	47.96
ROK	37.28	67.58	...

Notes:

... = data not available; GDP = gross domestic product; PRC = People's Republic of China; PSBS = Public Sector Balance Sheet; QPSD = Quarterly Public Sector Debt Database; ROK = Republic of Korea.

Sources: IMF. PSBS. Washington, DC: <https://data.imf.org/?sk=82A91796-0326-4629-9E1D-C7F8422B8BE6>; World Bank. QPSD: Quarterly Public Sector Debt. Table C1. Washington, DC: <https://datatopics.worldbank.org/debt/qpsd>.

2.4 Consolidated Liabilities of the Public Sector

Lending by one part of the public sector to another means that, for the purpose of measuring the possible contingent liabilities of the central government, the liabilities of public corporations cannot simply be added to those of the central government. Among other things, the central government may borrow from public banks, while state-owned enterprises may borrow from the central government. We can get a better sense of the incremental possible contingent liabilities created by public corporations by comparing the debt of the public sector with that of the central government.

Table 11.5 does this for traditionally defined debt (loans and debt securities), for which results are probably most nearly comparable among countries. In Indonesia, the data suggest that public corporations create a relatively small possible contingent liability, at about 3 percent of GDP. In the ROK, the additional traditionally defined debt is large, at about 54 percent of GDP. Most striking are the data for Japan, which imply that the traditionally defined debt of the public sector is significantly *smaller* than that of the central government, presumably because of the central bank's ownership of government bonds.

Table 11.5 *Loans and debt securities of central government and the public sector, 2016 (% of GDP)*

Country	Central Government	Public Sector	Difference
PRC	...	...	...
India	...	...	...
Indonesia	28.5	31.7	3.2
Japan	192.7	140.7	-52.0
ROK	37.2	91.1	53.9

Notes:

... = data not available; GDP = gross domestic product; PRC = People's Republic of China; ROK = Republic of Korea.

Source: IMF. PSBS. Washington, DC: <https://data.imf.org/?sk=82A91796-0326-4629-9E1D-C7F8422B8BE6>.

If we consider all nonequity liabilities, the picture changes somewhat (Table 11.6), though inconsistencies in data make country comparisons riskier. The nonequity liabilities of the public sector are, for all three countries for which data are available, much larger than the nonequity liabilities of the central government. For Japan, the explanation is partly liabilities in the form of the “currency and deposits” of the public sector, which amount to about 113 percent of GDP.

Table 11.6 *Nonequity liabilities of central government and the public sector, 2016 (% of GDP)*

Country	Central Government	Public Sector	Difference
PRC	...	...	...
India	...	124.98	...
Indonesia	31.30	67.13	35.83
Japan	264.55	313.87	49.32
ROK	89.61	173.87	84.26

Notes:

... = data not available; GDP = gross domestic product; PRC = People's Republic of China; ROK = Republic of Korea.

Source: IMF. PSBS. Washington, DC: <https://data.imf.org/?sk=82A91796-0326-4629-9E1D-C7F8422B8BE6>.

2.5 Public–Private Partnerships

The liabilities of private companies in PPPs are another source of possible contingent liabilities for the government. Accountants and statisticians sometimes treat PPPs as creating liabilities (as well as assets) for the government (see IPSAS 32 in IPSAS Board 2018b; IMF 2014, pp. 324–7). Thus, some liabilities related to PPPs could already be included in the debt of the public sector reported in Table 11.5. But this approach is not commonly applied, so it is worth looking at available information on contingent liabilities related specifically to PPPs.

Rough estimates can be extracted from the World Bank’s Private Participation in Infrastructure Database.⁹ The database aims to register infrastructure PPPs in low- and middle-income countries and thus excludes those in Japan and the ROK. For each identified project, the database includes the amount and year of investment, the percentage of the investment that is privately financed, and the length of the PPP contract. We can get an estimate of a government’s total possible contingent liabilities at the end of 2019 if we assume that the government’s possible contingent liability in relation to each project is initially equal to the full amount of private investment and then declines in a straight line until it reaches zero at the end of the contract.¹⁰ Estimated in this way, the possible contingent liabilities are 0.7 percent of GDP in the PRC, 3.4 percent of GDP in Indonesia, and 5.3 percent of GDP in India.

2.6 Banks

In examining the liabilities of financial public corporations, we have already considered some of the possible contingent liabilities associated with banks and other financial institutions. But we also need to consider possible contingent liabilities related to private banks and financial institutions. There do not appear to be any public databases that report the liabilities of financial corporations and distinguish public corporations from private corporations. The IMF’s Financial Soundness Indicators Database does, however, provide information on the liabilities of deposit-taking corporations, whether public or private, and for some countries the liabilities of other financial corporations (Table 11.7). These liabilities are particularly large in the ROK, at well over 100 percent of GDP. Data on Japan and the PRC are unavailable, though.

Table 11.7 *Nonequity liabilities of financial corporations, 2019 (% of GDP)*

Country	Deposit-Taking Financial Corporations	Other Financial Corporations
PRC	...	...
India	76.6	16.2
Indonesia	44.8	...
Japan	...	...
ROK	118.4	152.7

Notes:
... = data not available; GDP = gross domestic product; PRC = People’s Republic of China; ROK = Republic of Korea.
Sources: For financial corporations: IMF, Financial Soundness Indicators Database: <https://data.imf.org/?sk=51B096FA-2CD2-40C2-8D09-0699CC1764DA&sId=1411569045760>; estimates of GDP at the end of 2019: IMF, World Economic Outlook, October 2019 edn: <https://www.imf.org/en/Publications/WEO/weo-database/2019/October>.

3. MONITORING CONTINGENT LIABILITIES

Consider now some ways of measuring contingent liabilities for the purposes of monitoring.

3.1 Gross Amounts

The simplest way is to focus, like the previous section of this chapter, on the gross amount of the contingent liabilities. The disclosure of such measurements is required by many accounting standards (e.g., IPSAS 19 in IPSAS Board 2018a) and is encouraged by the main guidelines for preparing statistics on debt and government finances generally (IMF 2011, pp. 47–51; and IMF 2014, pp. 76–7). Many examples of the reporting of this kind of measurement can be found in the region, in various kinds of government documents such as the following:

- The Government of Bhutan’s financial statements (Government of Bhutan, Ministry of Finance 2019, Table 22);
- The Government of India’s statement of guarantees (Government of India, Ministry of Finance 2020b, pp. 50–52; 2020a, p. 25);
- The Government of the Philippines’ statement of fiscal risks (Government of the Philippines, Development Budget Coordination Committee 2019, sections VII–VIII);
- Thailand’s Public Debt Management Office’s reports on public debt (see Thai Public Debt Management Office 2020 and Public Debt Data¹¹).

The gross amount of contingent liabilities can be made the subject of a fiscal rule. In Armenia, for example, the stock of guarantees has been legally limited as a percentage of GDP (World Bank 2013, p. 25). In the Philippines, it is the dollar value of the stock of guarantees of foreign-currency borrowing that has been limited (World Bank 2019, p. 126), and in India it is the annual issuance of guarantees (Government of India, Ministry of Finance 2010). It is also possible to limit the *sum* of guaranteed and direct debt.

The same approach can also be used to monitor possible contingent liabilities that arise from implicit guarantees, which are often much larger than the contingent liabilities that arise from explicit guarantees. For example, as noted above, the Government of India has disclosed explicit guarantees of 2.35 percent of GDP, but as Tables 11.2, 11.3, 11.4, and 11.7 show, its possible contingent liabilities are much larger. Governments are justifiably wary of discussing implicit contingent liabilities for fear of making them firmer and encouraging moral hazard. But governments can monitor this information privately, and they can publish information on the liabilities without any implication that the liabilities are government guaranteed.

Monitoring the gross amount of contingent liabilities is simple; no estimation is required, only the use of information the government already has or can obtain. But it says nothing about the likelihood of the possible contingent liabilities’ being realized. This limitation does not make it useless though. Governments sensibly monitor gross debt even though it is used to finance investments and pay for government services that are expected directly or indirectly to generate revenue that can be used to repay the debt—in this case, as with contingent liabilities, whether the government will ultimately lose money depends on the balance between the debt and the revenue the debt generates. Nevertheless, just as governments estimate their *net* as well as their gross debt, they sometimes estimate the probability that contingent liabilities will be realized.

3.2 Probability-Dependent Measures

At least three types of probability-dependent measure can be estimated. The first is the contingent liability's expected value. In the simple case in which the contingent liability is either fully realized or not, the expected payment is the gross amount of the contingent liability multiplied by the probability that it will be realized. More often, the contingent liability may be partially realized, and the expected value is the probability-weighted sum of the possibly realized amounts. Since the possible payments occur in the future, it is natural to discount them to the present by, say, the government's borrowing rate. The US federal government takes this approach to many types of guarantees in its budgets. Instead of recording the cost of guarantees when they are called, the budgets record in the year in which guarantees are issued an estimate of the discounted present value of the expected cost of future payments less receipts. This means that guarantees do not seem like a free good to policy makers and, at least to a first approximation, budgetary accounting does not distort the choice between guarantees and other instruments such as spending and lending (Phaup 1993; Schick 2002).

The second type of measurement modifies the first approach to take account of the nature of the risks created by guarantees. In particular, guarantees that tend to be called during recessions, when the government's revenue is low, are arguably more costly to grant than guarantees that are called at random or when the economy is booming. This effect is captured by the market value of guarantees, and there is thus a case for estimating market values (Lucas and Phaup 2008; Lucas 2010). The Government of New South Wales in Australia sets guarantee fees in a way that approximates their market value (New South Wales Treasury 2014). And the Chilean and Peruvian governments have estimated the market value of revenue guarantees granted to companies in toll-road concessions (see Chilean Budget Department 2007; and Peruvian Ministry of Economics and Finance 2007).

The third possibility is to measure losses in statistically defined bad scenarios. The Chilean government, for example, publishes projections of the 95th percentile of the estimated distribution of its annual payments for the revenue guarantees for toll-road concessions. The Colombian government takes a similar approach for its loan guarantees (see Colombian Ministry of Finance and Public Credit 2015; and, for background, Bachmair 2016; and IMF 2017).

The main disadvantages of these probability-dependent measures are that they are difficult to estimate and that the resulting measurements can be unreliable. Moreover, even if they can be made precise, some are volatile, which makes them an unsuitable basis for binding fiscal targets.

3.3 Comprehensive Measures of Debt

This prompts consideration of a third strategy, which is to prepare fiscal accounts that are sufficiently comprehensive as to treat many would-be contingent liabilities as ordinary liabilities. Fiscal accounts can be made more comprehensive in two ways: (1) more of a government's obligations can be treated as liabilities that must be recorded on its balance sheet, and (2) the perimeter of the government entity whose accounts are being measured can be broadened to include more public and quasi-public bodies and thus their liabilities. Many steps in these two directions are required or encouraged by accounting and statistical norms. Though few gov-

ernments currently follow all these norms, many have taken some of the recommended steps, and a few publish fiscal accounts that are comprehensive enough to treat as ordinary liabilities many of the obligations described above as possible contingent liabilities.

Consider first extensions of the government entity's perimeter. Although fiscal analysis can track the debt of the government as a legal entity, economists frequently aim to monitor the debt of general government. When this is done, contingent liabilities related to the debts of government agencies and subnational governments become ordinary liabilities in the data. A notable example of this approach is the measurement and control of government debt in the European Union, where fiscal rules apply to general government (Eurostat 2019, Ch. 1). Still left out are possible contingent liabilities related to public corporations. They can be incorporated by measuring the accounts of the public sector, as in Tables 11.5 and 11.6; in the fiscal statistics published by the Australian Bureau of Statistics¹² and the UK Office for National Statistics (2020); and in the Whole of Government Accounts published by the UK Treasury (2019). The Australian and New Zealand governments publish financial statements that incorporate all the entities they are deemed to control, which excludes subnational governments, but includes state-owned enterprises and public banks (Australian Government 2019; New Zealand Treasury 2019). Debt-sustainability analysis can be done for the public sector as well as for narrower definitions of government so long as both the debt and the primary surplus are measured for the same institutional entity.

Second, broader definitions of the government's assets and liabilities can also turn some would-be contingent liabilities into ordinary liabilities. In fiscal statistics, one-off guarantees are not treated as creating a liability that must be shown on the balance sheet, but a portfolio of "standardized" guarantees creates an ordinary liability recorded at the "present value of the expected calls ... net of any recoveries" (International Monetary Fund 2011, para. 2.136). In the United Kingdom (UK), the Office for National Statistics has indicated that some of the guarantees introduced by the UK government after the COVID-19 pandemic will be recorded in this way (UK Office for National Statistics 2020). Many accounting standards require a similar on-balance-sheet treatment of any contingent liability that is more likely to be realized than not (see IPSAS 19 in IPSAS Board 2018a), and some generally require guarantees to be recorded at their market value, even if they probably will not be called.¹³ At other times, accounting rules may effectively treat the entire gross amount of the would-be contingent liability as an ordinary liability. For example, the Philippines Power Sector Assets & Liabilities Management Corporation (2020, pp. 14, 28) recognizes on its balance sheet a liability of this kind related to long-term power-purchase agreements with private power companies (as well as a corresponding asset).

The strategy of defining debt comprehensively is attractive in that it facilitates the monitoring of a broad range of would-be contingent liabilities, presenting their amounts not in supplementary tables but in a potentially prominent measure of public debt. If the comprehensive measure of debt is subject to a fiscal rule or target, the control of debt is automatically control of many would-be contingent liabilities. The strategy is similar in some respects to the first strategy—monitoring the gross size of contingent liabilities—but the production of comprehensive accounts has some further advantages: (1) it ensures consolidation (i.e., the elimination of intragovernmental flows and claims); (2) it allows for the articulation of data on fiscal stocks with data on fiscal flows and thus for a measure of the budget deficit that corresponds to the measure of debt that combines direct and otherwise-contingent liabilities; and

(3) it shows the assets that are associated with the (otherwise-contingent) liabilities, and thus gives an indication, albeit imperfect, of the severity of the problems they create.

Yet the strategy is by no means a panacea. It could not be applied to the implicit contingent liabilities created by private banks and other financial institutions without a rather fundamental change in the nature of fiscal accounts. Nor could it reasonably incorporate contingent liabilities related to explicit guarantees given to ordinary private firms or households. It might also be argued that consolidation in the accounts makes it harder for the government to disavow any implicit liabilities, though the New Zealand government seems to have required creditors to bear losses in the insolvency of two of its state-owned enterprises despite consolidating the enterprises in its accounts (New Zealand Minister of Finance 2001; New Zealand Treasury 2016). And to the extent that the government might let some public bodies fail without standing behind their liabilities, the strategy is not a substitute for measuring expected costs or market values.

4. CONCLUSION

The evidence surveyed here suggests that in Asia's five largest economies—the PRC, India, Indonesia, Japan, and the ROK—the central government's possible contingent liabilities arising from the liabilities of entities that may benefit from explicit or implicit guarantees are generally large—in some countries, much larger than the government's direct liabilities. Indonesia is something of an exception, having relatively small possible contingent liabilities, at least related to subnational governments and state-owned enterprises. Among the types of contingent liabilities considered here, those related to PPPs appear relatively small, with those related to state-owned enterprises and, especially, banks and other financial institutions being much larger.

Perhaps the main conclusion of the attempt to assess contingent liabilities in these countries, however, is that cross-country data on the gross magnitude of contingent liabilities—even in the region's large middle- and high-income countries—are patchy and often out of date. Although country-specific information is sometimes better, the gaps in cross-country data frustrate international monitoring of debt sustainability. Better data would facilitate three types of monitoring of contingent liabilities: (1) tracking the gross magnitude of the liabilities of entities whose liabilities may be implicitly or explicitly government guaranteed; (2) estimating the contingent liabilities' expected costs and other probability-dependent measures; and (3) constructing broad measures of public debt that effectively treat many contingent liabilities as direct liabilities.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent. For comments and other assistance, thanks are due to Benno Ferrarini, Marcelo Giugale, Luis de la Plaza, Juan Pradelli, Reza Vaez-Zadeh, and other participants at the authors' virtual workshop.
2. I recall hearing this said many years ago but do not recall the source.
3. See Annex Table 1.1 of IMF (2020) and Chapter 2 in this volume.
4. See part (b) (ii) of the definition of "contingent liability" in International Public Sector Accounting Standards (IPSAS) Board (2018c, 2410).

5. The PRC, India, Indonesia, Japan, and the ROK are the five largest countries in Asia by GDP at market prices in 2018 according to ADB (2019, Table 2.2.2). Debt is defined here as the gross debt of general government at the end of 2019 according to the IMF's World Economic Outlook Database, October 2019 edn. Accessed at: <https://www.imf.org/en/Publications/WEO/weo-database/2019/October>.
6. See the GFS 2019 tables in Country and World Tables in IMF Government Finance Statistics. Accessed at: <https://data.imf.org/?sk=a0867067-d23c-4ebc-ad23-d3b015045405>.
7. IMF. <https://www.imf.org/-/media/Files/Publications/WP/2018/datasets/wp18111.ashx> (accessed 5 September 2020).
8. See IMF. Public Sector Balance Sheet Database. <https://data.imf.org/?sk=82A91796-0326-4629-9E1D-C7F8422B8BE6> (accessed 5 September 2020); World Bank. QPSD: Quarterly Public Sector Debt. <https://datatopics.worldbank.org/debt/qpsd> (accessed 5 September 2020). Another possible source is the Global Debt Database, which has some estimates of the debt of the nonfinancial public sector (i.e., general government and nonfinancial public corporations), but for the five countries considered in this chapter the estimates of the debt of the nonfinancial public sector are either missing or identical to the estimate of the debt of general government, which is presumably an error.
9. World Bank. Private Participation in Infrastructure (PPI) Database. <https://ppi.worldbank.org/en/ppi> (accessed 4 September 2020).
10. The sectors included in the calculation are energy, transport, and water and sewerage (excluded are telecommunications and solid waste). The types of projects included are brownfield and greenfield (excluded are divestitures and management and lease contracts). Projects of all statuses except canceled are included. Cross-border projects are excluded. The US dollar figures in the database are expressed as percentages of GDP using estimates of the countries' 2019 GDP in current US dollars in the IMF's World Economic Outlook Database, October 2019 edn. Accessed at: <https://www.imf.org/en/Publications/WEO/weo-database/2019/October>.
11. Public Debt Management Office. Public Debt Data. <http://www.pdmo.go.th/en/public-debt/debt-outstanding>.
12. Australian Bureau of Statistics. Government Finance Statistics, Annual. <https://www.abs.gov.au/ausstats/abs@.nsf/mf/5512.0>.
13. See Financial Accounting Standards Board. Summary of Interpretation No. 45. Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others—An Interpretation of FASB Statements No. 5, 57, and 107 and Rescission of FASB Interpretation No. 34. Accessed at: <https://www.fasb.org/summary/finsum45.shtml>.

REFERENCES

- Asian Development Bank (ADB). 2019. *Key Indicators for Asia and the Pacific 2019*. Manila.
- Australian Government. 2019. Consolidated Financial Statements for the Year Ended 30 June 2019. Accessed at: <https://www.finance.gov.au/sites/default/files/2019-12/consolidated-financial-statements-201819.pdf>.
- Bachmair, F.F. 2016. Contingent Liabilities Risk Management: A Credit Risk Analysis Framework for Sovereign Guarantees and On-Lending. Country Experiences from Colombia, Indonesia, Sweden, and Turkey. *Policy Research Working Paper*. 7538. Washington, DC: World Bank.
- Baldwin, C.Y., D.R. Lessard and S.P. Mason. 1983. Budgetary Time Bombs: Controlling Government Loan Guarantees. *Canadian Public Policy*. 9(3), pp. 338–46.
- Bova, E., M. Ruiz-Arranz, F. Toscani and H.E. Ture. 2019. The Impact of Contingent Liability Realizations on Public Finances. *International Tax and Public Finance*. 26, pp. 381–417.
- Brixi, H.P. and S. Gooptu. 2002. Dealing with Contingent Liabilities in Indonesia and Thailand. In H.P. Brixi and A. Schick (eds), *Government at Risk: Contingent Liabilities and Fiscal Risk*. Washington, DC: World Bank and Oxford University Press. pp. 251–67.
- Brixi, H.P. and A. Schick (eds) 2002. *Government at Risk: Contingent Liabilities and Fiscal Risk*. Washington, DC: World Bank and Oxford University Press.

- Buchheit, L.C. and G.M. Gulati. 2014. Sovereign Contingent Liabilities. In L. Buchheit and R. Lastra (eds), *Sovereign Debt Management*. Oxford: Oxford University Press. pp. 241–54.
- Campos, C.F.S., D. Jaimovich and U. Panizza. 2006. The Unexplained Part of Public Debt. *Emerging Markets Review*. 7(3), pp. 228–43.
- Cebotari, A. 2008. Contingent Liabilities: Issues and Practice. *IMF Working Paper*. WP/08/245. Washington, DC: International Monetary Fund (IMF).
- Chilean Budget Department. 2007. Informe de Pasivos Contingentes 2007. Dirección de Presupuestos del Ministerio de Hacienda. Accessed at: https://www.dipres.gob.cl/598/articles-21701_doc_pdf.pdf.
- Colombian Ministry of Finance and Public Credit. 2015. Resolution 923 of 2015. Diario Oficial No. 49.482. 14 April. Accessed at: https://normativa.colpensiones.gov.co/colpens/docs/resolucion_minhacienda_0932_2015.htm.
- Dippelsman, R., C. Dziobek and C.A. Gutierrez Mangas. 2012. What Lies Beneath: The Statistical Definition of Public Sector Debt—An Overview of the Coverage of Public Sector Debt for 61 Countries. *Staff Discussion Note* SDN/12/09. Washington, DC: IMF.
- Eichengreen, B. 1996. Financing Infrastructure in Developing Countries: Lessons from the Railway Age. In A. Mody (ed.), *Infrastructure Delivery: Private Initiative and the Public Good*. Washington, DC: World Bank. pp. 107–27.
- European Commission, IMF, Organisation for Economic Co-operation and Development, United Nations, and World Bank. 2009. *System of National Accounts 2008*. New York.
- Eurostat. 2019. Manual on Government Deficit and Debt: Implementation of ESA 2010–2019 Edition. Luxembourg: European Commission.
- Ferrarini, B. and M. Hinojales. 2018. State-Owned Enterprises Leverage as a Contingency in Public Debt Sustainability Analysis: The Case of the People's Republic of China. *ADB Economics Working Paper Series*. No. 534. Manila: ADB.
- Frame, W.S., A. Fuster, J. Tracy and J. Vickery. 2015. The Rescue of Fannie Mae and Freddie Mac. *Journal of Economic Perspectives*. 29(2), pp. 25–52.
- Goolsbee, A.D. and A.B. Krueger. 2015. A Retrospective Look at Rescuing and Restructuring General Motors and Chrysler. *Journal of Economic Perspectives*. 29(2), pp. 3–24.
- Government of Bhutan, Ministry of Finance. 2019. Annual Financial Statements of the Royal Government of Bhutan for the Year Ended 30 June 2018. Thimphu. Accessed at: <https://www.mof.gov.bt/wp-content/uploads/2019/05/AFS2017–18English.pdf>.
- Government of India, Ministry of Finance. 2010. Government Guarantee Policy. New Delhi. Accessed at: https://dea.gov.in/sites/default/files/govern_guarantee_policy_1.pdf.
- Government of India, Ministry of Finance. 2020a. Medium Term Fiscal Policy Cum Fiscal Policy Strategy Statement. Accessed at: <https://www.indiabudget.gov.in/budget2020–21/doc/frbm2.pdf>.
- Government of India, Ministry of Finance. 2020b. Receipts Budget. Accessed at: <https://www.indiabudget.gov.in/budget2020–21/doc/rec/allrec.pdf>.
- Government of the Philippines, Development Budget Coordination Committee. 2019. Fiscal Risks Statement 2019. Accessed at: https://www.dbm.gov.ph/wp-content/uploads/DBCC_MATTERS/FiscalRiskStatement/FISCAL_RISKS_STATEMENT_2019.pdf.
- Hemming, R., M. Alier, B. Anderson, M. Cangiano and M. Petrie. 2006. *Public-Private Partnerships, Government Guarantees, and Fiscal Risk*. Washington, DC: IMF.
- International Monetary Fund (IMF). 2008. *Fiscal Risks—Sources, Disclosure, Management*. Washington, DC.
- International Monetary Fund (IMF). 2011. Public Sector Debt Statistics: Guide for Compilers and Users. Washington, DC. pp. 47–51.
- International Monetary Fund (IMF). 2014. *Government Finance Statistics Manual 2014*. Washington, DC.
- International Monetary Fund (IMF). 2016. Analyzing and Managing Fiscal Risks—Best Practices. Washington, DC.
- International Monetary Fund (IMF). 2017. How to Strengthen the Management of Government Guarantees. IMF How-To Note. No. 17/01. Washington, DC.
- International Monetary Fund (IMF). 2020. *Fiscal Monitor, April 2020*. Washington, DC. Accessed at: <https://www.imf.org/en/Publications/FM/Issues/2020/04/06/fiscal-monitor-april-2020>.

- International Public Sector Accounting Standards (IPSAS) Board. 2018a. *Handbook of International Public Sector Accounting Pronouncements*. Volume I. New York: International Federation of Accountants. Accessed at: <https://www.ifac.org/system/files/publications/files/IPSASB-HandBook-2018-Volume-1.pdf>.
- International Public Sector Accounting Standards (IPSAS) Board. 2018b. *Handbook of International Public Sector Accounting Pronouncements*. 2018 edn. Volume II. New York: International Federation of Accountants. Accessed at: <https://www.ifac.org/system/files/publications/files/IPSASB-HandBook-2018-Volume-2.pdf>.
- International Public Sector Accounting Standards (IPSAS) Board. 2018c. *Handbook of International Public Sector Accounting Pronouncements*. 2018 edn. Volume III. New York: International Federation of Accountants. Accessed at: <https://www.ifac.org/system/files/publications/files/IPSASB-HandBook-2018-Volume-3.pdf>.
- Irwin, T.C. 2007. *Government Guarantees: Allocating and Valuing Risk in Privately Financed Infrastructure Projects*. Washington, DC: World Bank.
- Irwin, T.C. 2015. Defining the Government's Debt and Deficit. *Journal of Economic Surveys*. 29(4), pp. 711–32.
- Irwin, T.C. 2019. Not Taking Debt at Face Value, or Market Value or Amortized Cost: Policy Value as a Measure of the Burden of Public Debt. *Financial Accountability and Management*. 35(3), pp. 275–89.
- Irwin, T., M. Klein, G.E. Perry and M. Thobani (eds) 1997. *Dealing with Public Risk in Private Infrastructure*. Washington, DC: World Bank.
- Jaramillo, L., C. Mulas-Granados and E. Kimani. 2017. Debt Spikes and Stock Flow Adjustments: Emerging Economies in Perspective. *Journal of Economics and Business*. 94, pp. 1–14.
- Kharas, H. and D. Mishra. 2001. Fiscal Policy, Hidden Deficits, and Currency Crises. In S. Devarajan, F. Halsey Rogers and L. Squire (eds), *World Bank Economists' Forum*. Washington, DC: World Bank. pp. 31–48.
- Kopits, G. 2014. Coping with Fiscal Risk: Analysis and Practice. *OECD Journal on Budgeting*. 2014(1), pp. 47–71.
- Lee, M. and K. Naqvi. 2020. State-Owned Enterprises in the People's Republic of China. In E. Ginting and K. Naqvi (eds), *Reforms, Opportunities, and Challenges for State-Owned Enterprises*. Manila: ADB. pp. 190–225.
- Lucas, D. (ed.) 2010. *Measuring and Managing Federal Financial Risk*. National Bureau of Economic Research Conference Report. Chicago, IL: University of Chicago Press.
- Lucas, D. and M. Phaup. 2008. Reforming Credit Reform. *Public Budgeting & Finance*. 28(4), pp. 90–110.
- Mann, F.K. 1947. The Dual-Debt System as a Method of Financing Government Corporations. *Journal of Political Economy*. 55(1), pp. 39–56.
- Mbaye, S., M. Moreno-Badia and K. Chae. 2018. Global Debt Database: Methodology and Sources. *IMF Working Paper*. WP/18/111. Washington, DC: IMF.
- Merton, R.C. 1977. An Analytical Derivation of the Cost of Deposit Insurance and Loan Guarantees: An Application of Modern Option Pricing Theory. *Journal of Banking and Finance*. 1(1), pp. 3–11.
- New South Wales Treasury. 2014. Government Guarantee Fee Policy for Government Businesses. Policy & Guidelines Paper. TPP 14–03. Accessed at: <https://www.treasury.nsw.gov.au/sites/default/files/2017-09/TPP14-03%20Government%20Guarantee%20Fee%20Policy%20for%20Government%20Businesses.pdf>.
- New Zealand Minister of Finance. 2001. Receiver Appointed for Terralink. Press release. Accessed at: <https://www.beehive.govt.nz/release/receiver-appointed-terralink>.
- New Zealand Treasury. 2016. Response to FEC Questions on Solid Energy. Accessed at: <https://treasury.govt.nz/sites/default/files/2013-06/se-3363387.pdf>.
- New Zealand Treasury. 2019. Financial Statements of the Government of New Zealand for the Year Ended 30 June 2019. Accessed at: <https://www.treasury.govt.nz/publications/year-end/financial-statements-2019>.
- Peruvian Ministry of Economics and Finance. 2007. Metodología de Valuación de Pasivos Contingentes Cuantificables y del Flujo de Ingresos Derivados de la Explotación de los Proyectos Generados por la

- Suscripción de Contratos de Concesión Bajo la Modalidad de Asociación Público Privada (APP) en Perú. Dirección General de Asuntos Económicos y Sociales. August. Accessed at: https://www.mef.gob.pe/contenidos/pol_econ/documentos/Metodologia_Valuacion_Pasivos_Contingentes.pdf.
- Phaup, M. 1985. Accounting for Federal Credit: A Better Way. *Public Budgeting & Finance*. 5(3), pp. 29–39.
- Phaup, M. 1993. Recent Federal Efforts to Measure and Control Risk-Bearing. In M.S. Sniderman (ed.), *Government Risk-Bearing: Proceedings of a Conference Held at the Federal Reserve Bank of Cleveland, May 1991*. Boston: Kluwer Academic Publishers. pp. 167–76.
- Phaup, M. 2009. Federal Use of Implied Guarantees: Some Preliminary Lessons from the Current Financial Distress. *Public Administration Review*. 69, pp. 651–9.
- Philippines Power Sector Assets & Liabilities Management Corporation. 2020. Financial Statements for 2019. Accessed at: <https://psalm.gov.ph/transparencysal>.
- Polackova, H. 1998. Contingent Government Liabilities: A Hidden Risk for Fiscal Stability. *Policy Research Working Paper*. 1989. World Bank.
- Schick, A. 2002. Budgeting for Fiscal Risk. In H.P. Brixi and A. Schick (eds), *Government at Risk: Contingent Liabilities and Fiscal Risk*. Washington, DC: World Bank and World Bank, pp. 79–97.
- Thai Public Debt Management Office. 2020. Public Debt Status Summary as of June 30th, 2020. Accessed at: <https://www.pdmo.go.th/pdmomedia/documents/2020/Jul/Public%20Debt%20Outstanding%20Report%20as%20of%20June%2030th,%202020.pdf>.
- Towe, C.M. 1991. The Budgetary Control and Fiscal Impact of Government Contingent Liabilities. *IMF Staff Papers*. 38(1), pp. 109–34.
- UK Office for National Statistics. 2020. Public Sector Finances, UK: June 2020. Accessed at: <https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/publicsectorfinance/bulletins/publicsectorfinances/june2020>.
- UK Treasury. 2019. *Whole of Government Accounts: Year Ended 31 March 2018*. London: HM Treasury. Accessed at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/803753/WGA_2017–18_PRINT_1.pdf.
- World Bank. 2013. Debt Management Performance Assessment (DeMPA): Armenia. Report 91014. Washington, DC.
- World Bank. 2019. Assessing and Managing Credit Risk from Contingent Liabilities: A Focus on Government Guarantees. Debt Management Learning & Training Notes. 2. Washington, DC: World Bank Treasury.

12. Debt generators: the case of energy subsidies

Klaus Enders¹

1. INTRODUCTION AND CONTEXT

Pakistan and Sri Lanka have a long history of high public debt and frequently experienced macroeconomic instability, as evidenced by repeated International Monetary Fund (IMF)-supported bailout programs. Both countries have also pursued for decades a policy of providing electricity (and other energy products) below cost, combined with a heavy role of state-owned enterprises (SOEs) in producing and distributing energy. This chapter explores the links between energy policy and public (and external) debt sustainability in Sri Lanka and Pakistan over the last two decades. It shows that energy policy has contributed to the buildup of public and foreign debt in both countries, quite substantially so in Pakistan where at least a quarter of its public debt can be attributed to the direct and indirect impact of energy policy. For Sri Lanka, the contribution of energy policy to debt is much less (about one-tenth), which as a brief comparison with a few other Asian countries indicates, may be more typical for developing countries.

Linkages between energy policy and debt potentially arise whenever energy is sold below (world) market prices. A direct linkage arises whenever energy is sold below cost, as losses will have to be absorbed by the public sector, directly affecting the fiscal position and thus public debt (losses may be temporarily borne by public enterprises in the energy sector but will eventually affect the general government finances). Secondary effects may then impact growth, inflation, and interest and exchange rates. An indirect linkage arises if energy produced domestically is sold below world market prices (but at or above cost). The opportunity cost of such policy (such as lower gross domestic product (GDP), lower fiscal revenue) implies actual public debt is higher than it would have been under market pricing of energy.

Pricing of energy below cost may arise notably if countries, *de facto* or *de jure*, treat household access to electricity as a “right”, largely divorced from the willingness or ability of households to pay (Burgess et al. 2020). This approach is widespread in the developing world, and universal access to electricity (by 2030) has been enshrined as the seventh of the United Nations Sustainable Development Goals. Apart from sociopolitical considerations, the approach is motivated by the belief that widespread access to electricity can boost growth. Indeed, there is evidence that household access to electricity can boost income (IEA 2018), mainly through boosting labor supply (Dinkelman 2011), but likely only if complementary conditions are met that position households to take action and make the complementary investments that will allow them to make good use of an electricity connection (Lee et al. 2020, p. 141).

The approach has several consequences: with many customers unable (or unwilling) to pay, and the public utilities not authorized to take away this “right”, utilities will incur losses. Since cash-strapped governments rarely fully cover these losses, utilities will ration supply (through involuntary or targeted outages) and/or underinvest in maintenance (reflected for example in high transmission losses²) and new capacity, all affecting growth. Utilities may also attempt to finance losses at least temporarily by borrowing from banks or incurring arrears to their suppliers (such as fuel suppliers for thermal power). In any case, energy sector SOE debt will increase. Increased public sector debt may in turn affect risk premia on interest rates and exchange rates, further adding to debt. In addition, there will be welfare losses: some customers willing and able to pay will still be rationed. The experience in Pakistan and Sri Lanka, but also in other countries, illustrates many of these points.

Access to energy as a “right” may well extend beyond electricity. Major energy producers, in particular, will face strong popular pressure to “share” the bounty of domestic energy resources with the population through fuel prices below world prices. In virtually all developing major oil producers, for example, gas prices at the pump are far below the prices that export of the fuel could fetch on world markets.

Table 12.1 Debt and energy policy indicators for selected countries (% of GDP)

Country	Energy Subsidy			Public Debt	Household Access to Electricity		T&D Losses	Firm Sales Lost to Electricity Outage (% of total)	Year of Observation
	2010	2019	Average 2010–2019	End of 2019	2010	2018	Average 2010–2014		
Bangladesh	4.9	0.5	2.6	34.6	55.3	85.2	11.4	5.5	2013
India	1.1	0.7	1.3	69.0	76.3	95.2	19.2	3.7	2014
Indonesia	2.0	1.7	2.5	30.3	94.2	98.5	9.3	1.9	2015
Iran	14.4	18.8	16.1	30.7	99.0	100.0	14.1	...	
Malaysia	1.1	0.5	1.0	56.3	99.2	100.0	6.3	1.8	2015
Pakistan	3.8	0.7	2.3	76.7	70.4	71.1	16.7	33.8	2013
Sri Lanka	0.7	0.6	0.5	83.0	85.3	99.6	11.5	3.0	2011
Thailand	1.4	0.1	0.7	42.4	99.7	100.0	6.2	4.1	2016
Viet Nam	2.9	0.1	1.1	54.3	98.5	100.0	9.5	2.2	2015

Notes: GDP = gross domestic product; T&D = transmission and distribution; ... = data not available.

Sources: Subsidies from IEA; public debt is IMF estimate as of October 2020; all other data from World Bank, World Development indicators.

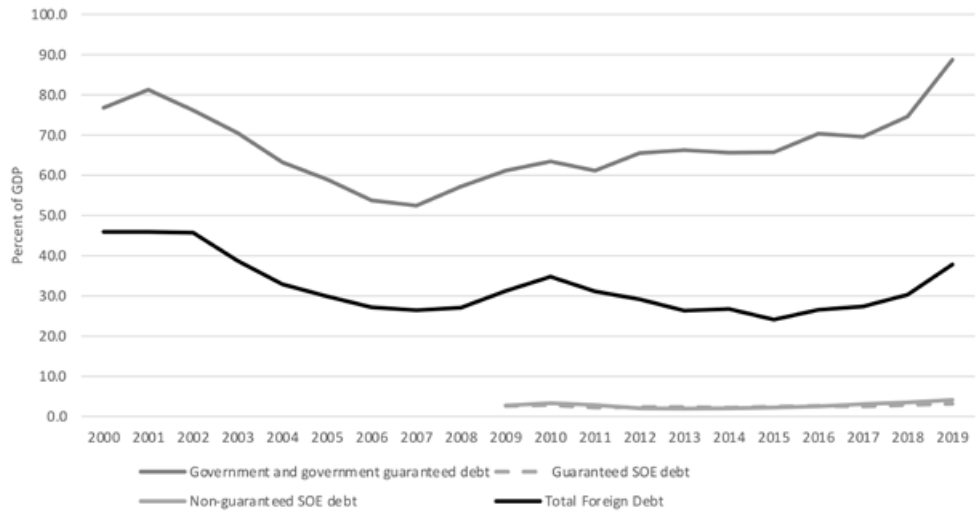
Table 12.1 illustrates some relevant observations for a few major Asian countries. The data on subsidies are the estimates of the International Energy Agency (IEA) for the difference between domestic and world prices, excluding hydro-energy. Thus, they capture both the “direct” subsidies as well as the “opportunity cost” for energy producers selling domestically below world prices. The latter feature is of course dominant in the case of Iran, as a major energy producer and net exporter, but also relevant for Pakistan, which has a sizable domestic gas production. The data also point to access to electricity as a major policy goal in all the countries, and hints

at some of the problems that seem to accompany high subsidies and a dominant role of SOEs in energy: relatively high transmission and dispatch losses (a symptom of inefficient energy firms) and some anecdotal evidence of the growth effects of such inefficiency (share of sales lost due to electricity outage). While these linkages will be explicitly explored only for the two case studies, many of the findings may well apply to other countries in Table 12.1 (and beyond). Furthermore, in many of these countries similar difficulties were encountered during attempts at subsidy reform, as discussed below.

2. PUBLIC AND FOREIGN DEBT IN PAKISTAN AND SRI LANKA, 2000–2019

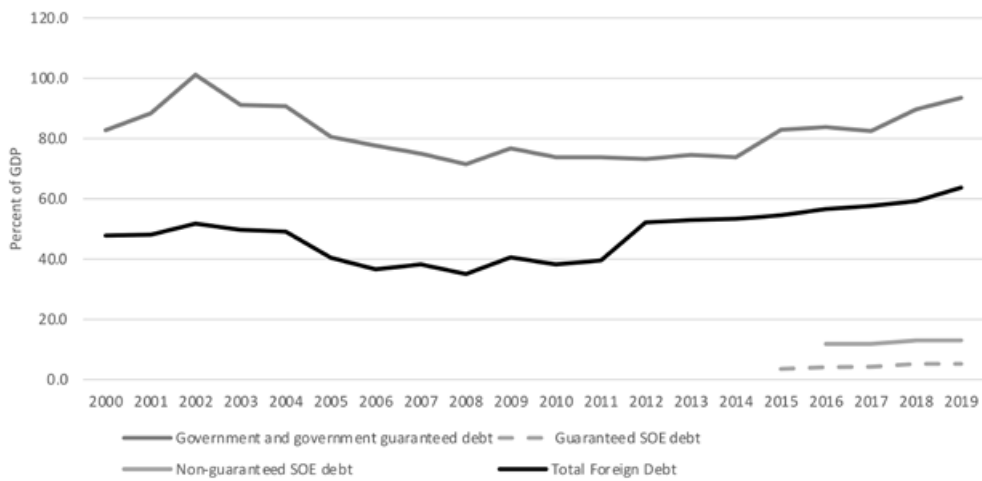
2.1 Public Debt

For our purpose we define gross public debt $pd(t)$ in year t , as a share of GDP, as general government plus government-guaranteed debt of public enterprises. General government debt has been reported by Pakistan and Sri Lanka throughout 1999–2019, and we use the data from the IMF World Economic Outlook (vintage April 2020). While the Pakistan data include outstanding debt to the IMF, Sri Lanka's IMF debt is added (from the IMF's International Financial Statistics). Only since 2009 does Pakistan also report the guaranteed and non-guaranteed debt of SOEs, which explains largely the sharp jump in $pd(t)$ in this year (Figure 12.1). Furthermore, Pakistan reports debt (as well as fiscal and balance of payments data) on a fiscal year basis.³ For a few data from other sources that are on a calendar year basis, we estimate the corresponding fiscal year data as average of the corresponding consecutive calendar year data. Sri Lanka reports guaranteed debt only since 2015 and non-guaranteed SOE debt since 2016. Again, this explains largely the jumps of $pd(t)$ in these years. Total foreign debt $fd(t)$ in year t , as a share of GDP, includes private- and public foreign debt. Figure 12.1 and Figure 12.2 show the evolution of total foreign debt, government and government-guaranteed debt, and non-guaranteed SOE debt for each country (for the years available). Since some of the non-guaranteed SOE debt may be owed to other SOEs (as is indeed the case for energy SOEs in both countries, as discussed below), non-guaranteed debt cannot simply be added to gross public debt to obtain a broader measure of public sector debt. Nevertheless, non-guaranteed debt may eventually fall to the government (or come under guarantee); examples for such transactions involving energy sector SOEs will be discussed below.



Note: GDP = gross domestic product; SOE = state-owned enterprise.
Source: International Monetary Fund, World Economic Outlook (October 2020).

Figure 12.1 Pakistan: public and foreign debt (% of GDP)



Note: GDP = gross domestic product; SOE = state-owned enterprise.
Source: International Monetary Fund, World Economic Outlook (October 2020).

Figure 12.2 Sri Lanka: public and foreign debt (% of GDP)

2.2 The Main Factors Driving Public Debt

From standard debt dynamics⁴ the equation of motion for public debt that explicitly accounts for the contributions of guaranteed debt, IMF debt, and the assumption by the government of SOE liabilities is:

$$\begin{aligned} pd(t) - pd(t-1) = & pd(t-1) * \{ir^*(t) - g(t)\} / (1 + g(t)) + \\ & (s(t-1) * pd(t-1) * \{1 + eeop(t)\} / \{(1 + g(t)) * (1 + \pi(t))\} \\ & - pb(t) + imf(t) + a(t) + q(t) \end{aligned} \quad (12.1)$$

where $g(t)$ is the real growth rate, $\pi(t)$ the inflation rate (change in GDP deflator), $(Eeop(t) - Eeop(t-1))/Eeop(t-1) = 1 + eeop(t)$ the rate of depreciation of the end-of-year exchange rate $Eeop(t)$ (against the US dollar), and $s(t)$ the share of foreign-currency-denominated debt. The *real* effective interest rate ir^* is defined through $1 + ir^* = (1 + i^*) / (1 + \pi)$, with $i^*(t) = ((1 - s(t-1)) * id(t) + s(t-1) * if(t)) * (Eavg(t)/Eeop(t-1))$ the effective interest rate on public debt, a weighted average of domestic ($id(t)$) and foreign ($if(t)$) interest rates that also takes account of how exchange rate movements will affect the local currency value of interest payments on the foreign component. Finally, $imf(t)$ denotes the change in IMF debt, $a(t)$ the assumption of SOE debts not previously recorded as guaranteed, and $q(t)$ any other factors contributing to the change in public debt. Such factors include exchange rate effects that arise if some of the forex-denominated debt is denominated in currencies other than the US dollar and there have been movements between these foreign currencies; changes in liquid financial assets of the government (i.e., changes to the difference between net and gross debt); any debt forgiveness (say in the context of Paris Club debt treatments); and errors and omissions, such as those arising from the simplifying assumption that interest payments in year t are paid on the stock of debt at the end of year $t-1$.

The first term in (12.1) quantifies the role of the real interest–growth differential in debt dynamics: if the real interest rate exceeds growth, interest payments on existing debt will contribute to an increase in the debt ratio, outweighing the effect of nominal GDP growth in reducing the value of existing debt. The second element highlights the impact of exchange rate changes: for example, a depreciation ($Eeop(t) > Eeop(t-1)$) will tend to increase the debt ratio through its valuation effect on existing foreign-denominated debt. The size of the increase will depend on the rate of depreciation, on the share $s(t)$ of foreign-denominated debt in total public debt, and on nominal GDP growth. The third term quantifies how a primary deficit ($pb(t) < 0$) will increase the debt ratio. Independent from these factors are changes in IMF debt (reflecting balance of payments financing), and the change in guaranteed debt from the assumption of previously non-guaranteed SOE debt.

Figures 12.3 and 12.4 and Table 12.2 (first column for each country, respectively) illustrate the relative importance of these factors for the evolution of actual debt stocks in the two countries during 2000–2019.⁵ In both countries, the average annual increase in the debt ratio was quite similar (0.7 percentage points of GDP in Pakistan, 0.6 in Sri Lanka) and accordingly the cumulative increase during 2000–2019 quite similar (13 points for Pakistan and 12 points for Sri Lanka). In most years, the real interest–growth differential has been a sizable factor and nearly always tended strongly to reduce the debt ratio. This reflects that both countries have been able to borrow at relatively low interest rates both domestically and abroad (much of the

foreign public debt is quite concessional), while growth has been relatively high (it averaged 4.4 percent for Pakistan and 5.2 percent for Sri Lanka during 2000–2019), as has been inflation (as measured by the GDP deflator), averaging about 8 percent for both countries.

With the exception of the early 2000s for Pakistan, primary fiscal balances were mostly negative and have contributed to an increase in public debt in both countries. Indeed, for the entire period the primary deficit averaged 0.7 percent of GDP for Pakistan and 1.4 percent for Sri Lanka.

Both countries' currencies have experienced in virtually all years a depreciation against the US dollar, for a cumulative depreciation during 2000–2019 of about 200 percent for Pakistan and 170 percent for Sri Lanka. As a result, exchange rate movements have in most years contributed to an increase in the public debt ratio, in some years quite sizably.

There have also been small changes in guaranteed debt in both countries, as well as in some years assumptions of SOE debt, much of it related to energy sector SOEs as discussed below. The average annual contribution of IMF debt to public debt has been virtually nil in both countries (and is absorbed in the residual in Table 12.2).

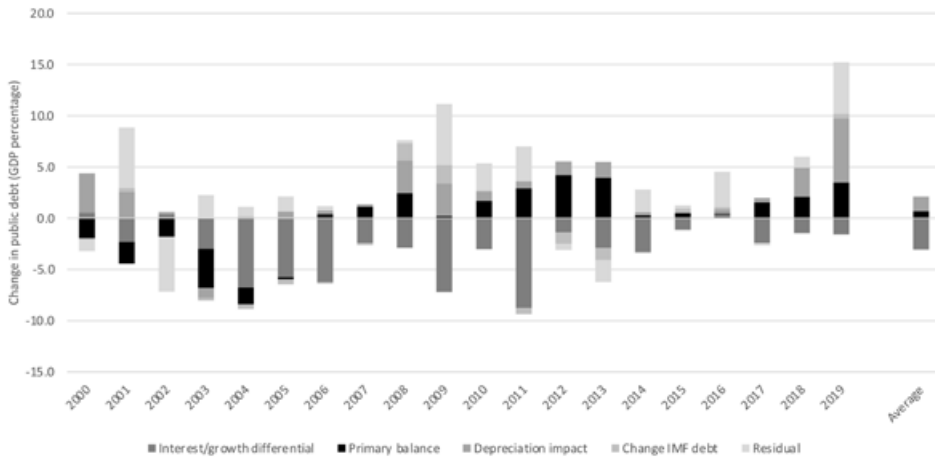
Finally, for both countries, factors other than the ones identified above have played an important role.⁶ Since in both countries some of the foreign component of public debt is denominated in euro or yen, cross-movements between these foreign currencies and the US dollar may explain some of the residual. In some years, at least for Pakistan (where data on both net and gross public debt exist), the change in liquid financial assets (buildup in government deposits) explains close to 1 percentage point of GDP in the change of the public debt ratio. Both countries had debt treatments under the Paris Club (Pakistan in 1999 and 2001, Sri Lanka in 2005) but these basically only changed the terms of repayment, apart from the usual provision of allowing part of the treated debt to be swapped into local currency to support aid or environmental projects, or equity for development purposes. Regarding non-Paris Club creditors—for both countries, the People's Republic of China (PRC) and for Pakistan also Saudi Arabia are important creditors—it seems possible that some debt forgiveness or debt–equity swaps have taken place, but the amounts are difficult to quantify.

Table 12.2 Public debt in Pakistan and Sri Lanka, 2000–2019 (percentage points of GDP, annual average)

	Pakistan			Sri Lanka		
	Actual	Market	Fiscal Reform	Actual	Market	Fiscal Reform
Change in debt ratio	0.7	−0.6	−0.1	0.6	0.1	0.2
Interest–growth differential	−3.0	−2.8	−2.8	−4.7	−4.5	−4.6
Primary balance	0.7	−0.2	−0.2	1.5	1.0	1.0
Depreciation impact	1.4	1.1	1.2	1.6	1.5	1.6
Assumption of SOE debt	0.3	0.0	0.3	0.1	0.0	0.1
Residual	1.3	1.3	1.3	2.1	2.1	2.1
Change in stock of debt 2000–2019 (percent of GDP)	13.1	−11.7	−2.2	11.8	2.8	3.3

Note: GDP = gross domestic product, SOE = state-owned enterprise.

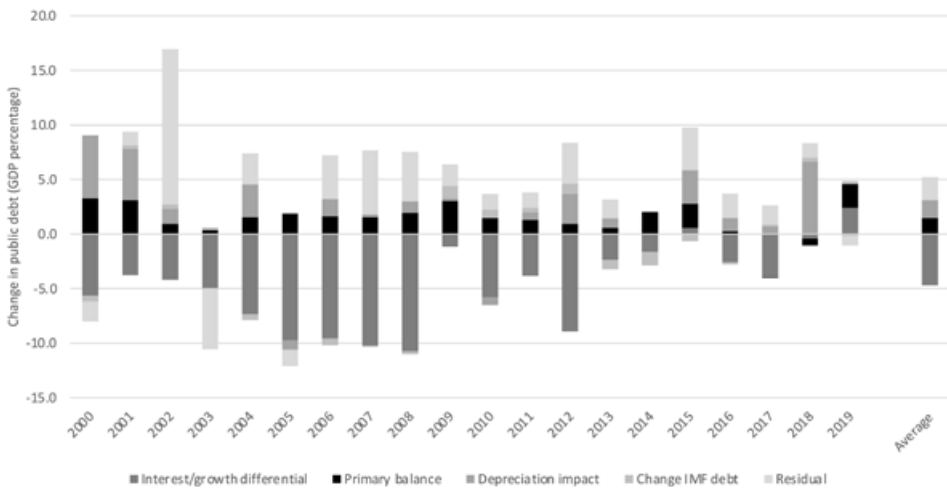
Sources: Author's calculations and IMF, World Economic Outlook (October 2020).



Note: GDP = gross domestic product; IMF = International Monetary Fund.

Sources: Author's calculations; and IMF, World Economic Outlook (October 2020).

Figure 12.3 Pakistan: government and guaranteed debt and contributing factors



Note: GDP = gross domestic product; IMF = International Monetary Fund.

Sources: Author's calculations; and IMF, World Economic Outlook (October 2020).

Figure 12.4 Sri Lanka: government and guaranteed debt and contributing factor

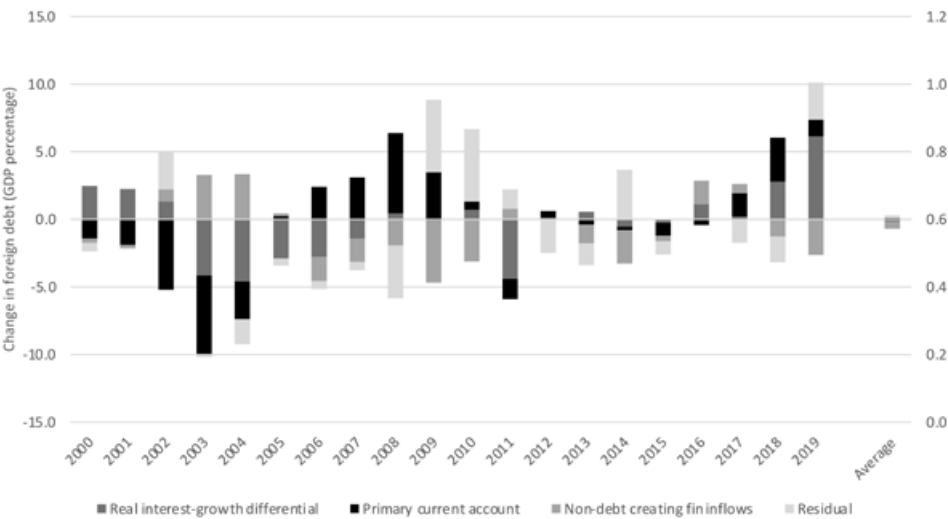
2.3 Foreign Debt

Analogous to (12.1), the equation of motion for the total foreign debt ratio $fd(t)$ (ignoring mixed terms $eeop*if$ and $g* \pi$ which are negligible) is:

$$fd(t) - fd(t-1) = [\{if(t) + eeavg(t) - g(t) - \pi(t)\} / \{1 + g(t) + \pi(t)\}] fd(t-1) - pca(t) - ndcff(t) + q(t) \tag{12.2}$$

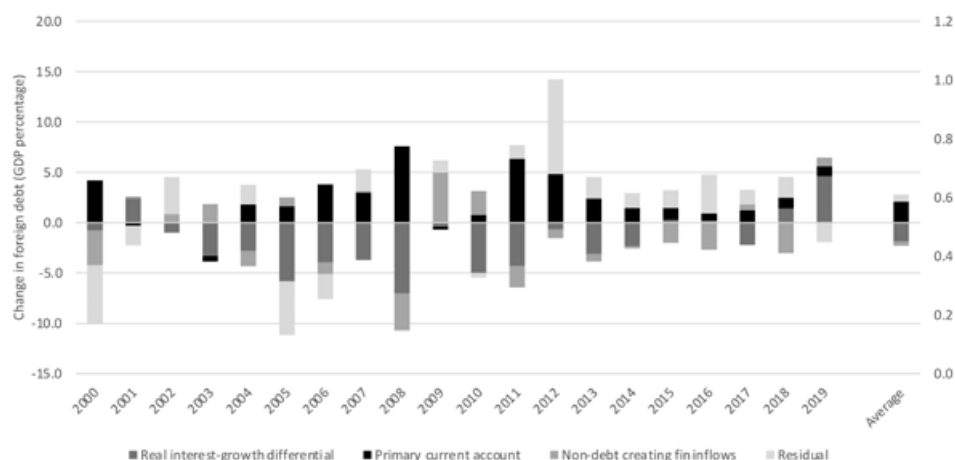
The first term again describes the impact of an adjusted real interest–growth differential: if the foreign interest rate adjusted for exchange rate movements and domestic inflation exceeds the growth rate ($if(t) + eeavg(t) - \pi(t) > g(t)$), interest payments on existing debt will contribute to an increase in the debt ratio, outweighing the effect of nominal GDP growth in reducing the value of existing debt. A primary current account deficit ($pca(t) < 0$) will increase foreign debt, while positive non-debt creating financing flows ($ndcff(t) > 0$), such as foreign direct investment (FDI) inflows or a use of gross reserves to finance the balance of payments, will decrease debt. Finally, q captures any other factors, including errors and omissions.

Figures 12.5 and 12.6 and Table 12.3 illustrate the relative importance of these factors for the two countries.



Note: GDP = gross domestic product; IMF = International Monetary Fund.
Sources: Author's calculations; IMF, World Economic Outlook (October 2020).

Figure 12.5 Pakistan: foreign debt and contributing factors



Note: GDP = gross domestic product; IMF = International Monetary Fund.

Sources: Author's calculations; IMF, World Economic Outlook (October 2020).

Figure 12.6 Sri Lanka: foreign debt and contributing factors

Table 12.3 Foreign debt in Pakistan and Sri Lanka, 2000–2019 (percentage point of GDP, annual average)

	Pakistan		Sri Lanka	
	Actual	Market	Actual	Market
Change in debt ratio	−0.4	−1.2	0.5	0.3
Interest–growth differential	−0.1	−0.4	−1.9	−1.9
Primary current account	0.1	−0.5	2.1	2.0
Non-debt creating inflows	−0.5	−0.5	−0.4	−0.4
Residual	0.2	0.2	0.7	0.7
Change in stock of debt 2000–2019 (% of GDP)	−8.0	−25.0	10.0	6.6

Note: GDP = gross domestic product, SOE = state-owned enterprise.

Sources: Author's calculations and IMF, World Economic Outlook (October 2020).

For Pakistan, the interest–growth differential has been an important driver. In 2000–2001 and in 2018–2019, it pushed debt higher, as sharp currency depreciations in those years and some increase in borrowing cost later as the government's commercial borrowing increased outweighed the impact of growth and inflation.⁷ For other years, this factor is either reducing debt, or is relatively small, mostly reflecting the comparatively low rate of depreciation or even some appreciation in these years. For Sri Lanka, this factor is mostly working to reduce debt ratios, reflecting a more stable exchange rate as well as lower foreign interest rates and higher growth.

Large primary current account surpluses contributed to a sizable downward pressure on foreign debt in Pakistan during 2000–2004, but large deficits pushed up debt during 2006–2009 and again in 2018, while during the remaining years the primary current account surplus or deficit had only a modest impact on the debt ratio. In Sri Lanka, the average primary current account deficit for the period (2 percent of GDP) far exceeded Pakistan's average deficit (0.1 percent) and in virtually all years contributed noticeably to an increase in debt.

Non-debt creating financing flows were of limited importance in both countries, largely reflecting relatively low FDI flows. During 2006–2009, however, such flows were reducing debt in Pakistan, reflecting a short-lived surge in FDI during these years, and for Sri Lanka pushed up debt in 2009–2010 as the country rebuilt its gross reserves.

For both countries in many years there are again large residuals, indicating that factors other than the ones discussed have often strongly impacted foreign debt levels. For example, the central bank may have built gross reserves by buying foreign exchange from commercial banks or the public (“dollars under the mattress”). Such a change in reserves does not reflect any non-debt creating financing flows in the balance of payments. This has been the case in the early 2000s in Pakistan, where prior to 2002 a parallel foreign exchange market existed in which the public held sizable foreign exchange deposits and cash. However, no published data seem available to gauge the extent of such transactions. Other factors in the residual may reflect foreign borrowing by commercial banks, in order to build up their foreign exchange reserves.

Overall, then, the main drivers of the public debt ratio were on average quite similar between the two countries: in each, depreciation was the most important factor driving up debt, followed by the primary deficit. And in both, a favorable interest–growth differential provided a strong counterpoint. Regarding foreign debt, the current account deficit in Pakistan was too low to drive up debt substantially, while in Sri Lanka a much larger deficit was the main factor driving debt upward. Again, in both countries a favorable interest–growth differential, and also relatively large non-debt creating financing, provided strong downward pressure.

3. ENERGY POLICY IN PAKISTAN

3.1 Institutional Framework

Pakistan since the 1960s has pursued *de facto* a policy of providing electricity as a right, that is largely separated from the ability and willingness to pay, which required a large role of the public sector in providing energy. Between 1958 and 1994, production and distribution of electricity was entirely the domain of two vertically integrated public enterprises: the Karachi Electric Supply Company (KESC) in the Karachi region, and the Water and Power Development Authority (WAPDA) in the rest of the country. Beginning in 1994, private investors were authorized to build and operate power stations (independent power producers (IPPs)); WAPDA guaranteed to buy all their output at prices set at levels based on fuel cost, operating charges, and a guaranteed return on capital in power purchase agreements. In recent years, IPPs have produced about 43 percent of all electricity, public sector power generation companies (government energy companies (GENCOs)) about 35 percent, and the remainder came mostly as hydropower from WAPDA. Starting in 1998–1999, WAPDA was gradually dismantled: its distribution network was carved into several regional distribution companies

(DISCOs), and the GENCOs became part of a holding company (PEPCO) managed by the Ministry of Power.⁸ Despite longstanding plans to privatize the DISCOs, only the Karachi company (KESCO) was privatized in 2005 (sold to a United Arab Emirates investor). Similarly, only one GENCO has to date been (partially) privatized. Purchase of power and transmission between the producers and the load points for the DISCOs was first vested into the National Transmission and Dispatch Company, but since 2015 the Central Power Purchasing Agency (CPPA) was carved out of the National Transmission and Dispatch Company and set up as the sole buyer. It purchases all power produced from the IPPs, GENCOs, and WAPDA hydel and sells it to the DISCOs in proportion of some historical peak demand—that is, unrelated to whether DISCOs pay for the power they receive. The prevailing power purchase agreements with all thermal power generators link payments to capacity (take or pay), whether or not the power is actually used (Independent Evaluation Department 2019). In 1997, a national regulator was set up (National Electric Power Regulatory Authority (NEPRA)) to issue licenses to operators in the sector, monitor compliance with these licenses, and determine the end-user tariffs DISCOs could charge. It determines tariffs annually, on the basis of:

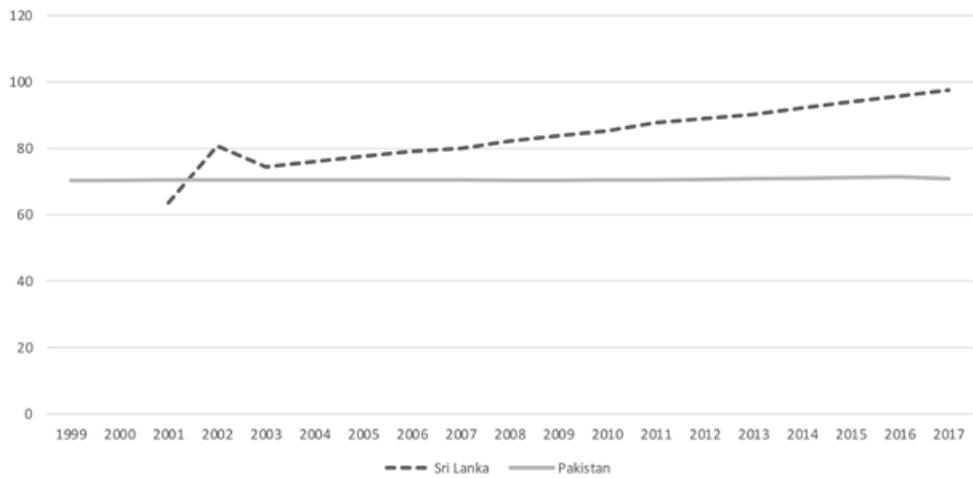
1. production cost of generation companies, including guaranteed return on equity (for IPPs) and finance charges;
2. cost of fuel or other energy input (some hydropower, some coal-fired, but mostly imported fuel);
3. operating cost and distribution margins of DISCOs, assuming 100 percent bill collection and “standard” transmission losses (15.5 percent in recent years); and
4. government budgetary subsidies to low-end consumers to allow poorer households access at lower rates.

However, the tariffs thus determined take effect only after notification by the government. In many years, substantial delays (for example, nine months in 2012) occurred in notifying the tariffs determined by NEPRA. A recent Asian Development Bank (ADB) report (Independent Evaluation Department 2019, Figure 10) shows furthermore that tariffs notified by the government tend to be below NEPRA’s determination for at least in 2009–2016. Partly this indicates that NEPRA’s tariff determination can be challenged in court, but mostly it reflects political concerns—tariff increases are politically quite sensitive.

3.2 Energy Sector Performance

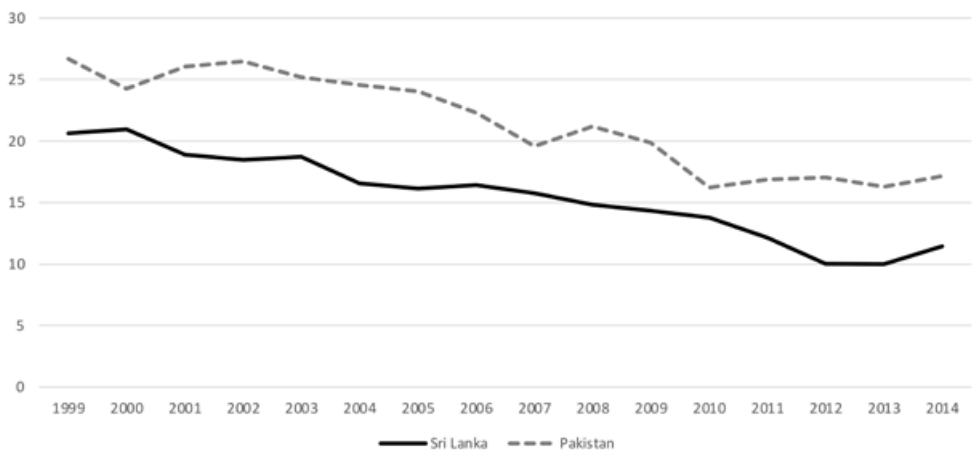
In recent decades, installed capacity has increased steadily (from less than 10 gigawatts in 1991 to nearly 30 gigawatts in 2017) (Bacon 2019), but access to electricity seems to have barely kept pace with high population growth, and the share of all households having access remained at around 70 percent between (Figure 12.7). Overall transmission and distribution (T&D) losses have been declining but remain high (Figure 12.8), well above the levels assumed by NEPRA. Similarly, collection falls far short (IMF 2019a, Annex I) of the 100 percent assumed by NEPRA in determining the tariffs. This reflects a highly uneven level of efficiency among the various DISCOs, with very poor performance of DISCOs operating in remote areas where law and order remain weakly enforced. For example, in 2019 the Balochistan DISCO (QUESCO) collected only about 30 percent of bills issued, with many customers continuing to receive service even when more than two years in arrears; and the

Peshawar DISCO (PESCO) had T&D losses of 40 percent. In addition, the government has been frequently unable to provide the budgeted subsidies to compensate DISCOS for the preferential tariffs to low-end consumers.



Source: World Bank, World Development Indicators.

Figure 12.7 Access to electricity (% of population)



Source: World Bank, World Development Indicators.

Figure 12.8 Electric power transmission and distribution losses (% of output)

As a result, DISCOs have been unable to collect the tariff revenue assumed in NEPRA's calculations, and hence could not pay CPPA the full amount of electricity purchased. This shortfall ("circular debt") in turn has led to inadequate payments to the power producers, with the following consequences:

1. Power producers ran up arrears to the fuel suppliers, especially the dominant public oil import company (Pakistan State Oil), which in 2014 was thereby weakened financially to the point it was denied letters of credit for fuel import—as well as tax arrears to the government.
2. Producers cut production, resulting in regular power outages/blackouts, with adverse consequences on growth. As recently as 2017, outages averaged five hours a day in urban areas and 10 hours in rural areas; in earlier years, the situation appears to have been even worse.
3. Investment in maintenance, let alone in new capacity remained low, especially for GENCOs.

To prevent the system from collapsing, every few years the government settled (some) of these arrears. In 2009, it created a holding company (Power Holding Private Limited (PHPL)) which borrows from banks, with government guarantee (typically at the Karachi interbank offered rate (KIBOR)+2 percent with 5–7 years maturity), to pay off some of the circular debt. These cash injections effectively replace DISCO liabilities to CPPA with liabilities to PHPL (but do not change the amount of circular debt). DISCOs are supposed to service these loans, an additional cost that NEPRA factors into consumer tariffs. The cash injections allow CPPA to pay off some of its arrears to power producers. The remaining arrears to the generators carry a late payment charge of KIBOR+4 percent. Given the financial situation of the DISCOs, these various finance charges are feeding back into an acceleration of circular debt accumulation. Thus, the stock of circular debt has been rising steadily throughout the period under consideration. While there does not appear to be a continuous data series since 2000, a joint United States Agency for International Development/Planning Commission of Pakistan study provided estimates for 2006–2012 (Bacon 2019) and a recent IMF report estimates for 2013–2019 (IMF 2019a, Annex I). According to these estimates, the stock of circular debt rose steadily (and quite rapidly in the last two years) from around PRs84 billion (1.2 percent of GDP) at the end of 2005 to PRs1,600 billion (4.2 percent of GDP) at the end of FY2019. Since 2013 this stock is held in roughly equal part as debt to PHPL (i.e., government-guaranteed debt) and arrears owed by CPPA to its suppliers.

In recent years, Pakistan has also published data on the liabilities of SOEs.⁹ The data indicate that between 2013 and 2017 total gross liabilities of energy sector SOEs rose from 13 percent to 16 percent of GDP; of course, much of these liabilities are cross-liabilities between SOEs in the sector.

4. ENERGY SECTOR DEVELOPMENTS IN SRI LANKA, 2000–2019

4.1 Energy Policy and Institutional Framework

Similar to Pakistan, Sri Lanka has pursued a policy of providing electricity as a right, within a similar framework of institutions and policies. As part of the "socialist" approach pursued in the first decades after independence, all electricity generation and distribution were consolidated in the government-owned Ceylon Electricity Board (CEB).¹⁰ To attract foreign invest-

ment, private investors have been allowed since 1996 to generate power (IPPs), but had to sell it to CEB, which to this day has remained the sole buyer, under purchase agreements similar to the ones described for Pakistan. In 2017, CEB produced about 70 percent of all electricity, with IPPs and some small producers (often owned by local government) accounting for the remainder. CEB holds the only transmission license and four out of five distribution licenses. The fifth license is held by Lanka Electricity Corporation, in which CEB and the Ministry of Finance hold a majority share. In 2002, the Parliament established the Public Utility Commission of Sri Lanka (PUCSL) to regulate the power, petroleum, and water services industries. However, only since 2009 was PUCSL effectively empowered to act as the technical, economic and safety regulator for the power sector; petroleum and water have yet to be brought under its purview. With PUCSL becoming effective, tariff-setting and the underlying cost assumption have become more transparent, although there seem to be no data published on the actual cost. Furthermore, in another parallel to Pakistan, there have been delays in notifying PUCSL-determined tariffs (World Bank Group 2019). The last tariff adjustment became effective in 2014; a further tariff adjustment was a condition under the recent IMF-supported adjustment program (2016–2020) but was not implemented. The existing tariffs are highly differentiated among the type of end users, with bulk and other commercial customers charged above (assumed) cost to cross-subsidize households (charged about two-thirds of the cost). Even so, the average tariff is below cost, that is, losses are built into the system as budgeted subsidies are insufficient to cover the difference.

Domestic energy sources are limited, with hydropower accounting for about one-third of installed capacity and other renewables for around 15 percent. Hydropower is, moreover, highly dependent on erratic rainfall (Sri Lanka is prone to both droughts and floods), and in 2017, for example, accounted for only 20 percent of electricity generation (World Bank Group 2019). Thus, power production remains dependent on imported inputs (mostly petroleum and coal). Since 1961, the government-owned Ceylon Petroleum Corporation (CPC) has had the monopoly for import, storage, transport and distribution of most petroleum products, and it also operates the only refinery in the country. Since 2003, some competition for retail distribution has been allowed through the Lanka Indian Oil Company. Sales prices are regulated, and for long periods CPC had to supply CEB at prices below cost. Only under the last IMF-supported program did CPC adopt a mechanism of regular price adjustments to reflect cost (since May 2018).

4.2 Energy Sector Performance

Electricity production has been rising steadily in recent decades, virtually quadrupling between 1997 and 2017, and since 2017 virtually all households have access to electricity (see Figure 12.7). As in Pakistan, T&D losses have been gradually declining but remain sizable (see Figure 12.8). However, power outage seems rare. Little information seems to be publicly available about collection rates. In any case, with average tariffs below cost and sizable T&D losses, CEB has incurred sizable deficits (0.3 percent of GDP in 2017, 0.2 percent in 2018) (IMF 2019b). These were financed in part by running up arrears to CPC, partly by bank credit from public banks, and partly by government support (for example, in 2013 the government assumed \$1 billion of CEB debt in return for equity, and furthermore assumed a large share of debt servicing to foreign investors (World Bank Group 2019, section 3). CEB's deficits of

course understate the underlying deficit arising from electricity as it has paid CPC below cost for many years. As a result, CPC has also often incurred large losses (0.7 percent of GDP in 2018 (IMF 2019b)), financed mainly by credit from public banks. As a result, the combined debt of CEB, CPC and Lanka Electricity Corporation that was guaranteed by the government reached nearly 4 percent of GDP in 2019.¹¹ Data on the total debt of energy sector SOEs do not seem to be publicly available.

5. THE IMPACT OF ENERGY POLICY AND DEBT IN PAKISTAN AND SRI LANKA

Energy policy has influenced public and foreign debt in many direct and indirect ways. By adding to macroeconomic imbalances, it has certainly contributed to higher interest rates and stronger currency depreciation, but quantification of these influences seems rather difficult. Here we focus instead on a few channels through which energy policy may have directly affected the other key factors driving the evolution of the debt ratios, as set out in section 2.

5.1 Energy Policy and Growth

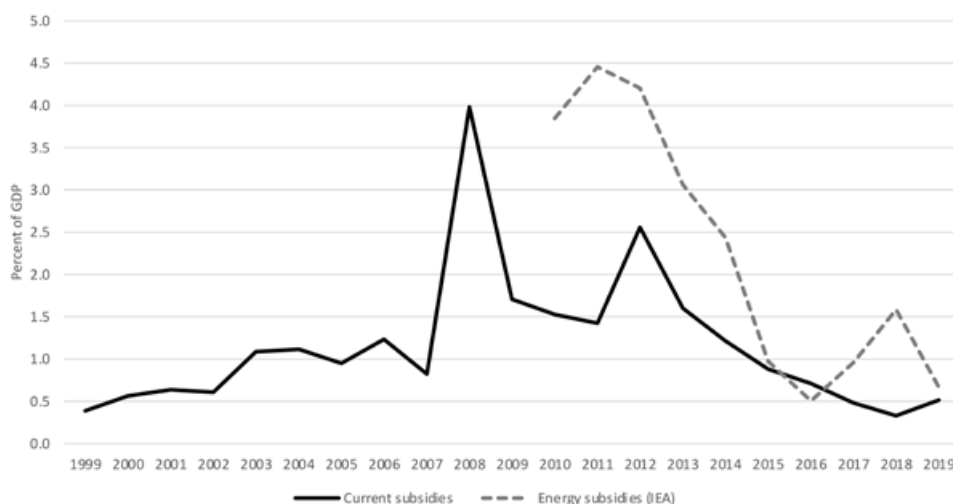
As indicated before, household access to electricity may affect labor supply and hence growth by raising (notably female) labor participation. However, there is little evidence that energy policy had much impact on labor participation in Pakistan, where access to electricity has remained virtually stable since 1999 at 70 percent of households (see Figure 12.7), while overall labor force participation barely increased between 2008 and 2018 from 50.1 percent to 51.0 percent, and female participation from 20.0 percent to 21.9 percent.¹² For Sri Lanka, energy policy might indeed have contributed to raising labor supply. While access to electricity increased from about 80 percent of households in 2008 to virtually 100 percent in 2017 (see Figure 12.5), overall labor force participation rose during the same period from 48.7 percent to 54.0 percent (female participation from 32.8 percent to 36.8 percent).¹³ However, labor supply will be affected by many factors other than electricity, and a recent World Bank study argues that female participation in Sri Lanka is in fact mostly determined by legal and social factors (World Bank Group 2015).

The impact of energy policy on growth through other channels is even more difficult to pin down. Clearly energy, and electricity in particular, is an important input especially into industrial production but also services. However, in Sri Lanka the growth of manufacturing in the last two decades has been quite anemic and its share in GDP on a declining trend.¹⁴ In Pakistan, the manufacturing sector's share in GDP rose during 2000–2008, but has been stagnating since.¹⁵ In both countries, the relatively high price of electricity for commercial customers (to cross-subsidize households) may have played a role. In Pakistan, there is furthermore evidence that frequent blackouts have negatively affected growth. The IMF in 2013 estimated that load shedding during 2000–2010 had cost around 10 percent of GDP (IMF 2013, Box 7). In the same year, a World Bank study (Lopez-Calix and Touqeer 2013) listed deficient energy infrastructure among the most critical growth constraints, corroborated by the World Economic Forum's regular surveys of business executives, which in 2014 ranked deficient infrastructure as the top concern in 2014–2015 (World Economic Forum 2015). Similarly, the 2013 World Bank Enterprise Survey found that 75 percent of firms in Pakistan

identified electricity as a major constraint, compared with a South Asia average of 46 percent. A more recent World Bank micro-data study (Grainger and Zhang 2017), using a large sample of manufacturing firms, found that a 10 percent increase in the duration of outage on average led to 0.4 percent decrease in value added. Assuming the sample is representative for the whole sector, the doubling of outage time between 2008 and 2013 (from around 13 percent to 26 percent of daytime) would have cost 4 percent of manufacturing GDP, or about 0.5 percent of total GDP. Similarly, the available data on sales losses due to outage (see Table 12.1) point to a sizable negative impact on growth.

5.2 Energy Policy and the Primary Fiscal Balance

Energy policy will affect the fiscal accounts mostly through subsidies and tax expenditure. However, neither country publishes data on budgetary energy subsidies. Both publish data on current subsidies (Figures 12.9 and 12.10). It is likely that for Pakistan the bulk of these current subsidies is indeed made up by energy-related subsidies (the remainder seem mostly food subsidies).



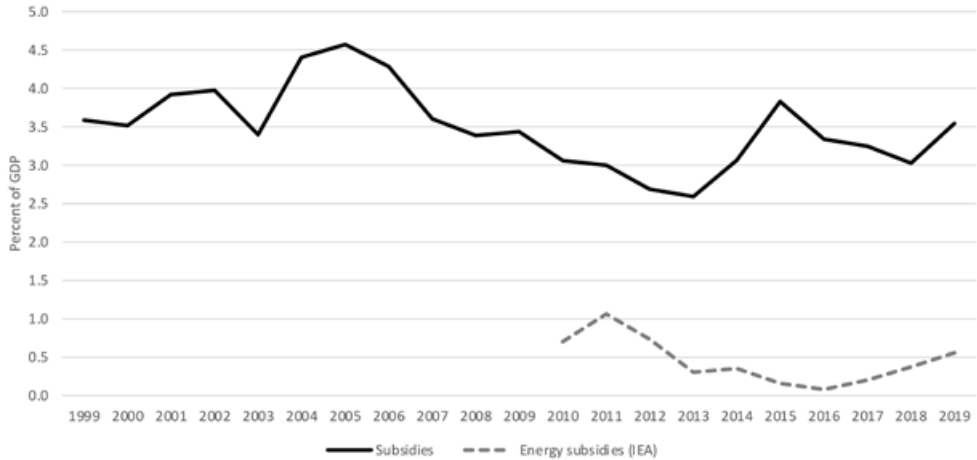
Note: GDP = gross domestic product; IEA = International Energy Agency.

Sources: IEA, Energy subsidies: IEA subsidies database; Ministry of Finance, Pakistan Economic Survey, Statistical Supplement.

Figure 12.9 Pakistan: current subsidies and the IEA estimate for energy subsidies (% of GDP)

For example, an IMF report in 2013 (IMF 2013, Box 7 and para. 8) estimates energy subsidies at 1.75 percent of GDP 2012–2013, compared with 1.6 percent of GDP of recorded current subsidies in that year (in many years due to fiscal constraints subsidies delivered are paid only in the subsequent year, and the government incurs arrears to the DISCOs). Similarly, in

FY2018 and FY2019 energy subsidies accounted for more than three-quarters of total budgeted subsidies (Independent Evaluation Department 2019). More recently, reforms (mostly in the context of IMF-supported adjustment programs) have brought down energy subsidies, both through electricity tariff adjustments (Bacon 2019) and automatic fuel price adjustments, and this helped lower current subsidies to 0.5 percent of GDP in FY2018/19. For Sri Lanka, no published information on the composition of current subsidies seems available.



Note: GDP = gross domestic product; IEA = International Energy Agency.

Sources: IEA, Energy subsidies: IEA subsidies database; World Bank, World Development Indicators.

Figure 12.10 Sri Lanka: Current subsidies and the IEA estimate for energy subsidies (% of GDP)

While government-paid subsidies are the relevant item affecting fiscal balances and hence actual public debt, they miss part of the picture. As discussed above, a more comprehensive view would estimate subsidies as the difference between global market prices for energy products and the price paid by local consumers, as the IEA has done in estimating energy subsidies for 2010–2018¹⁶ (Figures 12.9 and 12.10, and Table 12.1). For Pakistan, these estimates at times substantially exceed the total current subsidies recorded in the fiscal accounts. In the main, this shows that Pakistan's sizable natural gas production is sold to domestic customers well below world market prices (but not necessarily below the cost of production). While no fiscal cost is recorded, this broader subsidy measure highlights the opportunity cost of this aspect of energy policy (in particular GDP and tax revenues would be higher if gas were sold at market prices). For Sri Lanka, which has no own energy sources (outside of hydropower, which is not included in the IEA statistics), the IEA estimates are well below the level of total current subsidies, indicating that apart from 2010–2012, energy subsidies were smaller than other subsidies, averaging around 0.5 percent of GDP in recent years.

5.3 Assumption of Energy Sector SOE Debt

No systematic data on the government's assuming SOE debt seem to exist for either country. Some of this may be recorded as net lending in the fiscal accounts (and as such part of the primary balance), some in the acquisition of financial assets (such as equity) "below" the line defining the fiscal balance. However, in some IMF and World Bank reports several major instances of such transactions are detailed and may give a flavor of the magnitudes involved.

For Sri Lanka, as discussed above, a major transaction involved the government's acquisition of equity in CEB in 2013 (for \$1 billion, or 1.3 percent of GDP). Similarly, in preparation for privatization, the Pakistan government settled KESC arrears in return for equity for 1.4 percent of GDP in FY2001/02 and again in FY2002/03 for 0.2 percent of GDP. Unrelated to energy, it also recapitalized some public banks in FY2003/04 for 0.5 percent of GDP, similarly adding to government debt. More recently, it "cleared" part of the "circular debt" (see section 4) in FY2011/12 (2.0 percent of GP), FY2012/13 (1.4 percent), FY2017/18 (0.4 percent) and FY2018/19 (0.5 percent), largely through PHPL paying off DISCO debt to energy suppliers, with PHPL in turn borrowing commercially from local banks, with government guarantee. To the extent the original DISCO debts were already guaranteed, such clearance would, of course, not add to public and publicly guaranteed debt. While no published data seem available on the clearance of already guaranteed debt, much of these debts were most likely owed to the public power generators, as the IPPs would have been unlikely to have continued to sell output without being paid; and as debt between SOEs, these liabilities would presumably not have been guaranteed.

5.4 The Overall Impact of Energy Policy on Public Debt in Pakistan and Sri Lanka

To summarize and quantify the various elements discussed above, we try to develop a "counterfactual" path of public debt under the hypothesis that during 2000–2019 both countries had pursued a market-based energy policy.

Regarding growth, we assume an unchanged path of nominal and real GDP for Sri Lanka. As discussed above, while the relatively high electricity prices charged to industry may have suppressed manufacturing growth, rising household access to electricity may have contributed to an increase in labor participation, but neither effect is easy to quantify. For Pakistan, given the evidence that widespread outages—related to the mispricing and other mismanagement in the energy sector—affected output, we assume that annual real GDP growth would have been higher by half a percentage point. This is more conservative than the IMF estimate of a loss of GDP of 10 percent during 2000–2010 alone (and outages continued well into FY2018/19) (NEPRA 2019), but somewhat more than estimated in the World Bank micro-study, which looked at only the manufacturing sector.¹⁷ In fact, the assumption is likely to be still conservative, as market-based gas pricing would have raised the value added from domestic gas production.

To determine the impact of energy policy on the primary balance, we assume that conservatively with market pricing the balance would have improved by the amount of energy subsidies actually budgeted (fiscal subsidies). For both countries this would again seem to be a conservative assumption, as under market-based pricing policies, energy enterprises would probably have paid more taxes and, in the case of Pakistan, the government might have received

substantial royalties from domestic energy production.¹⁸ As discussed, while neither country publishes fiscal energy subsidies, it seems reasonable for Sri Lanka to use the IEA energy subsidy estimates for 2010–2019, and assume for 2000–2009 (with no IEA estimates available) the average ratio between IEA estimates and current subsidies for 2010–2019. Based on the IMF estimates for certain years discussed above, for Pakistan we assume that fiscal subsidies accounted for three-quarters of current subsidies. Finally, we assume that the various bailouts/recapitalizations discussed above would not have been necessary. For the remainder of the various factors driving public debt, we retain the actual values as shown in Figures 12.3 and 12.4, including for the residuals. Again, this is conservative: the better financial health of energy SOEs under market-based policies would have contributed to greater macroeconomic stability and hence lower risk premia in interest rates and a stronger exchange rate (also because energy consumption and hence fuel imports might have been lower). Furthermore, both guaranteed and non-guaranteed energy SOE debt would certainly have been lower.

Regarding foreign debt, the better primary fiscal balance under the market scenario would have been likely to have contributed to some improvement in the primary current account balance—but less than the improvement in the primary balance because of some offsetting decrease in private saving (Ricardian equivalence). On average during 2000–2019, an increase (decrease) of the primary fiscal balance of 1 percentage point of GDP was associated with an improvement (deterioration) in the primary current account balance of 0.7 percentage points of GDP in Pakistan and 0.4 percentage points in Sri Lanka. On this basis, we assume in the counterfactual scenario a corresponding improvement in the primary current account. This may again be conservative since it ignores any substitution effect from relatively higher energy prices on the import of fuel, improving the current account even more.

Tables 12.2 and 12.3 compare the outcome between these two different energy policies. For Pakistan, the difference is dramatic: public debt would have been lower by about 25 percentage points of GDP had market-based energy policies been pursued during 2000–2019. In the main this reflects the sharp improvement in the primary fiscal balance, to a lesser extent higher growth and the absence of any assumption of energy SOE debt. Because of the lower debt path, additional secondary effects change somewhat the contributions of the other factors, notably weaker contributions from the interest–growth differential and depreciation. For Sri Lanka, public debt would have been lower by about 9 percentage points of GDP, virtually all because of the improvement of the primary balance through lower energy subsidies. Thus, the main difference in the outcomes for the two countries is that because fiscal energy subsidies were much more important in Pakistan compared with Sri Lanka (on average 0.9 percent of GDP compared with 0.5 percent during 2000–2019), the gains from adopting a market-based energy policy would have been much larger for Pakistan. It may be noteworthy, however, that since total current subsidies (including non-energy related) were on average higher in Sri Lanka than in Pakistan, elimination of all subsidies would therefore have resulted in an even bigger drop in public debt for Sri Lanka compared with Pakistan. On the other hand, if one were to assume that the full amount of the savings in energy subsidies as defined under the broader IEA concept would have benefited the primary balance, Pakistan's public debt would have been around 40 percentage points of GDP lower.¹⁹

Regarding foreign debt, the difference between the market and actual scenario essentially stems from the improved primary current account balance, which is from the improved fiscal balance dampened by some Ricardian offset. Since the improvement of the fiscal balance is

much larger and the average Ricardian offset much lower in Pakistan than in Sri Lanka, again the impact of market-based energy policies would be much more substantial for Pakistan (foreign debt would have been lower by 21 percentage points of GDP).

Of course, these results depend critically on the assumptions made. There is particular uncertainty in estimating the growth impact of energy outages in Pakistan, the level of energy subsidies in both countries (especially since IEA estimates are available only for the second half of the period), and (for the foreign debt path) the impact of a change in the primary fiscal balance on the primary current account. Furthermore, in both countries net lending to SOEs²⁰ will probably have gone at least partly to energy sector SOEs, equivalent to energy subsidies in its impact on the primary balance.

6. ENERGY POLICY AND PUBLIC DEBT IN OTHER COUNTRIES

Given that energy subsidies were an important factor in driving debt in Pakistan and to a lesser extent also in Sri Lanka, it seems plausible that subsidies played a comparable role in Bangladesh and Indonesia, which over the period considered had similar or even higher average levels of (IEA concept) energy subsidies (Table 12.1), and a still sizable role in India and Viet Nam. Similarly, substantial inefficiencies in energy sector firms (again predominantly state-owned in most cases) are indicated (at least during 2010–2014, later data seem not available) by T&D losses which in several of these countries were not far away from Pakistan, and were even worse in India (Table 12.1). It might be interesting to explore to what extent this led to the occasional need to recapitalize these SOEs or assume part of their debt, thus further contributing to public debt. In India, for example, the IEA reports (IEA 2020b) that under a reform program launched in 2015 (UDAY) state governments were authorized to issue bonds to finance the taking over of up to 75 percent of the debt owed by (mostly state-owned) DISCOs, provided certain governance reforms (metering, feeder segregation, some tariff increases) were implemented—quite similar to the treatment of “circular debt” in Pakistan and the bailout of CEB in Sri Lanka. Any growth impact from outages cannot be reliably inferred from the anecdotal data in Table 12.1. Still, a recent IEA report notes that outages in India were quite substantial through 2008 (but declined thereafter), and the erratic supply from the public system had given rise to a growing trend for industry to build their own dedicated power generator plants (IEA 2020b). On the other hand, household access in all these countries has been much higher than in Pakistan, suggesting the likelihood of positive growth effects (through labor participation). Finally, lower public debt levels in all these countries make it unlikely that energy policy much affected risk premia on interest rates or exchange rates.

7. POLICY OPTIONS

There are many ways to address public debt issues and ensure debt sustainability. The above analysis of the role of energy policy can help to clarify and quantify the cost and benefits of various policy options, and thus help policy makers constrained by limited political capital to choose the reform with the biggest “bang for the buck”. In Pakistan and in Sri Lanka the fiscal deficit has been a key factor in raising public debt. Indeed, in both countries, reforms supported by IMF programs over the last 20 years (and more) have prioritized revenue-based

fiscal consolidation as the key to debt sustainability, as in both countries fiscal revenue remains lower than comparator countries. However, increasing revenue will usually have some negative effects on incentives to work and produce (at least in the formal, taxed sector of the economy), and thus will trigger secondary effects, dampening growth and offsetting some of the revenue gains. By contrast, a reduction of energy subsidies with the same fiscal impact will usually have positive effects on the allocation of resources, and thus the secondary effects will reinforce the fiscal improvement (and have additional positive spillovers such as reducing pollution). To illustrate, an additional scenario (“fiscal reform”) assumes energy policy to remain unchanged from the actual one, but through revenue action the primary fiscal balance is improved by exactly as much as through the elimination of energy subsidies in the market scenario (Table 12.2, third columns for each country).

For Pakistan, revenue-based fiscal consolidation yields a far more modest improvement in public debt than energy sector reform, because such consolidation does not help growth (outages remain) and does not shut down the additions to public debt from inefficient energy enterprises. For Sri Lanka, the difference is virtually nil, since there are no negative growth effects from unreformed energy policy, and the assumption of SOE energy debt remains small.

Reducing energy subsidies is certainly not an easy option. The large share of households having access to electricity in most countries (Table 12.1) indicates that electricity price increases (and similarly increases of fuel prices at the pump) affect virtually the whole population, whereas income tax reform, for example, will usually affect only a relatively small number of households in the formal sector. Accordingly, political resistance will be strong. Nevertheless, the case for reducing energy subsidies has certainly not been lost on policy makers. The first columns in Table 12.1 indicate policy efforts across a range of countries, with a decline in subsidies as a share of GDP in 2010–2019 that cannot be explained solely by the decline in oil prices over the period (around 20 percent).²¹ This shows that reform is possible even in a difficult political environment, as the substantial decline in subsidies in Pakistan since about 2010 (Figure 12.9) demonstrates (mostly based on tariff adjustments, and of course much helped by the decline in global oil prices since 2015). In India, where subsidies were much lower to start with, reforms focused mostly on narrowing various energy subsidy schemes to the poorer segments of the population, bringing subsidies down to the same level as Pakistan by 2019. Indonesia has since 2014 attempted to reduce subsidies (from levels comparable to Pakistan) through a combination of price/tariff adjustments and the narrowing of eligibility; a recent Organisation for Economic Co-operation and Development peer review describes the political and institutional aspects of the reforms (OECD 2019). However, political pressures halted these reforms in 2018, and subsidies rose back to the former levels in 2018, before declining in 2019 due to falling oil prices. An interesting case of subsidy reform is Iran, which did not aim at improving the fiscal situation but aimed to reap the efficiency gains (that is the difference between the “market” and the “fiscal reform” scenarios illustrated above) (Guillaume et al. 2011). After a careful public information campaign to build support, domestic consumer prices for fuel were raised twentyfold in late 2010 (from levels that were a tiny fraction of world prices); and consumers were credited with lump-sum compensation through the banking system. However, domestic prices remained still well below world prices, and as the latter surged in 2011–2012, with little further adjustments, subsidies quickly rose again, and in 2019 exceeded the levels of 2010. Dramatic subsidy reduction succeeded in Thailand, Bangladesh and Viet Nam, whereas in Sri Lanka the small modest decline in subsi-

dies was largely due to lower fuel prices. Overall, most countries in Table 12.1 had achieved a level of subsidies by 2019 that should not have been a major driver of public debt (and at most contribute to debt at levels broadly comparable to the Sri Lankan experience discussed earlier). With oil prices even lower in 2020 and probably beyond due to the COVID-19 pandemic, this should hold also for the next few years.

Reform of energy subsidies, especially regarding electricity, will involve a combination of reducing cost and raising consumption prices. Reducing cost would require addressing the many governance and efficiency issues that characterize the mostly state-owned distributors (and often producers) in many of the countries in Table 12.1. However, in most countries subsidy reduction was mainly achieved through tariff adjustments, less through institutional reform of an energy sector that remains dominated by inefficient state enterprises and government interference (such as price controls). In other words, to some extent consumers have been asked to pay the cost of poor governance.

The experience of Pakistan as well as Sri Lanka is instructive for the difficulties in structural reforms of the SOEs involved. While the declining trend for transmission losses (at least through 2013) points to some efficiency improvements, virtually no progress has been achieved in privatizing SOEs in the energy sector. In the long run, sustainable energy policy will require tackling deeper reforms, such as privatizing energy production and distribution, and allowing prices to be automatically market-determined.

8. OUTLOOK

The economic fallout from the COVID-pandemic has dramatically altered the outlook for debt sustainability in Pakistan and Sri Lanka. Growth in 2020 will turn negative, because exports will suffer from weaker global demand (tourist arrivals in Sri Lanka virtually collapsed in April 2020), and domestic demand and production will be affected by the various lockdown measures during the spring of 2020. According to the October 2020 IMF World Economic Outlook, Pakistan is expected to be affected less than Sri Lanka. The real economy will suffer some negative growth of -0.4 percent in FY2020 and a modest recovery in FY2021 ($+1$ percent), while the overall fiscal deficit is expected to remain at around 8 percent of GDP in FY2020 before falling to 7 percent in 2021. For Sri Lanka, however, growth would fall sharply by 5 percent in 2020 and rebound by $+5$ percent in 2021, while the fiscal deficit would continue to rise, to about 8 percent of GDP in 2020 and 10 percent in 2021.

Regarding the external account, imports will shrink; and despite the expected decline in exports, the current account balances are projected to improve in Pakistan but deteriorate slightly in Sri Lanka. Since worker remittances in both countries are an important source of foreign exchange inflows, there is considerable uncertainty as to how severely these are affected—in particular the remittances from the Gulf countries where lower oil prices may force some belt-tightening.

For Pakistan, the outlook will also be substantially affected by the ongoing implementation of a range of energy sector projects, many in the context of the China–Pakistan Economic Corridor (CPEC), which is part of the Belt and Road Initiative. CPEC projects in the energy sector involve power generation and transmission, financed by FDI or commercial borrowing from Chinese financial institutions, by Chinese investors or foreign-owned joint ventures. Most have been or will shortly be completed and may largely eliminate the rationing of

demand through outages. However, over the medium term, these projects will result in substantial additional balance of payments outflows (loan repayment, repatriation of profits, and higher fuel imports), estimated by the IMF to rise gradually to around \$4 billion per year after FY2025 (IMF 2017). Already in April 2020, Pakistan asked the PRC to renegotiate the terms of these payments. Furthermore, as long as poor governance and low efficiency in the transmission and distribution sector prevail, losses may rise with rising energy supply. Unless the country addresses these structural issues, increased electricity production and consumption will exacerbate the cost of the existing distortion, accelerating the accumulation of circular debt and thus, as discussed above, eventually public debt.

Under recent IMF projections for Pakistan, public debt would remain at around 90 percent of GDP for 2020–2021, while total foreign debt would also rise to levels not seen since the early 2000s, well above 40 percent of GDP in both years (IMF 2020a and IMF 2020b). For Sri Lanka, the October World Economic Outlook projections expect public debt to exceed 100 percent of GDP for 2020–2021, levels not seen since during the last two decades. Debts could even rise higher if governments would have to bail out SOEs—given the impact of the COVID-19 pandemic on global travel the two state-owned airlines may be particularly vulnerable.

Neither Pakistan nor Sri Lanka has the fiscal space to address the economic fallout from the pandemic through countercyclical fiscal policy (see Chapter 10, this volume). Thus, the challenging outlook clearly gives added importance to deepening energy policy reform now—using the opportunity of low global energy prices to move to automatic market-based pricing mechanisms (indeed Pakistan is planning to apply NEPRA’s tariff determinations automatically) to improve efficiency and support public finances, and over the longer run tackle the structural issues of SOE reform in the energy sector.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent. The author thanks B. Ferrarini, M. Guigale, and J. Pradelli as well as Mueen Afzal for helpful comments and suggestions, and I. Vilkelyte for excellent research assistance.
2. Transmission and dispatch (T&D) losses in lower (higher) middle income are nearly three times (1.5 times) as high than in high-income countries, despite access to basically the same technology. See Burgess et al. (2020, p. 153).
3. The fiscal year (FY) of the Government of Pakistan ends on 30 June. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2016 ends on 30 June 2016.
4. For example, Escolano (2010).
5. Assuming that the interest rate on the foreign-denominated part of public debt equals the average interest rate on total foreign debt. In both countries the share of foreign debt owed by the private sector is relatively small and the bulk of foreign debt is public and publicly guaranteed (about 80 percent for Pakistan in 2019, and 64 percent for Sri Lanka in 2018; see State Bank of Pakistan (2020) and IMF (2019b).
6. The regular public- and foreign debt sustainability exercise in the IMF Article IV staff reports similarly finds in many years large residuals not explained by the primary balance, interest/growth factors, and exchange rate movements.
7. Between FY2010 and FY2019 the share of commercial debt in external debt doubled from 16 percent to 33 percent; see State Bank of Pakistan (2020).
8. WAPDA remains in charge of water management and hydroelectric power generation.

9. Government of Pakistan, Finance Division. (2020a) State-Owned Enterprises Annual Reports, 2013–2017 Islamabad. Finance.gov.pk.
10. For an overview of the history of energy policy in Sri Lanka, see ADB (2019).
11. Government guarantees for SOE debt are capped at 7 percent of GDP under the Fiscal Management Responsibility Act.
12. ILO (2020a). Earlier data are not available.
13. ILO (2020b). Earlier data are not available.
14. Government of Sri Lanka (2020). Department of Census and Statistics. National Accounts. <http://www.statistics.gov.lk>.
15. Government of Pakistan (2020b) Pakistan Bureau of Statistics. National Accounts Tables. pbs.gov.pk.
16. International Energy Agency (IEA 2020a). Energy Subsidies: Tracking the Impact of Fossil-Fuel Subsidies. <https://www.iea.org/topics/energy-subsidies>.
17. IMF (2013). However, the underlying research has not been published.
18. Most dramatically so in Pakistan's gas sector. As Figure 12.9 indicates, additional taxes might have been in the order of 2–3 percent of GDP in certain years.
19. Assuming energy subsidies under the IEA concept for 2000–2010 (where IEA data are not available) to be a constant share of current subsidies, with the constant the average of this share during 2010–2019.
20. For most years, net lending to SOEs in Pakistan was, however, quite modest; for Sri Lanka, no data on net lending seem to be published (budgetary statistics lump net lending with capital expenditure).
21. The fact that coal and natural gas prices often move differently from oil prices would not much alter this conclusion; of course, the share of subsidies is also affected by factors that reflect neither global energy prices nor policy action, such as real growth exceeding the growth in energy demand.

REFERENCES

- Asian Development Bank (ADB). 2019. *Sri Lanka: Energy Sector Assessment, Strategy, and Road Map*. Manila.
- Bacon, R. 2019. Learning from Power Sector Reform: The Case of Pakistan. *Policy Research Working Paper*. No. 8842. Washington, DC: World Bank.
- Burgess, R., M. Greenstone, N. Ryan and A. Sudarshan. 2020. The Consequences of Treating Electricity as a Right. *Journal of Economic Perspectives*. 34(10), pp. 145–69.
- Dinkelman, T. 2011. The Effects of Rural Electrification on Employment: New Evidence from South Africa. *American Economic Review*. 101(7), pp. 3078–108.
- Escolano, J. 2010. A Practical Guide to Public Debt Dynamics, Fiscal Sustainability, and Cyclical Adjustment of Budgetary Aggregates. *Technical Notes and Manuals*. No. 2010/02. Washington, DC: International Monetary Fund (IMF).
- Government of Pakistan, Finance Division. 2020a. State Owned Enterprises Annual Reports 2013–2017. Finance.gov.pk.
- Government of Pakistan, Finance Division. 2020b. Pakistan Bureau of Statistics. 2020. National Accounts Tables. pbs.gov.pk.
- Government of Sri Lanka. 2020. Department of Census and Statistics. National Accounts. <http://www.statistics.gov.lk>.
- Grainger, C.A. and F. Zhang. 2017. The Impact of Electricity Shortages on Firm Productivity: Evidence from Pakistan. *Policy Research Working Paper*. No. 8130. Washington, DC: World Bank.
- Guillaume, D., R. Zytok and M.R. Farzin. 2011. Iran—The Chronicles of the Subsidy Reform. *IMF Working Paper*. 11/167. Accessed at: <https://www.imf.org/external/pubs/ft/wp/2011/wp11167.pdf>.
- Independent Evaluation Department. 2019. *Sector Assistance Program Evaluation: The Asian Development Bank's Support for the Power Sector in Pakistan 2005–2019*. Manila: ADB.
- International Energy Agency (IEA). 2018. *World Energy Outlook 2018*. Paris.
- International Energy Agency (IEA). 2020a. Energy Subsidies: IEA subsidies database.
- International Energy Agency (IEA). 2020b. *India 2020: Energy Policy Review*. Paris. Accessed at: https://niti.gov.in/sites/default/files/2020-01/IEA-India%202020-In-depth-EnergyPolicy_0.pdf

- International Monetary Fund (IMF). 2013. Pakistan: 2013 Article IV Consultation and Request for an Extended Arrangement under the Extended Fund Facility. Country Report No. 13/287. Washington, DC.
- International Monetary Fund (IMF). 2017. Pakistan: 2017 Article IV Consultation – Press Release; Staff Report; Informational Annex; and Statement by the Executive Director for Pakistan. Country Report No. 17/212. Washington, DC.
- International Monetary Fund (IMF). 2019a. Pakistan: First Review under the Extended Arrangement under the Extended Fund Facility and Request for Modification of Performance Criteria – Press Release; Staff Report; and Statement by the Executive Director for Pakistan. Country Report No. 19/380. Washington, DC.
- International Monetary Fund (IMF). 2019b. Sri Lanka: Sixth Review Under the Extended Arrangement Under the Extended Fund Facility and Requests for Waiver of Nonobservance and Modification of Performance Criterion – Press Release; Staff Report; and Statement by the Executive Director for Sri Lanka. Country Report No. 19/335. Washington, DC.
- International Monetary Fund (IMF). 2020a. Pakistan: Request for Purchase under the Rapid Financing Instrument – Press Release; Staff Report; and Statement by the Executive Director for Pakistan. Country Report No. 20/114. Washington, DC.
- International Monetary Fund (IMF). 2020b. *World Economic Outlook, October 2020: A Long and Difficult Ascent*. Washington, DC.
- International Labour Organization (ILO). 2020a. Pakistan Country Profile.
- International Labour Organization (ILO). 2020b. Sri Lanka Country Profile.
- Lee, K., E. Miguel and C. Wolfram. 2020. Does Household Electrification Supercharge Economic Development? *Journal of Economic Perspectives*. 34(10), p. 141.
- Lopez-Calix, J. and I. Touqeer. 2013. Revisiting the Constraints on Pakistan's Growth. *World Bank Policy Paper Series on Pakistan*. PK 20/12. Washington, DC: World Bank.
- National Electric Power Regulatory Authority (NEPRA). 2019. State of Industry Report 2019. Islamabad. Nepra.org.pk.
- Organisation for Economic Co-operation and Development (OECD). 2019. Indonesia's Effort to Phase Out and Rationalize its Fossil-Fuel Subsidies. A Report on the G20 Peer-Review of Inefficient Fossil-Fuel Subsidies that Encourage Wasteful Consumption in Indonesia. Accessed at: https://www.oecd.org/fossil-fuels/publication/G20%20peer%20review%20Indonesia_Final-v2.pdf.
- State Bank of Pakistan. 2020. Economic Data, Pakistan's Debt Profile. SBP.org.pk.
- World Bank Group. 2015. *Sri Lanka: Ending Poverty and Promoting Shared Prosperity – A Systematic Country Diagnostic*. Washington, DC: World Bank.
- World Bank Group. 2019. World Bank and International Finance Corporation: Sri Lanka Energy Infrastructure Sector Assessment Program: Final Report. Washington, DC.
- World Economic Forum. 2015. *The Global Competitiveness Report, 2015–2016*. Geneva.

13. Population aging and debt

Sang-Hyop Lee, Andrew Mason, and Donghyun Park¹

1. INTRODUCTION

Many governments support seniors by taxing workers and funding health-care programs and public pensions. If patterns of taxing and spending do not change, aging will push total spending to much higher levels without a commensurate increase in tax revenues. This would expand deficits and accelerate growth in public debt. In the absence of substantial reform, debt could easily reach unsustainable levels.

Whether higher debt is sustainable will depend, in part, on how aging affects the demand for debt and the willingness of households and the firms that represent them to hold government-supplied debt. Aging has important implications for the demand for assets in all forms, including public and private debt, to help meet retirement needs. An increase in life expectancy, which contributes to aging, lengthens the duration of retirement. Thus, individuals may accumulate more assets to support any given level of annual consumption during retirement. Compositional effects reinforce the impact on the individual. Older populations have a greater aggregate demand for retirement assets because they have been accumulating assets over many years of work.

This chapter assesses how population age structure will affect debt throughout Asia. Rapid increase in public debt is an urgent concern in many high-income economies whose populations are aging rapidly, and in particular those that have implemented expansive public social welfare systems. The populations of low- and middle-income economies in Asia are younger than those in advanced economies, but they too are aging. These low- and middle-income economies also tend to have modest social welfare systems. For now, their age structure favors program expansion because a relatively large number of individuals are in the younger tax-paying age groups and relatively few are in the older benefit-receiving age groups. As the population ages, however, the fiscal strain from providing more public support to seniors will become increasingly apparent even in low- and middle-income economies in Asia in the future.

Furthermore, demographic change can impede economic growth and thus make it more difficult for economies to grow out of debt. Whether or not this becomes a problem will depend on trends in interest rates. If gross domestic product (GDP) growth and real interest rates both fall, existing debt may decline or rise relative to GDP.

Little has been written about how aging might influence consumers' willingness to extend credit to the public sector. Our analysis indicates that aging will result in a substantial increase in Asian households' demand for public debt and for public and private debt combined.

Without major public sector reform, however, Asian governments will have to increase their supply of public debt by much more. High levels of public sector indebtedness could be met to some extent if households substitute public for private debt. Moreover, Asian governments could turn to foreign sources to fund high debt levels. The problem with this strategy, of course, is that aging and increasing debt have become issues of global concern.

2. THE DEMAND FOR DEBT

The next two sections of this chapter consider the impact of aging on the demand for both public and private debt on the part of households. The impact of aging on the supply of public debt, that is, debt incurred by governments is discussed in section 4, and some concluding remarks are offered in section 5.

2.1 Foundation

During the retirement phase of life, individuals rely heavily on wealth to fund the gap between what they produce through their labor and what they consume. However, the wealth required to fund retirement is accumulated during the working years. Consequently, the total demand for wealth depends on behavior during retirement and long before retirement begins.

Given standard assumptions, per capita wealth rises during the working years, peaks near the age of retirement, and declines thereafter. Retirement needs are met by dis-accumulating wealth and by relying on income generated by the wealth that remains at each age (Diamond 1965; Lee and Mason 2011; Lee 1994; Mason 1988; Modigliani and Brumberg 1954; Samuelson 1958; Willis 1988).

Changes in population during the demographic transition influence aggregate pension wealth in three important ways. First, changes in age structure over the demographic transition have compositional effects on aggregate wealth—the larger the share of population concentrated nearer the peak of the age profile of wealth, the greater will be aggregate wealth.

Second, the demographic transition also affects the age profile of per capita life-cycle wealth by influencing the expected duration of life and, hence, the duration of retirement. A longer period of retirement, other things being equal, requires greater pension wealth at each age.

Third, the demographic transition influences aggregate economic growth and, hence, the size of the economy. Rapid growth in the working age population will produce a demographic dividend in many economies, resulting in more rapid growth in national income and, hence, national wealth. As population aging sets in and growth in labor slackens, however, aggregate wealth can be expected to grow more slowly than in recent decades.

There may be important indirect effects of population aging on debt, but we do not explore them in this chapter. Slowing population growth could lead to secular stagnation and lower interest rates (Summers 2015; Eggertsson et al. 2019). Should interest rates drop below GDP growth for a sustained period of time it will have substantial effects on debt as a share of GDP (see Chapter 2 in this volume).

The trends in components of aggregate debt depend on the trends in pension wealth and on the composition of that wealth which takes various forms: transfer wealth, capital, and credit or debt. Old-age transfer wealth is the present value of anticipated net transfers on which seniors rely to fund old-age needs. Old-age transfer wealth includes both private transfers

mostly through families and public old-age transfer wealth consisting of publicly funded pensions and health-care programs along with other goods and services provided by the public sector. Public transfer wealth is net of the taxes paid to fund such programs (Lee et al. 2003; Lee 1994).

Life-cycle needs can be satisfied by accumulating capital. This might include direct investment in businesses, farms and owner-occupied housing, for example, or indirectly through equity markets. The third component of wealth is credit/debt—the value of loans extended to governments, firms, or individuals less loans undertaken. Loans between financial institutions are not of interest here because debt undertaken is exactly balanced by debt extended. No net debt is created.

In a closed financial system, credit and debt must be equal. For this reason, as first pointed out by Samuelson (1958), the life-cycle role of private credit is limited. If children supported their life-cycle needs by accumulating debt, it could be balanced by assets accumulated by older adults to fund their old-age needs. In the real world, however, debt can be relied on to a very limited extent to fund consumption during the younger ages. Those in their late teens and early twenties can take out student loans and incur credit card debt, but younger children cannot. Because the supply of debt by children is relatively small, the potential demand for debt at older ages greatly exceeds the potential supply of debt at younger ages unless interest rates are very negative. The demand for debt over the life-cycle can be satisfied by the supply of debt by firms and governments (Diamond 1965; Lee and Mason 2010). The debt demanded by residents can differ from the debt supplied by domestic firms and governments with the difference equal to external debt. This possibility is not explored further in this chapter.

The total demand for wealth by households is increasing sharply worldwide because of population aging. Almost all high-income economies, where global wealth is concentrated, are aging and many quite rapidly. Even in economies where aging is in its early stages, the demand for wealth is rising in anticipation of retirement needs of the future.

In what follows, we place particular emphasis on how aging could affect public debt, considered from two perspectives. The first is the perspective of the government which adopts policies that influence the size of deficits and the evolution of public debt. We call this the supply of public debt. The second perspective is that of private individuals who choose to allocate some part of their life-cycle pension wealth to public debt. We call this the demand for public debt. We also project the demand for public and private debt combined given that public and private debt demanded by individuals may be close substitutes.

Our analysis relies heavily on baseline scenarios using business-as-usual assumptions. We do not consider some interesting possibilities that bear further consideration. Aging could have an influence on the share of public resources claimed by seniors through their increasing power at the polls. Or aging could influence the demand by seniors for debt versus equity (or capital). We do not find compelling evidence that would warrant incorporating these kinds of effects into our baseline scenarios. We do not, for example, find that net transfers to seniors are rising relative to net transfers to children as populations age. Nor do empirical studies of pension funds consistently show that participants reduce their equity holdings with age (Cappelletti et al. 2014; Bikker et al. 2012; Alestalo and Puttonen 2006; Gerber and Weber 2007; Lucas and Zeldes 2009).

To summarize, the empirical analysis presented below is informed by the following key points:

- Aging will lead to an increase in life-cycle pension wealth relative to labor income.
- Growth in total pension wealth and total debt may slacken due to slower growth in the effective labor force.
- The share of assets in total pension wealth will depend on public policies regarding old-age transfer systems, examined in more detail later in the chapter.
- Debt as a share of labor income will rise with aging.

2.2 Methods for Projecting Debt

To assess the impact of population change on debt, we build on projections of other key macroeconomic variables detailed below. These methods are applied both to the demand for debt by households and the supply of debt by governments. Projections of population by age are based on the most recent available data from the United Nations. The implications for macroeconomic variables are incorporated using age profiles of economic flows based on National Transfer Accounts (NTA). The baseline projections of economic series are used to assess the impact of population change, holding the age patterns of those variables fixed at the base year values. The per capita age profiles of economic variables are assumed to shift upward at a productivity growth rate of 1.5 percent per annum.

Projecting economic variables employs a simple approach as compared with more complex models, for example, general equilibrium models, often used to assess the impact of aging on individual economies. Projections are used here because of our interest in considering the impact of aging over many years and for many economies under very heterogeneous circumstances. It is very important that the results be interpreted as a way to assess the first order effects of aging in the absence of changes in economic structure, public policy, or other features of economies in Asia. The results presented here are not intended as long-term forecasts of macroeconomic trends. Indeed, projections presented here and below show that business as usual is not possible.

The same approach is used to project economic flows: GDP, labor income, consumption, public transfer inflows, taxes and related measures. The economic flows are then used as the basis for projecting the demand for wealth, and public and private debt, as well as the supply of debt by governments examined below. The general approach to projecting flows can be represented as follows. Denote the per capita value of economic flow at age x in the base year b by $v(x, b)$ and the population of age x in year t by $N(x, t)$. The projected aggregate flow $V(t)$ is equal to:

$$V(t) = (1 + \lambda)^{t-b} \sum_{x=0}^{\omega} v(x, b) N(x, t) \quad (13.1)$$

where λ is the annual rate of productivity growth and ω is the maximum years of life. To simplify notation, the country indicator has been dropped but the per capita age profiles and population data vary by country.

Projected values of economic flows are calculated as shown in Table 13.1.

Table 13.1 Calculation of projected economic flows

Labor income	$YI(t)$	Annual income by age for employees, self-employed workers, and the value of uncompensated family labor. Labor income incorporates age-specific variation in labor force participation, unemployment, hours worked, and wages.
Gross domestic product (GDP)	$GDP(t)$	The ratio of GDP to total labor income is constant and, hence, total labor income and GDP grow at the same annual rate.
Consumption	$C(t)$	Consumption by age is the value of all goods and services consumed including both public and private consumption.
Public transfer inflows	$TGI(t)$	The value of goods and services at each age provided by general government to residents.
Taxes	$Taxes(t)$	The value of taxes paid at each age for general government.
Fiscal balance	$Fiscal(t)$	The fiscal balance is equal to taxes less public transfer inflows.
Public saving	$SG(t)$	Fiscal balance plus public asset income.

Source: Authors.

Two methods are used to project stocks, wealth, assets and debt. The first method emphasizes life-cycle decision-making of individuals. The life-cycle wealth of each cohort is calculated as the cumulative prospective value of consumption and labor income over the remaining existence of that cohort. The life-cycle wealth of all persons aged x in year t , $WP(x, t)$, is calculated as:

$$WP(x, t) = \sum_{z=0}^{\omega-x} (1+\delta)^{-z} (C(x+z, t+z) - YI(x+z, t+z)) \quad (13.2)$$

Total pension wealth in year t , $WP(t)$, is the sum of pension wealth of retirees and pre-retirees:

$$WP(t) = \sum_{x=P}^{\omega} WP(x, t) \quad (13.3)$$

Pension wealth includes life-cycle wealth accumulated toward retirement and life-cycle wealth held after retirement has begun. Mason et al. (2017) provide details about estimating the age at which accumulation of life-cycle retirement wealth begins. We assume that credit extended over the life cycle to the private and public sectors, MF and MG, respectively, are a constant share of life-cycle pension wealth:

$$\begin{aligned} MF(t) &= b_1 WP(t) \\ MG(t) &= b_2 WP(t). \end{aligned} \quad (13.4)$$

The second approach applies to public debt and relies on projections of the fiscal balance, $BF(t)$, and public saving:

$$\begin{aligned} BF(t) &= Taxes(t) - TGI(t) \\ SG(t) &= BF(t) + rAG(t) \end{aligned} \quad (13.5)$$

We have adjusted taxes so that taxes and transfers are balanced in the base year with taxes and transfers projected following equation (13.1). Hence, changes in debt do not reflect existing deficits, only deficits that arise due to aging. Public assets (AG) are projected using:

$$AG(t+1) = AG(t) + SG(t) \quad (13.6)$$

with public debt equal to the negative of public assets.

We distinguish two forms of public assets (or debt). The first is legacy debt that is a consequence of public debt that economies have already accumulated. To some extent legacy debt may reflect aging that economies have already experienced but it will also reflect the impact of war, fiscal crises, and other factors unrelated to aging. New debt measures only the imbalances between public transfer inflows and outflows that are driven by population aging.

$$\begin{aligned} \text{Legacy debt: } & -(1+r)^{t-t_0} AG(t_0) \\ \text{New debt: } & - \sum_{z=0}^{t-t_0} (1+r)^z BF(t_0+z) \end{aligned} \quad (13.7)$$

where r is the rate of interest, t_0 is the base year, and t the year of the projected value.

The projections presented below distinguish the demand and supply of public debt. The demand for public debt refers to securities held by consumers who are seeking to diversify their portfolio between public and private credit and other forms of life-cycle wealth. The supply of debt refers to debt incurred by the government as a consequence of their policies regarding spending and taxation. To the extent that these projected values differ, governments will be pressured to adjust their fiscal policy, and consumers to adjust their reliance on public debt.

A simple extension of this method allows for changes in the per capita public transfer inflow and tax profiles. Several earlier papers (Lee et al. 2017; Lee and Mason 2015; Mason et al. 2016) use this approach.

2.3 Data

The analysis is dictated in part by the availability of data. Demographic data and NTA data are used to provide baseline projections to show how population aging would affect life-cycle wealth and the household demand for private and public debt. For a more limited group of economies (see Table 13.7), data on public transfer inflows (cash and in-kind benefits from public programs) and taxes are used to simulate how demographic change will affect public fiscal balance and public debt embodied in current public policy. Life-cycle pension wealth as a share of total labor income is converted to life-cycle pension wealth as a share of GDP

assuming that total labor income is two-thirds of GDP. See Appendix Table 13A.1 for information on data sources.

3. AGING AND OLD-AGE NEEDS IN ASIA

This section provides basic information about demographic trends and old-age needs in Asia. For a subset of economies (shown in Table 13.7), we describe the role of the public sector in funding old-age needs.

3.1 The Life Cycle and Demographic Trends

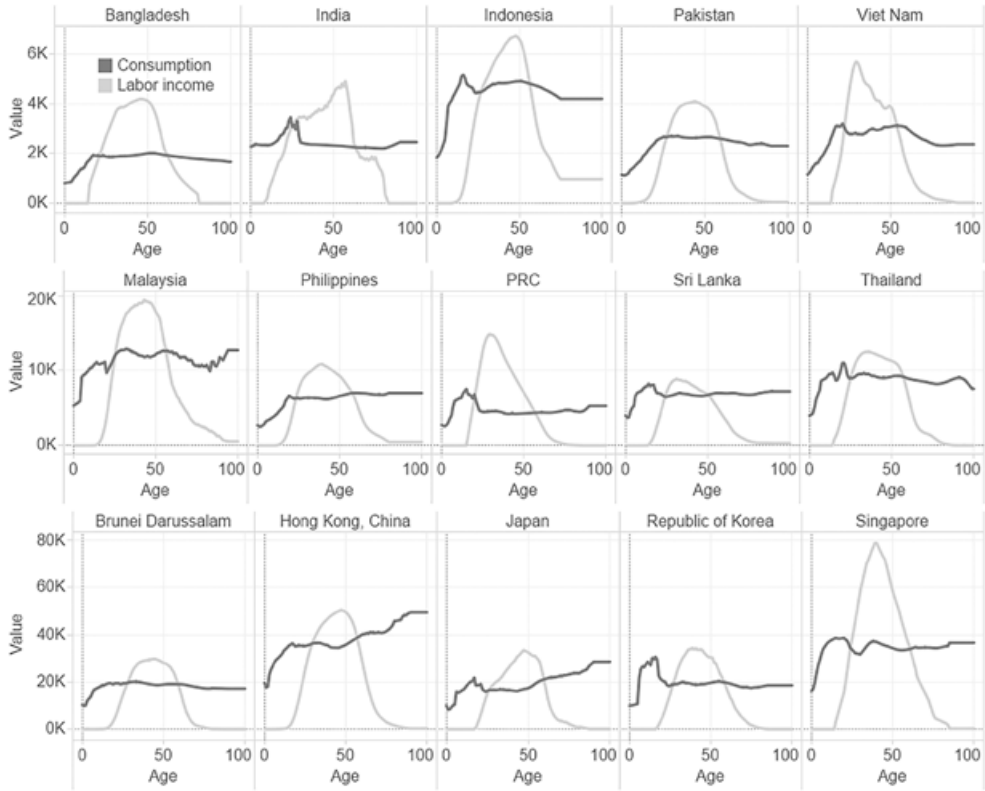
The effects of demographic change on the economy can be traced to fundamental features of the life cycle. For extended periods, at the beginning and the end of life, people consume much more than they produce through their labor. We call these deficit ages. Between these two phases of life, which we call surplus ages, people produce more through their labor than they consume. Over the demographic transition the concentrations of the population in the surplus and deficit ages are changing. Two trends are particularly important to economic trends, in general, and debt in particular.

First, the population in the productive ages is growing more slowly than in the past and is expected to grow even more slowly in the future. Second, the population concentrated at the old-age-deficit ages is increasing relative to the population concentrated at the productive ages. This has been going on for some time, but it is accelerating in many parts of the world and particularly in Asia.

To understand these trends, it is helpful to recognize that the years devoted to schooling and, hence, the age at which people begin to work is relatively high in East Asian economies. The relationship between age and labor income at older ages varies as well, because of differences in health, labor markets, and laws and policies that govern work at older ages. The cost of being old also varies considerably across economies. In general, the consumption of seniors is high compared with younger adults in rich economies. This is driven in large part by high spending on health care. But this pattern does not hold in all high-income economies in Asia, for example, the Republic of Korea.

The life cycle is incorporated into our analysis using NTA data. Figure 13.1 displays per capita labor income and consumption estimates by age, circa 2010 for 15 economies ranging from relatively low income in the top row to relatively high income in the bottom row.

These life-cycle profiles are used to capture major demographic trends in a way that reflects economy-specific economic features of the life cycle. The trends in growth are measured by the rate of growth of the effective number of workers. The number of effective workers is calculated as the population weighted using the labor income profile. The weight for each age is labor income at that age divided by the average of labor income for those 30–49 years of age. The second measure is the old-age gap ratio which is equal to the ratio of total consumption less total labor income for those 65 and older relative to total labor income for all ages combined.



Notes:

PRC = People's Republic of China.

All values are in purchasing power parity dollars. K represents "thousands".

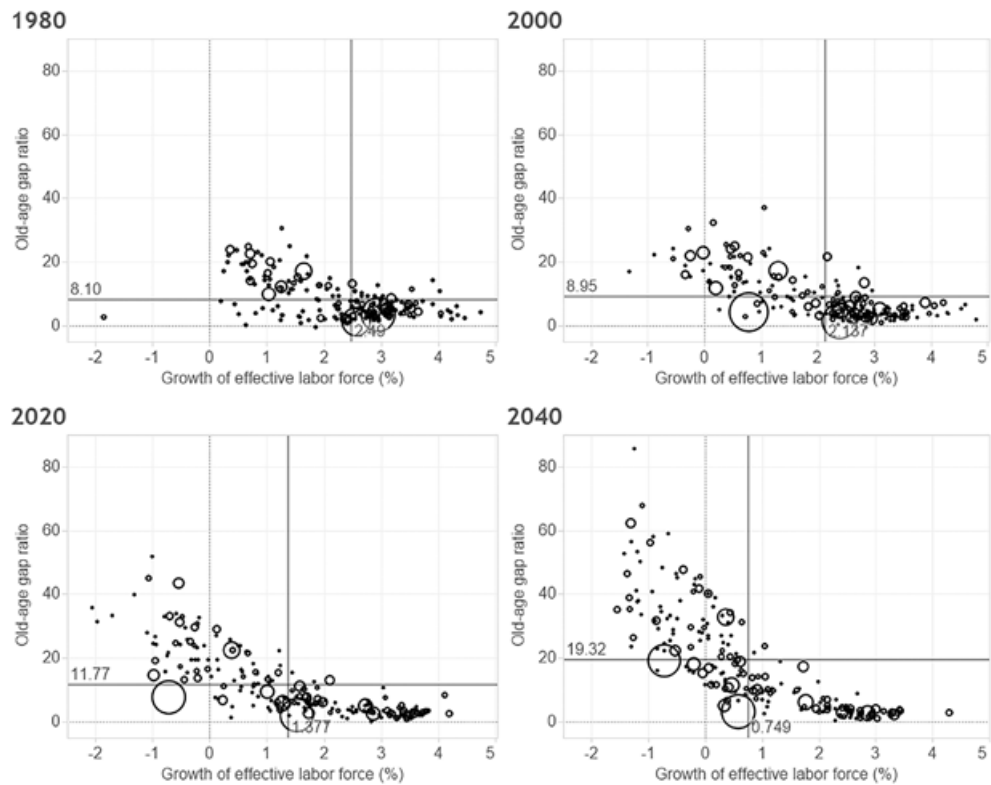
Source: Mason et al. (2017).

Figure 13.1 Per capita consumption and labor income by age for selected Asian economies (\$ 000)

Figure 13.2 shows two features of the global demographic transition: growth rate of effective labor and the old-age gap ratio for 185 economies in 1980, 2000, 2020, and 2040. The regional groupings used in this figure are based on the UN population division classifications. Asia refers to all Asian economies as defined in that grouping.

In 1980, effective labor was growing rapidly in Asia and in many economies worldwide. The average growth rate for Asia (simple average of economies) was 3.2 percent per year. The growth rate was not as rapid in any other region of the world, and for European economies the average was only 1.1 percent per year. Asia was also quite young in 1980. The old-age gap was only 6.3 percent of total labor income as compared with an average of 17.4 percent for European economies.

Since 1980, the growth of effective labor has slowed and populations have aged. The average growth rate of effective labor dropped to 2.7 percent by 2000, to 1.4 percent by 2020, and to



Notes: The size of the circle is proportional to population size. See Appendix Table 13A.2 for list of economies.
Source: Mason et al. (2017).

Figure 13.2 Growth rate of effective labor and old-age gap ratio, selected economies

a projected growth rate of only 0.4 percent in 2040. For European economies, the growth rate of effective labor has also dropped sharply since 1980. For 2020, a decline of 0.4 percent per year is expected and an even more rapid decline at -0.6 percent per year is projected for 2040.

As measured by the old-age gap ratio, aging for the Asian region as a whole has been relatively modest so far, with the regional average rising from 6.3 percent in 1980 to 6.7 percent in 2000 and to 8.7 percent by 2020. A very sharp increase is anticipated over the next two decades, however, with the gap ratio expected to reach 17.6 percent by 2040. European economies are much older than Asian economies but very sharp increases are also projected for those economies over the next 20 years. By 2040, the gap ratio is projected to reach 40.8 percent.

Asia was much less heterogeneous demographically in 1980 than it is today. Japan was the only major economy in that year that had begun to experience slower growth and aging. The growth rate and the gap ratio in the People's Republic of China (PRC), India, Indonesia, Pakistan, Bangladesh, and other Asian economies were similar, and these economies were all

growing more rapidly and had larger younger populations than the average economy in the world.

The diversity that now marks Asia was becoming apparent by 2000 with particularly rapid decline in the growth rate of effective labor force in the PRC to -0.7 percent per year. Several other economies in East Asia and Southeast Asia are experiencing decline such as Japan; the Republic of Korea; Taipei, China; and Thailand. In many Asian economies, however, the effective labor force is growing 1–2 percent per year, including in Bangladesh, India, Indonesia and the Philippines, and more rapidly in Pakistan.

When it comes to aging, economies in Asia look similar, while economies in Europe and North America are more heterogeneous. The exception is Japan, of course, which has the highest old-age gap ratio of any economy in the world. Asia will become much more diverse on the aging dimension during the next two decades. East Asian economies and some Southeast Asian economies are expected to age very rapidly between now and 2040. From a demographic perspective these economies will look more like Europe and less like other economies in Asia.

3.2 Life-Cycle Pension Wealth

A surprising, and to our knowledge so far unknown, finding is that that demographic trends in Asia have led to a sharp, but amazingly steady rise in “projected” life-cycle wealth for the last 40 years. In 1980–2020, total “projected” life-cycle wealth increased at close to 5 percent per annum, year in and year out. Total life-cycle wealth increased from \$14 trillion in 1980 to \$92 trillion in 2020 (at 2010 United States dollars purchasing power parity (PPP)). Note that the trends in these values are only a reflection of demographic change. We refer to the values before 2020 as “projected”, to be crystal clear that the plots capture the effects of historical changes in population, holding per capita age profiles of consumption and labor income constant, other than a 1.5 percent annual increase at every age.

Further increases in total wealth are projected for the future but the era of rapid growth, driven by population growth and aging, has clearly ended. Over the next 40 years, total life-cycle wealth is projected to grow at 2.4 percent per year, essentially half the rate experienced during the preceding 40 years. The rate of growth is expected to be more rapid at 3 percent per year during the next 20 years than the rate of growth of 1.8 percent in 2040–2060 (Table 13.2).

Regional differences in wealth are substantial in Asia, with more than half of total life-cycle wealth found in East Asia. In 2020, total wealth in East Asia was 82 percent of Asia’s total but by 2060 the projected share will drop to 70 percent. Other Asian regions will all gain at the expense of East Asia.

Table 13.2 Life-cycle wealth for selected ADB subregions, 1980 to 2060

	1980	2000	2020	2040	2060
Life-Cycle Wealth (\$ billion, 2010 \$ at PPP)					
Total	13,522	36,980	92,384	167,393	239,024
Central Asia	363	630	1,697	4,030	6,874
East Asia	11,457	31,552	75,513	128,396	166,276
South Asia	515	1,416	4,075	10,639	24,186
Southeast Asia	1,187	3,381	11,098	24,328	41,689
Annual Growth Rate over the Preceding 20-Year Period (%)					
Asia		5.16	4.68	3.02	1.80
Central Asia		2.80	5.08	4.42	2.71
East Asia		5.20	4.46	2.69	1.30
South Asia		5.19	5.43	4.91	4.19
Southeast Asia		5.37	6.12	4.00	2.73

Notes:

PPP = purchasing power parity.

Peak values are in bold font; subregions as defined by the Asian Development Bank (ADB).

Source: Authors' calculation based on NTA Indicators 2019. www.ntaccounts.org (accessed 15 September 2019).

3.3 Aging and Debt Estimates: Household Demand for Debt

Although our focus is on Asia, Table 13.3 provides some context by comparing Asian debt to debt in other regions of the world over the last 25-year period (1995–2019). For the period as a whole, debt was about 140 percent of GDP in Asia, less than in Europe, Oceania, and especially North America, but more than in Africa and Latin America. The rankings for private debt were similar as for total debt, with Asia's private debt higher than in Africa or Latin America and the Caribbean, but lower than other regions of the world. Note that comparisons with Oceania are problematic because private debt includes many Pacific island nations but public debt and total debt are based solely on New Zealand and Australia.

Debt as a percentage of GDP is rising around the world, driven largely by an increase in private debt as a percentage of GDP. The increase was very rapid in Europe and North America as compared with Asia where the increase was 1.8 percentage points per year for total debt and 1.6 percentage points per year for private debt. The picture is more mixed for public debt. Public debt in Asia and in Latin America and the Caribbean declined by 0.2 percentage points per year over this period, whereas it increased in Europe (0.7) and North America (1.2).

Table 13.3 Debt statistics for regions of the world, 1995–2019

	Africa	Asia	Europe	LAC	North America	Oceania
(%)						
Debt/GDP	91.5	139.9	185.6	94.3	239.8	188.6
Private debt/GDP	17.7	68.3	129.2	55.2	158.5	68.9
Public debt/GDP	66.3	50.9	54	43.8	81.3	23.6
Annual Change (%)						
Debt/GDP	–2.2	1.8	4.4	1.0	3.5	4.6
Private debt/GDP	0.6	1.6	3.4	1.4	2.3	1.6
Public debt/GDP	–2.8	–0.2	0.7	–0.2	1.2	0.7

Notes:

GDP = gross domestic product; LAC = Latin America and the Caribbean.

Private and public debt do not sum to total debt because economies reporting public and private debt vary. See Appendix 13A.2 for list of economies.

Source: International Monetary Fund (2019).

The extent of debt varies considerably among the economies of Asia. Average total debt and public debt are particularly high in Japan. Private debt is relatively high there but has declined in recent years as a percentage of GDP. Total debt is high in the PRC, the Republic of Korea, and Malaysia, mostly due to high levels of private debt. Private debt is also high in Hong Kong, China (IMF 2019).

Public and private debt are projected assuming that the partial effect of life-cycle pension wealth on debt is constant. Based on available data for Asian economies, an increase in life-cycle pension wealth by \$100 was matched by an increase in total debt by \$39. The estimated increase is greater for private debt (\$22) than for public debt (\$14). (Private and public debt do not equal total debt because of differences in the economies included in the calculations.)

3.4 Projections: The Demand for Debt

Based on the projected values for Asia (Table 13.4), demographic change will lead to an increase in the total demand for debt, combining public and private, from just under \$36 trillion in 2020 to almost \$65 trillion in 2040. By 2060, the total demand for debt is projected to fall just short of \$93 trillion. Although aging could lead to a shift toward a demand for public debt, we do not find any compelling evidence that this will occur and, hence, the demand for private debt and public debt maintain their respective shares in total debt. Projected demand for private debt is a little less than 60 percent, and demand for public debt is a little more than 40 percent of total debt.

Projected demand for debt is heavily concentrated in East Asia, with 82 percent of the total in 2020. About 12 percent of the projected demand for debt is concentrated in Southeast Asia. Demand for debt is projected to experience a significant increase in regional dispersion over the coming decades, however. By 2060, regional debt in East Asia is projected to drop to 70 percent of Asia's total debt. The shares for all other regions are projected to rise, but particularly in South Asia.

Table 13.4 Projected demand for debt in selected ADB subregions, 2000, 2020, 2040 and 2060 (\$ billion at PPP)

	2000	2020	2040	2060
Total Debt				
Total	14,328	35,791	64,850	92,600
Central Asia	245	658	1,562	2,663
East Asia	12,224	29,254	49,741	64,416
South Asia	549	1,579	4,122	9,370
Southeast Asia	1,310	4,300	9,425	16,151
Private Debt				
Total	8,223	20,541	37,219	53,145
Central Asia	140	377	896	1,528
East Asia	7,015	16,790	28,548	36,970
South Asia	315	906	2,366	5,378
Southeast Asia	752	2,468	5,409	9,269
Public Debt				
Total	5,176	12,930	23,428	33,453
Central Asia	88	238	564	962
East Asia	4,416	10,568	17,970	23,271
South Asia	198	571	1,489	3,385
Southeast Asia	473	1,553	3,405	5,835
Regional Distribution of Debt				
Total	100.0	100.0	100.0	100.0
Central Asia	1.7	1.8	2.4	2.9
East Asia	85.3	81.7	76.7	69.6
South Asia	3.8	4.4	6.4	10.1
Southeast Asia	9.1	12.0	14.5	17.4

Notes:

PPP = purchasing power parity.

Subregions as defined by the ADB.

Source: Authors' calculations.

Throughout Asia, aging is leading to a projected increase in the demand for debt relative to total labor income (Table 13.5). Roughly speaking, starting in 2000, debt increased from 1× total labor income, to 1.6×, to 2.2×, and to 2.5× total labor income at 20-year intervals. A more precise examination of the data shows that the increase is greatest for the next 20-year period. The greatest impact of aging on debt as a share of total labor income (or of the aggregate economy in general) is expected between 2020 and 2040.

Table 13.5 Projected debt as a percentage of labor income in selected ADB subregions, 2000, 2020, 2040, and 2060

	2000	2020	2040	2060
Total Debt				
Total	104.1	161.4	221.2	251.2
Central Asia	127.1	172.4	254.7	294.2
East Asia	127.9	213.9	324.1	377.9
South Asia	23.4	32.3	48.8	76.5
Southeast Asia	78.8	133.2	192.0	242.2
Private Debt				
Total	59.8	92.6	126.9	144.2
Central Asia	72.9	98.9	146.2	168.8
East Asia	73.4	122.8	186.0	216.9
South Asia	13.4	18.5	28.0	43.9
Southeast Asia	45.2	76.5	110.2	139.0
Public Debt				
Total	37.6	58.3	79.9	90.7
Central Asia	45.9	62.3	92.0	106.3
East Asia	46.2	77.3	117.1	136.5
South Asia	8.5	11.7	17.6	27.6
Southeast Asia	28.5	48.1	69.4	87.5

Note: Subregions as defined by the ADB.

Source: Authors' calculations.

Table 13.6 presents annual growth rates of debt and its components. Keep in mind that the projections are based on an assumed productivity growth rate of 1.5 percent per year and, hence, debt and labor income will grow at 1.5 percent per year if the effects of demographic change are neutral.

Table 13.6 Growth of debt and its component, annual rates

	Debt			Debt/Labor Income			Labor Income		
	2000– 2020	2020– 2040	2040– 2060	2000– 2020	2020– 2040	2040– 2060	2000– 2020	2020– 2040	2040– 2060
Total	4.58	2.97	1.78	2.19	1.58	0.64	2.39	1.40	1.14
Central Asia	4.95	4.32	2.67	1.53	1.95	0.72	3.42	2.37	1.95
East Asia	4.36	2.65	1.29	2.57	2.08	0.77	1.79	0.58	0.52
South Asia	5.29	4.80	4.11	1.61	2.06	2.25	3.68	2.73	1.85
Southeast Asia	5.94	3.92	2.69	2.63	1.83	1.16	3.31	2.10	1.53

Note: Growth of debt equals growth of debt/labor income plus growth of labor income.

Source: Authors' calculations.

In the absence of demographic change, debt would have increased by 1.5 percent per year, the assumed rate of productivity growth. Thus, for 2000–2020, the demographic change led to more rapid growth in debt of 3.08 percent (i.e., 4.58–1.50) for the region as a whole. The impact of aging on debt is projected to remain positive at 1.47 percent and 0.28 percent for 2020–2040 and 2040–2060, respectively, but over time the impact on the growth of total debt is projected to be considerably smaller. Growth in debt/labor income and in labor income are reinforcing with both growing more slowly in future periods. For 2040–2060, the effective labor force is actually projected to decline ($-0.36 = 1.14 - 1.50$).

The changing impact of demography on debt is occurring earlier in East Asia and to some extent in Southeast Asia. Of particular note is that the labor income is projected to grow substantially less than productivity growth after 2000. As a result, total debt is projected to increase by only 1.14 percent per year between 2040 and 2060 as compared with the assumed rate of productivity growth of 1.5 percent per year.

4. AGING AND DEBT: PERSPECTIVE OF THE PUBLIC SECTOR

Studies of the impact of population on public finances emphasize the close connection between age and tax revenues on the one hand and public benefits provided on the other. In general, prime-age adults fund government programs while children and seniors depend on them. An increase in the population of prime-age, tax-paying adults improves a country's fiscal balance while an increase in the child or senior populations weakens a country's fiscal balance, undermining public finances.

This fundamental interaction between public finances and population is captured for individual economies using per capita age profiles of taxes and benefits based on NTA estimates. Taxes include both direct and indirect taxes which are allocated to individuals based on the nature of the tax. Benefits that are individual in nature, such as health-care benefits or public pensions, are allocated to the recipients of those programs. Collective benefits, such as public diplomacy or safety and security, are allocated on a pro-rata basis. As explained in the methods section above, the projected fiscal balance rises and falls depending on the age profile of the fiscal balance and population age structure.

Our projections are based on the assumption that age patterns of taxes and benefits do not change over time, but it is important to acknowledge that important changes are likely to occur in the future. Many economies have implemented more generous transfer systems over time. The importance of the public sector has grown quite rapidly in Asia not only because of population change, but because of more rapid increase in transfer programs compared with their productivity growth. Per capita government transfers for children and the elderly have increased much more rapidly than transfers for prime-age adults as per capita income increased.

Tax profiles have changed too. There is a growing body of literature on the impact of the tax mix on economic growth, equity, and tax revenue. One part of this literature compares the effects of direct versus indirect tax choices in the context of the dynamic endogenous growth model. Since income taxes are more difficult to evade than indirect taxes, tax authorities are more likely to rely on indirect taxes where tax evasion prevails. Consequently, developing economies may rely more on indirect taxes, while developed economies tend to rely more on

direct taxes. A number of empirical studies show that reliance on direct taxes rises with per capita income (Hines and Summers 2009; Estrada et al. 2015). This has implications for tax incidence by age, for example, because the age profiles of consumption are different from the age profile of income.

Tax and spending patterns vary considerably in Asia. Japan and the Republic of Korea depend on income, corporate and valued-added taxes, which account for about 80 percent of their tax revenues, while the Republic of Korea relies less on income taxes. The financing of social welfare expenditures is also different in the two economies.

4.1 Public Debt Projections for Asia

The growing public debt is a concern for many Asian governments. Japan in particular has the oldest population in Asia; its working-age population has begun to decline rapidly; and its public programs, pensions, health care, and long-term care provide ample support for seniors. Thus, Japan provides an instructive case.

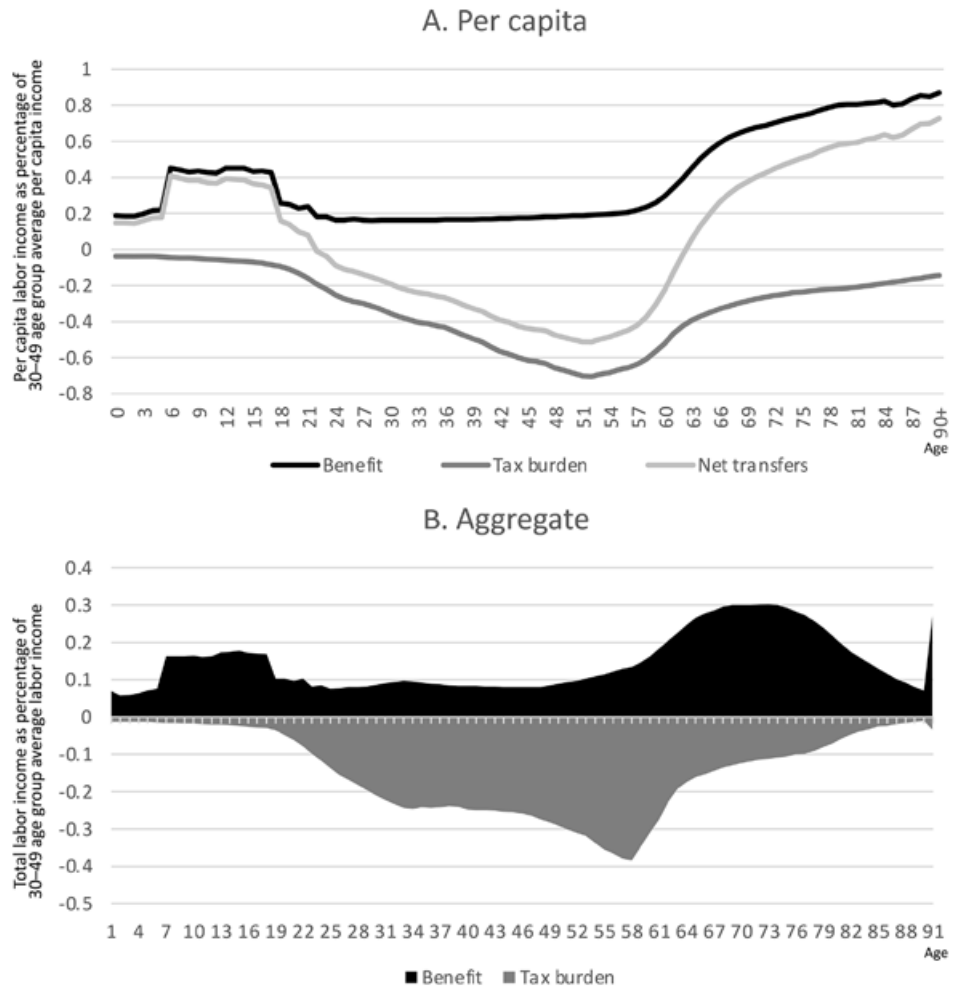
Figure 13.3 shows per capita and aggregate public transfer flows by age for Japan in 2009. The per capita flows are normalized by dividing the annual flows by the annual per capita labor income of persons aged 30 to 49, the prime working ages in most economies. The aggregate profiles are normalized by dividing the annual flows by the total labor income of persons aged 30 to 49. Per capita age profiles (panel A) show two peaks: the first for children, which is driven primarily by public spending on education; and the second for seniors, which is driven primarily by public pensions and health-care spending. The tax burden profiles peak around ages 45–54 when labor income peaks. The aggregate flows by age are the product of the per capita flows shown in panel B. The influence of Japan's old population age structure is clearly evident as most public transfers go to the elderly.

Table 13.7 presents debt projections based on current tax and spending age profiles. Data are available to construct projections of gross debt and new debt for eight member economies. Net debt estimates are available only for three economies—Japan, the Republic of Korea, and Indonesia. New debt estimates are based on the adjusted tax profiles and government transfers that produce fiscal balance in 2015. Arguably, deficits in recent decades are a consequence of the aging already experienced. There is no obvious way, however, to quantify the effects of aging as compared with other macroeconomic factors. For this reason, we are particularly interested in the increase in debt, which we call new debt, that is attributable to demographic factors. Japan has been running a deficit in recent years. Our projection for 2020 is that gross debt will exceed 250 percent of GDP and net debt will reach 175 percent of GDP, far higher levels of debt than in any other Asian economy. New debt for Japan is projected to reach just over 700 percent and legacy debt 600 percent of GDP in 2060. Total net debt would approach 1,300 percent of GDP by 2060.

The projected impact of population on public debt is substantial in East Asian economies. The accumulation of new debt is smallest in Taipei, China but even there it is 341 percent by 2060. Elsewhere in East Asia, new debt is even greater, with the greatest increase projected for the Republic of Korea at 826 percent of GDP. Increases of this magnitude are surely unsustainable. We discuss some possible responses below.

The situation is quite different in the four Southeast Asian economies for which projections are available. In three—Thailand, Singapore, and Indonesia—an increase in new debt is pro-

jected to range between 6 percent of GDP in Singapore and 62 percent of GDP in Indonesia in 2050. Only in Indonesia is the projected value greater than 100 percent of GDP in 2060. The situation in the Philippines is entirely different because transfers to seniors are very limited there, and thus, aging is projected to lead to budget surpluses rather than deficits.



Notes: Per capita profiles are normalized by the average labor income of those aged 30–49. Aggregate profiles are normalized by the total labor income of those aged 30–49.
Source: Authors' calculations.

Figure 13.3 Profiles of government transfers in Japan, 2009

Table 13.7 *Projected public debt for eight economies, 2010 to 2060 (% of GDP)*

		2010	2020	2030	2040	2050	2060
Legacy Debt, Gross							
East Asia	PRC	33.7	51.1	68.7	92.3	124.1	166.8
	Japan	207.9	256.8	345.1	463.8	623.3	837.6
	Korea, Republic of	...	43.8	58.8	79.0	106.2	142.8
	Taipei, China	36.7	38.8	52.1	70.0	94.1	126.5
Southeast Asia	Indonesia	24.5	32.1	43.2	58.0	78.0	104.8
	Philippines	49.7	43.6	58.6	78.8	105.9	142.3
	Singapore	98.7	119.7	160.8	216.1	290.4	390.3
	Thailand	27.8	35.6	47.9	64.3	86.5	116.2
Legacy Debt, Net							
	Japan	137.2	174.7	234.8	315.6	424.1	570.0
	Korea, Republic of	11.3	11.8	15.9	21.3	28.7	38.5
	Indonesia	9.1	3.7	5.0	6.8	9.1	12.2
New Debt							
East Asia							
	PRC		2.2	29.9	105.5	248.4	476.9
	Korea, Republic of		2.2	36.6	150.6	400.1	826.6
	Taipei, China		0.7	12.7	58.3	162.0	341.2
	Japan		4.8	40.0	144.8	362.6	708.9
Southeast Asia							
	Indonesia		-0.6	7.0	25.6	62.4	124.9
	Philippines		-2.8	-27.4	-89.4	-209.7	-424.4
	Singapore		-1.4	-8.4	-9.4	6.1	41.2
	Thailand		-0.8	-4.2	-1.7	15.2	57.0
Combined Debt, Gross							
East Asia							
	PRC	33.7	53.3	98.6	197.8	372.5	643.7
	Korea, Republic of	...	46.0	95.4	229.7	506.3	969.4
	Taipei, China	36.7	39.5	64.9	128.4	256.1	467.7
	Japan	207.9	261.6	385.0	608.6	985.8	1,546.5
Southeast Asia							
	Indonesia	24.5	32.7	50.2	83.7	140.4	229.7
	Philippines	49.7	40.9	31.2	-10.6	-103.9	-282.1
	Singapore	98.7	118.2	152.4	206.7	296.5	431.5
	Thailand	27.8	34.8	43.6	62.6	101.6	173.2
Combined Debt, Net							
	Japan	137.2	179.5	274.8	460.4	786.7	1,278.8
	Korea, Republic of	11.3	14.0	52.5	171.9	428.8	865.1
	Indonesia	9.1	4.3	12.1	32.4	71.5	137.2

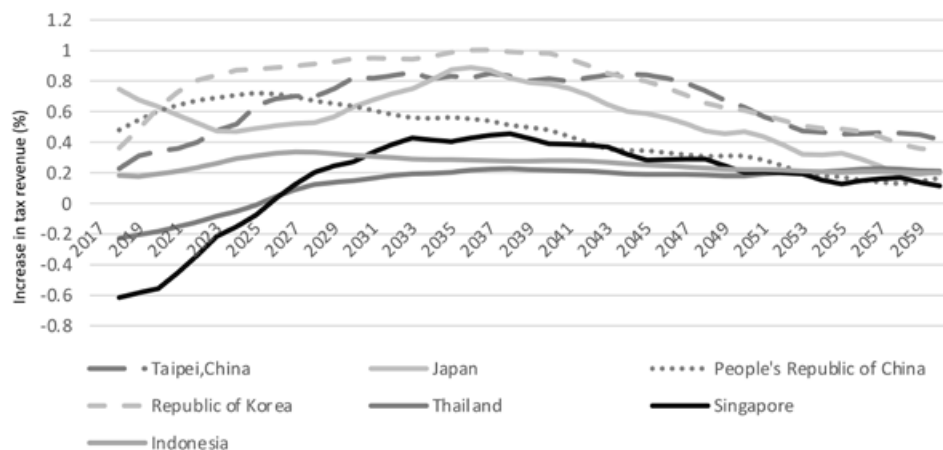
Notes:

... = data not available; GDP = gross domestic product; PRC = People's Republic of China.

Source: Authors' calculations.

4.2 Extensions

To mitigate the negative impact of population aging, taxes must increase, benefits must decrease, or some combination of these should occur. Figure 13.4 shows a required tax increase (benefit decreases) schedule which removes the aging effect year by year until 2060. This is calculated to make fiscal balance zero every year, holding government transfer profiles constant. For example, in the Republic of Korea, tax (expenditure) should increase (decrease) by 0.4–1.0 percent every year holding expenditure (tax) profiles constant. This *tax gap* is ranging from 0.1 percent to 1 percent per year for all case studies in this chapter.



Source: Authors' calculations.

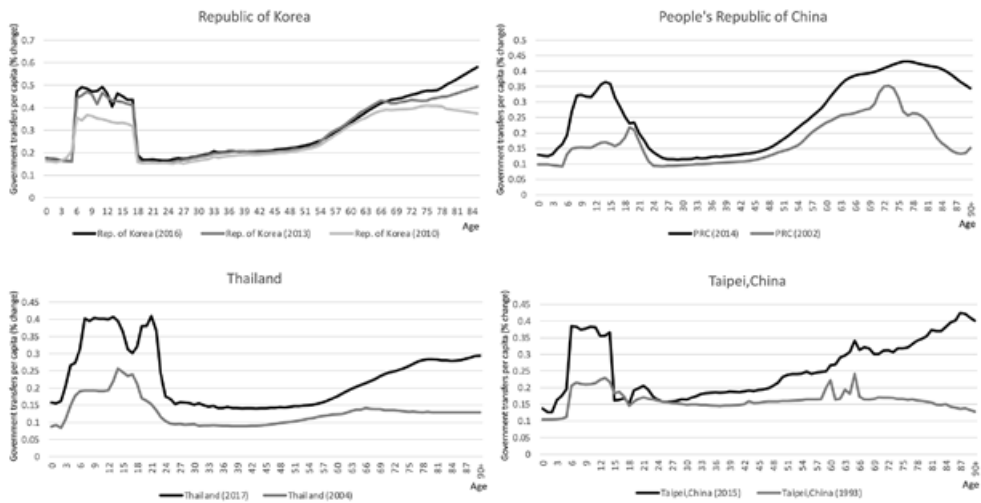
Figure 13.4 Tax growth required to eliminate population aging effects, 2017–2060, 3-year moving average (%)

Two things should be noted. First, needless to say, our projection is dependent upon our basic assumptions on productivity growth as well as interest rates. However, the projected new debt is still enormous, with very favorable assumptions leading to a lower level of debt (i.e., very low interest rates and higher growth rates). This implies that the impact of demographic change on debt is quite substantial for some economies regardless of assumptions. Second, economies in Asia are very different in terms of their speed of demographic transition and their macroeconomic condition. While the four East Asian economies in our projections are experiencing very rapid population aging, some lower-income economies are not. However, it should be noted that population aging is a region-wide trend which will affect all of Asia eventually.

On the other hand, our projections assume that the tax and benefit profiles will be held constant. However, historical data show that this cannot be true. In the real world, public benefits

for children and the elderly have risen sharply in all economies regardless of their level of economic development.

Figure 13.5 presents the per capita government transfers of selected economies, which shows clearly a sharp increase in public benefits for children and the elderly in all economies regardless of time range. But the transfers for other ages have increased as well. The PRC and Thailand show dramatic changes over even a shorter period of time, 12–13 years, which can be due to their rapid growth and favorable demographic conditions. However, this is also largely due to their expansion of welfare programs. For example, in 2009, the PRC committed to building a universal public pension system in rural areas funded by individual premiums and government subsidies. The transfers for children and the elderly have increased substantially for the Republic of Korea as well within only six years. Such a sharp rise is somewhat exceptional, but other Asian economies are also experiencing the same.



Notes:

PRC = People's Republic of China.

The per capita flows are normalized by dividing the annual flows by the annual per capita labor income of persons aged 30–49.

Source: Authors' calculations.

Figure 13.5 Change in per capita government transfers (expenditure) by age

Raising taxes has been much more difficult than raising government expenditure, which is especially true for rapidly growing economies. Thus, the danger is that economies with favorable demographics and fast growth will implement generous transfer systems that prove ultimately to be unsustainable. In fact, lower-income economies in Asia spend relatively little on public programs for reasons that are largely unrelated to demographic conditions. As lower-income economies develop, however, the key issue for them is whether the public sector can expand at the same time as their populations are aging.

5. CONCLUDING OBSERVATIONS

Asia is still a relatively young region, but it is in the midst of a demographic transition toward older populations. The demand for debt—which consists of public and private debt and represents retirement-funding assets for the life-cycle consumer—is growing as the population grows older. Our projections indicate that the demand for both public and private debt will rise sharply between now and 2060 in developing Asia. All four subregions of developing Asia will see a significant increase in demand for debt although the exact patterns differ. Our projections confirm our expectation that as Asia turns older, Asians will demand more debt to finance their old-age consumption.

The implications of business-as-usual public policies are that there are very high levels of public debt that substantially exceed the demand for debt on the part of life-cycle consumers. The demand for public debt as a percentage of labor income from life-cycle households is projected to increase from 58 percent in 2020 to 91 percent of total labor income in 2060. For Southeast Asia, the 2020 value is 48 percent of total labor income in 2020 and 88 percent of total labor income in 2060. Private debt in East Asia is projected to increase from 123 percent to 217 percent of total labor income and in Southeast Asia from 77 percent to 139 percent. The expected increase in the supply of debt by Asian governments could be met in part by a shift from private debt to public debt on the part of life-cycle consumers. This appears to have been the case in Japan. Comparisons with individual economy projections in Table 13.7 suggest that life-cycle consumers in East Asia will not be in a position to absorb all the public debt that would result in the absence of public sector reform.

Our results show that population aging leads to very substantial increases in life-cycle wealth. At the same time, public programs are providing important sources of support for the elderly, especially in East Asian economies. The key question is how to sustain or reform current old-age support systems in the face of rapid population aging. The worsening fiscal health of economies like the Republic of Korea; Japan; Taipei, China; and the PRC suggests that current tax and expenditure systems will lead to huge increases in public debt, which would impair the future fiscal sustainability of aging Asian economies. On a more optimistic note, the favorable demographic position of lower-income economies such as the Philippines can substantially help their debt position. However, population aging is a region-wide trend affecting all of Asia although its timing and speed vary across economies. Therefore, all Asian economies will eventually face growing pressure from their public debt.

NOTE

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.

REFERENCES

- Alestaw, N. and V. Puttonen. 2006. Asset Allocation in Finnish Pension Funds. *Journal of Pension Economics and Finance*. 5, pp. 27–44.
- Bikker, J.A., D.W.G.A. Groeders, D.A. Hollanders and E.H.M. Ponds. 2012. Pension Funds' Asset Allocation and Participant Age: A Test of the Life-Cycle Model. *The Journal of Risk and Insurance*. 79(3), pp. 595–618.

- Cappelletti, G., G. Guazzarotti and P. Tommasion. 2014. The Effect of Age on Portfolio Choices: Evidence from an Italian Pension Fund. *Journal of Pension Economics and Finance*. 13(4), pp. 389–419.
- Diamond, P. 1965. National Debt in a Neoclassical Growth Model. *American Economic Review*. 55, pp. 1126–50.
- Eggertsson, G.B., M.I. Lancaster and L.H. Summers. 2019. Aging, Output per Capita, and Secular Stagnation. *American Economic Review: Insights*. 1(3), pp. 325–42.
- Estrada, G., S.-H. Lee and D. Park. 2015. An Overview. In D. Park, S.-H. Lee and M. Lee (eds), *Fiscal Policy, Inequality, and Inclusive Growth in Asia*. Abingdon, UK and New York, NY, USA: Routledge. pp. 1–25.
- Gerber, D.S. and R. Weber. 2007. Demography and Investment Behaviour of Pension Funds: Evidence for Switzerland. *Journal of Pension Economics and Finance*. 6, pp. 313–37.
- Hines, J.R. and L.H. Summers. 2009. How Globalization Affects Tax Design. *NBER Working Paper*. 14664. Cambridge, MA: National Bureau of Economic Research.
- International Monetary Fund (IMF). 2019. Global database. Global Debt (December).
- Lee, R.D. 1994. Population, Age Structure, Intergenerational Transfers, and Wealth: A New Approach, with Applications to the US. In P. Gertler (ed.), *The Family and Intergenerational Relations: Journal of Human Resources*. 29(4), pp. 1027–63.
- Lee, R. and A. Mason. 2010. Some Macroeconomic Aspects of Global Population Aging. *Demography*. 47(supplement). pp. S151–72.
- Lee, R. and A. Mason. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.
- Lee, R., A. Mason and T. Miller. 2003. From Transfers to Individual Responsibility. *Scandinavian Journal of Economics*. 105(3), pp. 339–57.
- Lee, S.-H. and A. Mason. 2015. Are Current Tax and Spending Regimes Sustainable in Developing Asia?. In D. Park, S.-H. Lee and M. Lee (eds), *Fiscal Policy, Inequality, and Inclusive Growth in Asia*. pp. 202–234. Abingdon, UK and New York, NY, USA: Routledge.
- Lee, S.-H., J. Kim and D. Park. 2017. Demographic Change and Fiscal Sustainability in Asia. *Social Indicators Research*. 134(1), pp. 287–322.
- Lucas, D.J. and S.P. Zeldes. 2009. How Should Public Pension Plans Invest? *American Economic Review: Papers and Proceedings*. 99, pp. 527–32.
- Mason, A. 1988. Saving, Economic Growth, and Demographic Change. *Population and Development Review*. 14(1), pp. 113–44.
- Mason, A., R. Lee, M. Abrigo and S.-H. Lee. 2017. Support Ratios and Demographic Dividends: Estimates for the World. *United Nations Population Division Technical Report*. New York, NY: United Nations Department of Economic and Social Affairs, Population Division.
- Mason, A., R. Lee, D. Stojanovic, M. Abrigo and S.A. Ahmed. 2016. Aging and the Changing Nature of Intergenerational Flows: Policy Challenges and Responses. *National Transfer Accounts Working Papers*. WP16–05.
- Modigliani, F. and R. Brumberg. 1954. Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data. In K.K. Kurihara (ed.), *Post-Keynesian Economics*. New Brunswick, NJ: Rutgers University Press, pp. 388–436.
- Samuelson, P. 1958. An Exact Consumption Loan Model of Interest with or without the Social Contrivance of Money. *Journal of Political Economy*. 66, pp. 467–82.
- Summers, L.H. 2015. Demand Side Secular Stagnation. *American Economic Review: Papers and Proceedings*. 105(5), pp. 60–65.
- Willis, R.J. 1988. Life Cycles, Institutions and Population Growth: A Theory of the Equilibrium Interest Rate in an Overlapping-Generations Model. In R.D. Lee, W.B. Arther and G. Rodgers (eds), *Economics of Changing Age Distributions in Developed Countries*. Oxford: Oxford University Press, pp. 106–38.

APPENDIX 13.1

Table 13A.1 Data sources

Data	Source	Remarks
Demographic Data	United Nations Department of Economic and Social Affairs. World Population Prospects 2019. https://population.un.org/wpp/ .	All projections are based on the medium-fertility scenario.
Macroeconomic Data	World Bank. World Development Indicators, Country Statistics. https://datacatalog.worldbank.org/dataset/world-development-indicators . Washington, DC. Asian Development Bank. Key Indicators for Asia and the Pacific. Manila. https://www.adb.org/data/key-indicators/main .	
Net Debt	International Monetary Fund (IMF). Global Debt Database. 2019 Global Debt (December).	
	IMF. Private Debt, Loans, and Debt Securities. https://www.imf.org/external/datamapper/PVD_LS@GDD/SWE .	Private debt is the total stock of loans and debt held by households and nonfinancial corporations as a share of gross domestic product (GDP).
	IMF. Central Government Debt. https://www.imf.org/external/datamapper/CG_DEBT_GDP@GDD/SWE .	Public debt is the total stock of debt issued by the central government as a share of GDP.
NTA Debt Measures	National Transfer Accounts (NTA). Time Series Indicators. https://ntaccounts.org/web/nta/show/Time%20Series%20Indicators . Mason et al. (2017).	NTA data on public sector finances for eight ADB member economies: People's Republic of China: 2002, 2014 Indonesia: 2005 Japan: 1984, 1989, 1999, 2004, 2009 Philippines: 2015 Singapore: 2013 Republic of Korea: 2010, 2013, 2016 Taipei, China: 1993, 2015 Thailand: 2004, 2017

Table 13A.2 *List of economies*

Afghanistan	People's Republic	French Polynesia	Lesotho	Portugal	Syrian Arab
Albania	of China	Gabon	Liberia	Puerto Rico	Republic
Algeria	Colombia	Gambia	Libya	Qatar	Taipei, China
Angola	Comoros	Georgia	Lithuania	Republic of Korea	Tajikistan
Argentina	Congo	Germany	Luxembourg	Republic of	Thailand
Armenia	Costa Rica	Ghana	Macau, China	Moldova	Timor-Leste
Australia	Côte D'Ivoire	Greece	Madagascar	Romania	Togo
Austria	Croatia	Guam	Malawi	Russian	Tonga
Azerbaijan	Cuba	Guatemala	Malaysia	Federation	Trinidad and
Bahamas	Cyprus	Guinea	Maldives	Rwanda	Tobago
Bahrain	Czechia	Guinea-Bissau	Mali	Saint Lucia	Tunisia
Bangladesh	Dem. People's	Guyana	Malta	Saint Vincent and	Turkey
Barbados	Republic of	Haiti	Mauritania	The Grenadines	Turkmenistan
Belarus	Korea	Honduras	Mauritius	Samoa	Uganda
Belgium	Democratic	Hong Kong,	Mexico	Sao Tome and	Ukraine
Belize	Republic of The	China	Mongolia	Principe	United Arab
Benin	Congo	Hungary	Montenegro	Saudi Arabia	Emirates
Bhutan	Denmark	Iceland	Morocco	Senegal	United Kingdom
Bolivia	Djibouti	India	Mozambique	Serbia	United Republic of
(Plurinational	Dominican	Indonesia	Myanmar	Sierra Leone	Tanzania
State of)	Republic	Iran (Islamic	Namibia	Singapore	United States
Bosnia and	Ecuador	Republic of)	Nepal	Slovakia	United States
Herzegovina	Egypt	Iraq	Netherlands	Slovenia	Virgin Islands
Botswana	El Salvador	Ireland	New Caledonia	Solomon Islands	Uruguay
Brazil	Equatorial Guinea	Israel	New Zealand	Somalia	Uzbekistan
Brunei Darussalam	Eritrea	Italy	Nicaragua	South Africa	Vanuatu
Bulgaria	Estonia	Jamaica	Niger	South Sudan	Venezuela
Burkina Faso	Eswatini	Japan	Nigeria	Spain	(Bolivarian
Burundi	Ethiopia	Jordan	Norway	Sri Lanka	Republic of)
Cabo Verde	Fiji	Kazakhstan	Oman	State of Palestine	Viet Nam
Cambodia	Finland	Kenya	Pakistan	Sudan	Yemen
Cameroon	France	Kuwait	Panama	Suriname	Zambia
Canada		Kyrgyz Republic	Papua New Guinea	Sweden	Zimbabwe
Central African		Lao People's	Paraguay	Switzerland	
Republic		Democratic	Peru		
Chad		Republic	Philippines		
Chile		Latvia	Poland		
		Lebanon			

Note: In this chapter, data for Afghanistan and Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.

PART III

What next? Policies to keep Asia's debt sustainable

14. Debt management capacity: a tale of three Asias

Phillip Anderson¹

1. INTRODUCTION

Over the last two decades, many Asian economies have sought to build their capacity to manage public debt and develop their domestic debt markets. Several economies rose to this challenge early and now have debt management operations that are among the best in the world and deeper and more liquid bond markets. Less-developed economies at the earlier stages are facing hurdles arising from lack of scale, conflict, or prolonged low-income status. At the same time, the financing choices available to government have increased as international capital markets and official sector lending continue evolving. Governments must manage efforts to address the challenges amid higher public debt levels and the economic impact of the COVID-19 pandemic.

This chapter identifies areas where more capacity-building effort is needed to manage public debt and develop the domestic debt markets. But developments in public financial and fiscal risk management also have implications for a government's debt management capacity. Central government debt is a major component in the identification and compilation of the public sector balance sheet. To manage risks across this broader canvas, the government could draw on already existing skills in the public debt management function, although the institutional hurdles are significant. In addition, market instruments can be used to manage fiscal risks and pressures, as discussed in other chapters. Again, the debt management function could contribute, given its role of analyzing risk and transacting in markets.

2. DEFINING AND MEASURING DEBT MANAGEMENT CAPACITY

Public debt management involves the *composition* of public debt, while debt sustainability focuses on identifying sustainable *levels* of debt in the long run. Despite their distinct objectives, both are of course closely related. The International Monetary Fund (IMF) and the World Bank (2014) cite numerous examples of economies with poorly structured debt in terms of currency, maturity, or interest-rate composition, which induced or exacerbated liquidity and sustainability crises. A number of these events occurred in the 1990s and focused global attention on how economies manage public debt. As a result, when asked to develop guidance on what constitutes sound practice, the IMF and the World Bank published the "Guidelines for Public Debt Management" in 2001 and a revision in 2014.²

The Asian financial crisis, which afflicted several economies in East Asia during 1997–1998, did not directly implicate government debt, but highlighted vulnerabilities in financial systems that relied excessively on bank financing and leverage. Governments saw the necessity to focus on the development of domestic bond markets to increase resilience and improve capital allocation. To help economies achieve this objective, the Association of Southeast Asian Nations (ASEAN), the People's Republic of China (PRC), Japan, and the Republic of Korea (ROK) launched the Asian Bond Markets Initiative in 2002, with the Asian Development Bank (ADB) serving as secretariat and providing technical support.

To manage central government debt effectively, an institution must establish objectives, develop and implement strategies, and maintain the highest levels of accountability and transparency. While the main focus is on the entity or entities that are directly responsible for borrowing on behalf of the central government, other policy areas contribute to strengthening debt management capacity. In particular, the institutional capacity to implement fiscal policy, cash management, monetary policy, and capital market regulation influences public debt management outcomes. The development of the local financial market and the quality of its infrastructure also play a role.

The Guidelines for Public Debt Management were a useful step in codifying what experienced practitioners viewed as the necessary framework for the activity. Experience in applying this guidance in many economies led to the development of a tool to assess capacity through performance indicators, the Debt Management Performance Assessment (DeMPA) methodology (Box 14.1).³

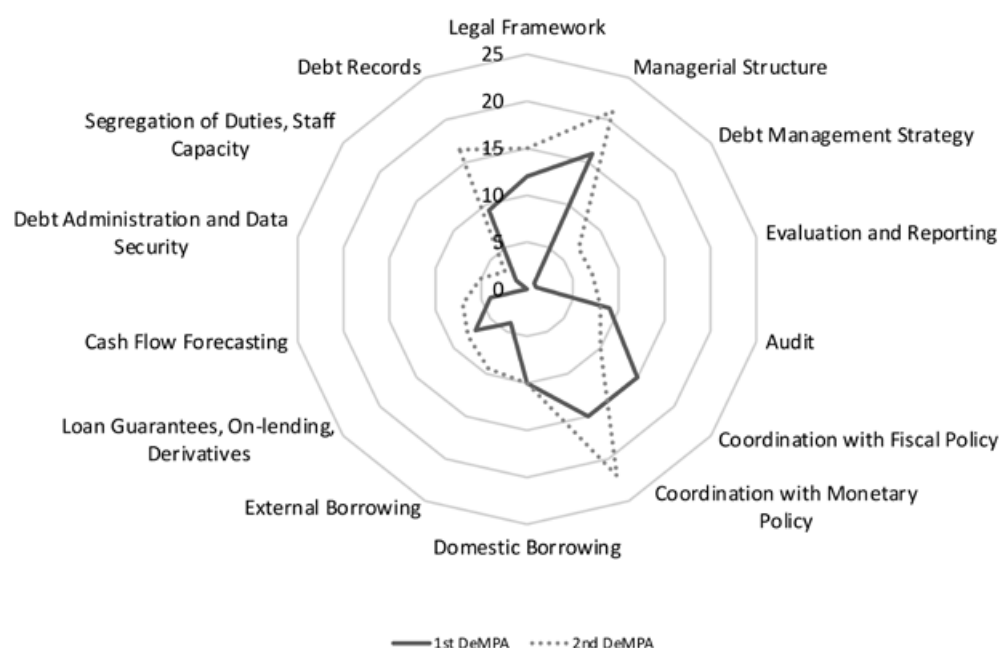
BOX 14.1 DEBT MANAGEMENT PERFORMANCE ASSESSMENT METHODOLOGY

The World Bank in 2009 developed the Debt Management Performance Assessment (DeMPA) methodology to assess the institutional performance of developing economies through a comprehensive set of indicators spanning the full range of government debt management functions. Modeled after the Public Expenditure and Financial Accountability indicators, the assessment scores performance at four levels. There are 14 indicators grouped in five areas:

1. Governance and Strategy Development: five indicators, covering legal framework, management structure, debt management strategy, debt reporting and evaluation, and audit.
2. Coordination with Macroeconomic Policies: two indicators, covering coordination with fiscal policy, and with monetary policy.
3. Borrowing and Related Financing Activities: three indicators, for domestic borrowing, external borrowing, and loan guarantees, onlending and derivatives.
4. Cash Flow Forecasting and Cash Balance Management: one indicator.
5. Debt Recording and Operational Risk Management: three indicators covering debt administration and data security; segregation of duties, staff capacity and business continuity; and debt and debt-related records.

Source: World Bank (2015).

While the DeMPA is designed to apply to developing and emerging market economies, it has been used largely in low-income economies and lower-middle-income economies. While most economies choose not to publish DeMPA reports, the World Bank has compiled aggregate data to show the pattern of strengths and weaknesses across indicators and their progress through time. Figure 14.1 shows a recent analysis measuring progress in 37 economies that had performed two DeMPA assessments from 2008 to 2015 (World Bank and the IMF 2018). The data show the number of economies that had an adequate level of performance (i.e. a score of C or better) for each of the 14 indicators and the results are mixed, with an improvement in some areas and a deterioration in others. Overall, the results highlight the challenges faced by low-income economies and lower-middle-income economies: on average, these economies had a satisfactory score for only around 30 percent of the indicators.



Note: DeMPA = debt management performance assessment.

Source: World Bank and IMF (2018).

Figure 14.1 Changes in DeMPA scores for 37 low-income economies and lower-middle-income economies

The analysis does not provide a geographic breakdown, so it is not possible to obtain a picture for “developing Asia” as classified by ADB. Nevertheless, 21 economies have had a DeMPA and, of these, seven have published results (World Bank 2020).

2.1 Debt Management Capacity in Developing Asia

A challenge in reviewing the debt management capacity across ADB's 46 developing Asian economies is their diversity. For example, they range in population from 1,600 in Niue to over 1,400 million in the PRC. The group includes nine economies classified by the World Bank as "fragile and conflict-affected states" (FCS) but also lists Singapore and Brunei Darussalam, which are among the top 10 economies ranked by gross domestic product (GDP) per capita, and with Hong Kong, China not far behind. Also, the level of public debt ranges from 3 percent to over 100 percent of GDP, with 10 economies viewed by the IMF and the World Bank at high risk of debt distress.

To meaningfully consider the challenges for institutional capacity to manage public debt, we separate developing Asia into three groups:

- *Group 1:* Economies that have no or very little domestic debt and rely on official sources of financing (most of the Pacific island economies and a few others); borrowing choices are limited and volumes are tightly constrained by sustainability concerns.
- *Group 2:* Economies that rely largely on the domestic market (90 percent or more), including the high-income economies, the PRC, India, Malaysia, and Thailand. Debt portfolios have little currency risk and weight is placed on developing and improving the local bond market. This group has institutional requirements similar to most Organisation for Economic Co-operation and Development (OECD) economies (although they may have residual official debt and some international bonds).
- *Group 3:* The group in the middle comprises economies with the broadest range of financing sources (bilateral, multilateral, possibly international bonds, and domestic market). Their level of domestic market development is wide-ranging, from nascent to mature.

We develop an overview of debt management capacity in each of these groups using several sources such as full DeMPA reports, summary DeMPA scores published in World Bank (2020), other published works, disclosure on member government websites, and the functioning of domestic debt markets.

2.2 Group 1 (With Official Sources of Financing, Little Domestic Debt)

This group comprises 13 economies, including most of the small Pacific island economies and other developing Asian economies such as Bhutan and Cambodia. Under the World Bank's Debt Sustainability Framework as of the end of 2019, five economies have been assessed as high risk of external debt distress and four are classified as FCS (World Bank 2020).

Most of these economies have no domestic debt, while those that do have less than 5 percent of total public debt. For the larger economies, this reflects their stage of economic and financial sector development; for the small island states, the lack of scale represents a challenge in developing a securities market. Institutional capacity in the near term is therefore shaped with financing from official sources and includes selecting the most beneficial and cost-effective loans within a sustainable fiscal envelope, which in many cases is already stretched. Effective debt administration must ensure accurate and timely recording and reporting of obligations. Although the loans are granted on either concessional or below-market terms, they are denominated in foreign currency, exposing the public debt portfolio to significant currency risk.

There is some evidence that small states generally have lower debt management capacity than larger economies. Prasad et al. (2013) analyzed 17 DeMPA reports for small states and compared them with a sample of 42 larger economies with similar income and debt levels.⁴ The study found that in aggregate the small states met the minimum requirement for 32 percent of the dimensions assessed, whereas the larger economies achieved 41 percent on average. One counterintuitive finding is that there was no correlation between gross national income (GNI) per capita and institutional performance for the small states in this sample. Nevertheless, the study found that the small states had limited staff numbers with broad spans of responsibility and little or no reserve capacity, which may have a bearing on the scores that were observed.

These challenges appear to be evident in the small Pacific island economies. The Pacific Association of Supreme Audit Institutions (PASAI 2016) summarizes patterns of weakness in capacity, based on the findings of the supreme audit institutions (SAIs) in eight Pacific island territories and economies. In the area of governance, four of the eight SAIs highlighted problems such as the lack of a legal framework, absence of a strategy, weak organizational structure, and weak internal controls and procedures. The weakest area was in monitoring and reporting, with six of the eight SAIs finding a lack of available information or documentation, which casts doubts on the accuracy and completeness of the government's financial reports. Contributing factors could be suboptimal use of debt management software as well as irregular reporting. In addition, the Pacific economies face unique development challenges arising from "extreme geography" (see Chapter 5 in this volume), which perennially threaten debt sustainability.

Of the two larger economies that have had DeMPAs, Afghanistan scored a 40 percent satisfactory rate in 2011, despite being an FCS at high risk of debt distress.⁵ Cambodia rated 30 percent in 2018, around the global average indicated in Figure 14.1, and has published a debt management strategy and regular bulletins on the composition of public debt on the finance ministry website. Bhutan scored satisfactory on 40 percent of indicators—better than the small-country average (World Bank 2020).

Eight of the economies in Group 1 have made improvements to debt management capability in recent years, such as new legislation, better debt recording systems, preparation of debt management strategies, or publication of public debt reports.⁶ Nevertheless, challenges remain—for example, only five of the 13 economies publish debt data regularly on websites, and only 3 have published a debt management strategy.

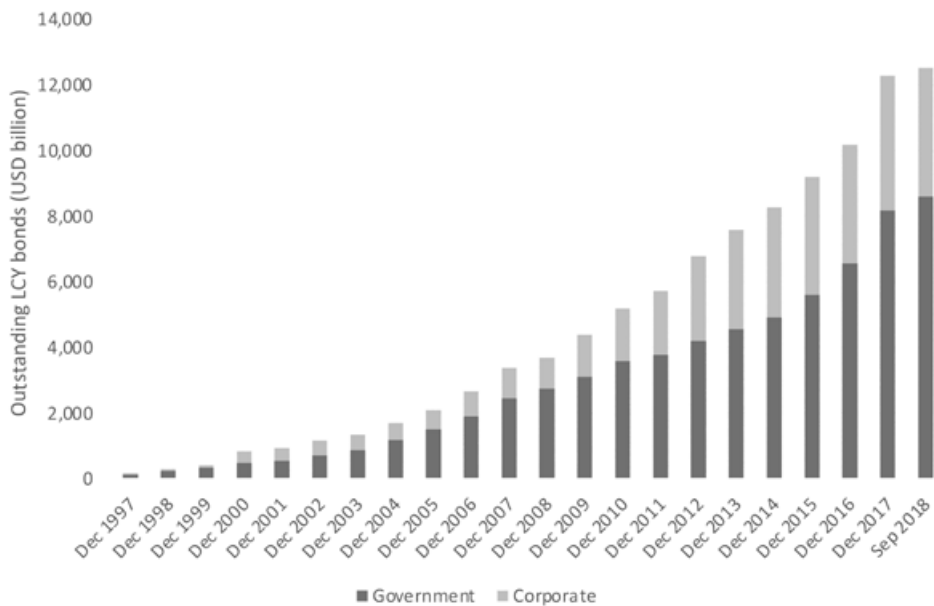
2.3 Group 2 (Domestic Market Borrowing is at Least 90 percent of Public Debt)

There are nine economies in this group: Brunei Darussalam; Hong Kong, China; India; Malaysia; the PRC; the ROK; Singapore; Taipei, China; and Thailand. The high-income economies (Brunei Darussalam; Hong Kong, China; the ROK; Singapore; and Taipei, China) borrow only in the domestic market in local currency, while the PRC, Malaysia, and Thailand have some residual foreign-currency debt (less than 3 percent of total public debt). Although India has, in absolute terms, sizable official borrowing denominated in foreign currencies, it amounts to less than 7 percent of total public debt.

To manage public debt, these economies focus on the management of refinancing and interest-rate risk and on developing the domestic securities market. Brunei Darussalam and Hong Kong, China have very little public debt, at less than 3 percent of GDP, so risks are

minimal in any event. The other economies issue securities across the yield curve, with tenors extending to at least 30 years. The PRC, Thailand, and the ROK have issued 50-year bonds. In this context, debt managers have sufficient choices in instruments to keep risks in check in line with their objectives.

All of the economies in this group have over a long period developed their domestic government securities markets, some starting from the early 1990s. With the exception of India and Taipei,China, they participate in the Asian Bond Markets Initiative (ABMI), which was launched in December 2002 to develop local currency bond markets and promote regional financial cooperation.⁷ ABMI was established in the aftermath of the Asian financial crisis, which was caused largely by “balance sheet mismatches” in the private sector—businesses had borrowed through short-term bank loans in foreign currency to finance long-term investments that generated returns in domestic currency (ADB 2019). While the objective was to develop local currency debt capital markets for the private sector, the government securities market usually comes first in developing and emerging market economies and acts as a benchmark.



Notes:
LCY = local currency.
Economies include Indonesia; Malaysia; Singapore; Thailand; the Philippines; the PRC; Hong Kong, China; the ROK; and Viet Nam.
Source: ADB (2019).

Figure 14.2 Growth of emerging East Asian local currency bond markets, 1997–2018

The analysis undertaken as part of the ABMI shows that each economy had a unique approach in developing its market, which is consistent with development pathways in other economies.

Nevertheless, we identified some commonalities. During the initial phase (2002–2007), governments focused on increasing the supply of local currency securities, developing market infrastructure, improving access for investors, strengthening regulation, and improving access for a range of issuers (ADB 2017). Subsequently, initiatives to expand regional integration and deepen the private sector bonds markets complemented these efforts.⁸ Figure 14.2 shows the impressive growth in the volume of bonds outstanding.

Singapore and Hong Kong, China issue government securities to support the development and functioning of local markets, even though there is no fiscal need to borrow. In Hong Kong, China, government securities amount to around 3 percent of GDP, while the fiscal reserve is around 40 percent of GDP. Under Singapore's Government Securities Act, the proceeds from issuance cannot be spent for budgetary purposes and are invested. The principal objectives of securities issuance are to provide a robust yield curve and fostering the growth of an active secondary market.

The successful development of an economy's local market is measured in part by its liquidity, one indicator of which is the difference between the yields at which bonds are bought and sold (the bid–ask spread). The size of the bond market also contributes to its liquidity—even the most efficient small market will have less liquidity than a large one. Nevertheless, the changes each market goes through over time provide an indication of structural improvements. Table 14.1 shows the improvement in selected economies since 2004.

Table 14.1 Selected economies: government bonds bid–ask spreads (basis points)

Market	2004	...	2010	2011	2012	2013	2014	2015	2016	2017	2018
People's Republic of China	32.5		2.2	4	2.7	4.1	3.4	5.3	1	1	1.9
Republic of Korea	4.8		1.1	0.7	0.6	0.7	0.7	0.5	0.5	0.5	0.5
Malaysia	3.5		2.6	3.3	2.7	3.8	1.7	2.4	2.1	1.9	2.3
Singapore	5.5		3	3.8	3.1	2.6	2.3	2	3	3	2.1
Thailand	7.3		3.1	3.3	3.2	2.4	1.9	1.5	2.3	1.8	2.5

Source: ADB (2019).

The development of local currency government bond markets is a complex process and requires that public institutions have a deep understanding of financial markets. As the issuer, the government controls all aspects of the primary market, including the issuance methods, choice of instruments, and rules for market access. The choices made will have a significant impact on the efficiency of the secondary market. In addition, extensive collaboration with the regulator, the central bank, and market participants is essential to develop other dimensions of market liquidity. The economies in this group have adopted a range of approaches: India; Hong Kong, China; Malaysia; and Singapore have relied extensively on the monetary authorities as agents to build their markets.⁹ Thailand established its Public Debt Management Office in 1999 as an agency of the government to manage all aspects of public debt. In the PRC and the ROK, the finance ministry is given the responsibility for the daily management of public debt.

2.4 Group 3 (A Range of Financing Sources)

The remaining economies in developing Asia (24) are grouped together, but reflect a wide range in levels of institutional capacity. One common aspect across the group is their access to a broad range of financing sources, including official sources, domestic markets, and the international capital markets, although the mix of these sources varies a great deal. Some economies are advanced in developing the domestic securities market and have been relying on it for over 60 percent of financing (Indonesia and the Philippines), whereas others are only beginning the process (Armenia and the Lao People's Democratic Republic (Lao PDR)). Of the 24 economies, 15 have issued international sovereign bonds at least once, while some are regular issuers (Indonesia and the Philippines).

Given the range of financing alternatives, the economies in this group have more complex trade-offs to make than the other two groups when developing their debt management strategies. They must consider the relative cost and risk of borrowing in foreign currencies, both from official and market sources, as well as the pace at which the domestic market can be developed as a source of longer-tenor financing. Also, they must maintain the institutional capacity to tap each source of financing.

Most of the eight economies in Central Asia could be regarded as having strong debt management capacity.¹⁰ Five have had DeMPAs, of which three (Armenia, Georgia, and Kazakhstan) have been published and show considerably higher scores on average than the global sample illustrated in Figure 14.1, scoring satisfactory for 50–75 percent of indicators. The summary data for the Kyrgyz Republic and Tajikistan are not as strong—around 40 percent satisfactory—but are still favorable compared with global averages. Since the assessments, these economies have made improvements to debt management practices such as greater transparency, development of strategies, market development initiatives, and updates of the legal framework (World Bank 2020).

Six of the eight economies have issued international bonds, with Uzbekistan joining the group with its first issue in 2019. Resource-rich Azerbaijan and Kazakhstan with their substantial financial assets have relatively low levels of public debt—at just over 20 percent of GDP at the end of 2019—but recognize the value of a government bond market for financial sector development. Both are active in pursuing initiatives to this end, but development is still at an early stage, with Azerbaijan having a very low level of securities outstanding and Kazakhstan's investor base heavily concentrated. Similarly, domestic government debt in Armenia, Georgia, the Kyrgyz Republic, and Tajikistan is less than 20 percent of total public debt. Uzbekistan began issuing domestic securities in December 2018, and the authorities have committed to developing this market (IMF and the World Bank 2019).

Overall, the Central Asian economies rate well in transparency, with six economies providing statistical bulletins or debt data on websites regularly. Five economies publish their public debt management strategies and, with three published DeMPAs, they are more open than the other regions. The pattern of strong capacity is likely to be related to income—five economies are classified as upper-middle income.

The five South Asian economies in this group—Bangladesh, Maldives, Nepal, Pakistan, and Sri Lanka—have a sizable proportion of public debt sourced in the domestic market, ranging from 45 percent to 65 percent. Maldives, Pakistan, and Sri Lanka have issued securities in the international capital markets and borrow extensively from official sources. Their debt levels

are over 75 percent of GDP (as at the end of 2019), which is a major challenge for fiscal policy, with debt interest cost consuming much of the budget, indicating they must make cost–risk trade-offs when developing their debt management strategy.

All economies have had DeMPAs over the last decade and the summary results are not strong, ranging from less than 20 percent of indicators scoring satisfactory to around 35 percent. Maldives was the weakest, which may be an indication of challenges similar to those faced by small Pacific island states (World Bank 2019). Most have made improvements to debt management capacity in recent years, so it is plausible that the assessments understate current performance in some cases—for example, the Pakistan assessment is 10 years old (World Bank 2020).

In South Asian economies, the responsibility for managing public debt is dispersed across various entities. The central bank manages borrowing in the domestic market, in some cases with a high degree of discretion and not strictly as an agent. The finance ministry looks after external borrowing from official sources, while a team assembled for each operation oversees borrowing from the international capital markets. While guidance on international sound practices, including the DeMPA methodology, does not insist on a consolidated debt management office, it does reduce the risk of uncoordinated central government borrowing and expedites the logistics involved in developing and obtaining approval for an overall debt management strategy. Maldives and Nepal have plans to consolidate debt management activities, but they have not been fully carried out. Pakistan put in place a Debt Policy Coordination Office to coordinate the five separate units that manage parts of the public debt portfolio, but in March 2020 it announced a plan to consolidate the units into one debt office. Sri Lanka also has several times made plans to set up a single debt office but has yet to put them in place.

The level of transparency across economies is mixed. Maldives has since 2018 produced a regular, comprehensive bulletin on public debt, while the central banks of Sri Lanka and Pakistan provide some data in monthly or quarterly statistical releases. All economies except for Nepal have published a debt management strategy, although Bangladesh produced its strategy in 2014 and Sri Lanka its first in 2019 by setting up a working group.

The only country from East Asia in Group 3 is Mongolia, which was assessed in a 2016 DeMPA as having strong debt management capacity relative to global averages, with around 55 percent of indicators scoring satisfactory (World Bank 2020). And authorities have continued to make improvements since then. Between 2011 and 2016, the country’s public debt escalated from around 35 percent of GDP to almost 90 percent, mostly through borrowing in the international capital markets, which led to a debt crisis and support being received from an IMF program and from other partners. By the end of 2019, debt levels had retreated to just over 70 percent of GDP. This debt matures between 2021 and 2024, so the portfolio has high levels of refinancing and interest-rate risk, in addition to currency risk. Domestic debt is negligible, at around 7 percent of total public debt.

Institutional capacity in the five Southeast Asian economies in this group is wide-ranging: Indonesia and the Philippines have strong and seasoned debt management operations, with Viet Nam not far behind, and Myanmar and the Lao PDR still at an earlier stage.¹¹ Viet Nam is the only country that has available DeMPA information, which was assessed satisfactory for almost 50 percent of indicators in 2011, a strong score compared with global averages. Since then, it has implemented various initiatives including a revised law, published debt bulletins, and measures to improve the functioning of the domestic debt market (World Bank 2020).

All economies participate in the ABMI, but by 2020 a meaningful secondary market has emerged only in Indonesia, the Philippines, and Viet Nam. Domestic market borrowing accounts for 60–65 percent of the public debt portfolios in these three economies. Much like the Group 2 economies, the bid–ask spread in the secondary market is a useful indicator of improvements in market efficiency over time. While market liquidity is assessed as lower than the Group 2 economies (Table 14.1), it has improved since 2004 or from when data became first available (Table 14.2).

Table 14.2 Government bonds bid–ask spreads, selected economies (basis points)

Market	2004	...	2010	2011	2012	2013	2014	2015	2016	2017	2018
Indonesia	21.4		4.8	5.0	5.9	7.6	6.0	9.2	5.2	3.3	5.3
Philippines	25.0		3.1	5.3	2.1	5.4	3.3	3.4	4.6	3.7	6.9
Viet Nam	n.a.		13.2	33.5	30.5	21.7	11.7	15.0	7.2	5.0	8.3

Note: n.a. = not applicable.

Source: ADB (2019).

Myanmar has been developing its domestic debt market since 2015, and regularly issues Treasury bills and Treasury bonds with maturities of up to five years. The bonds are concentrated into “benchmark” lines by reopening them at successive auctions. Transparency has improved in recent years, with an annual debt report presented to the legislature, and debt management strategies published on the finance ministry website. In the Lao PDR, domestic issuance is limited to Treasury bills by 2020.

All Southeast Asia economies in this group issue in the international capital markets, with the exception of Myanmar. Indonesia and the Philippines have the scale to issue benchmark bonds, with volumes of well over \$1 billion. In addition, Indonesia is one of a few emerging market sovereigns to issue in the international green bond market, which it has tapped three times since 2018. The Lao PDR has borrowed in the baht and United States dollar markets.

This group includes four economies from the Pacific: Fiji, Papua New Guinea (PNG), Solomon Islands, and Vanuatu. PNG, Solomon Islands, and Vanuatu have had DeMPAs undertaken during 2015 to 2020 with summary scores indicating fairly weak capacity in Solomon Islands and Vanuatu, consistent with the scores of other small island nations. PNG scored a little stronger than the global averages (Figure 14.1). Fiji, Vanuatu, and Solomon Islands regularly publish data on public debt. Fiji, PNG, and Vanuatu provide information on the government’s debt management strategy, either as a stand-alone report or part of the government’s budget documentation.

Fiji and PNG have large shares of domestic debt, at 75 percent and 55 percent, respectively, and in Fiji the National Provident Fund holds the majority of it. In Vanuatu, domestic debt has declined to around 15 percent of public debt, but in its debt management strategy the government commits to maintaining a small volume of bonds to ensure that the market is available, if needed.

In 2017, Fiji was the first emerging market country to issue a green bond, a F\$100 million offering in the local market.

3. FURTHER DEVELOPMENT

Given the variation in levels of institutional capacity and financing sources across developing Asia, each economy will need a tailored approach in setting priorities for development. Diagnostic tools and performance assessments, such as the DeMPA, are useful inputs for the authorities to design a capacity-building roadmap, particularly in low- and middle-income economies. Economies that rely mostly on official sources of financing and that are about to embark on domestic financing will need to take significant steps toward building debt management capacity and introducing other new sources of financing, such as the international capital markets.

The COVID-19 pandemic has severely tested the debt management capacity of all economies. The scale of its economic impact is almost unprecedented and the resulting fiscal responses have generated an increase in public debt levels that will be likely to continue for many years. Debt managers have had to move rapidly to support their governments' responses to the crisis, which has affected all aspects of their operation. Careful judgment is required in a challenging market environment, with some economies seeing severe market dislocation and capital flow reversal, particularly in the initial stages of the crisis.

Debt managers need to coordinate closely with fiscal policy decision-makers in order to guide them on the amount of additional financing that can be raised over a specific time frame. In this regard, the original annual borrowing plan (ABP) and probably also the medium-term debt management strategy (DMS) will need to be revised as the original assumptions about financing requirements, costs and sources will probably no longer apply. Central to reworking the DMS is considering the appropriate trade-off between cost and risk under the new circumstances. In some cases, this may require accepting more risk, for example through additional short-term or foreign-currency financing. Debt managers should explain to decision-makers the rationale for such changes to the DMS as it could reduce fiscal flexibility in the future.

Many economies have difficulty executing transactions in markets during periods of crisis, as debt managers have to respond to rapidly changing conditions. In domestic markets, there is greater risk of failing to attract sufficient bids to cover auctions of securities; it is necessary therefore to prepare for this eventuality by managing liquidity buffers, installing backup financing mechanisms, engaging in market communication, adjusting issuance mechanisms such as the frequency and size of auctions, and making greater use of syndication to reduce execution risk. For economies with financing requirements in the international capital markets, access has been restricted, particularly for weaker credits, with investors experiencing periods of risk aversion. Debt managers therefore need to be flexible and capable of obtaining necessary approvals quickly so as to take advantage of favorable opportunities. Some economies have used liability management operations to help stabilize markets, as has been the case in earlier crisis situations.

Debt managers must also coordinate more closely with the monetary authorities. The departure of nonresident investors from the domestic market has implications for the exchange rate and potentially foreign-exchange reserves levels. Similarly, close coordination is required when international bonds are maturing or when there is a change in plans for foreign-currency borrowing. In extreme circumstances it may be legally permissible for the government to draw on an overdraft from the central bank. This is clearly a last resort to be used only when normal financing channels have failed; the protocols for when and how this would be implemented

should be established as a precautionary measure, in coordination with the government's cash manager. In response to the COVID-19 crisis, some central banks in emerging market economies have launched programs to purchase domestic government securities, including five in developing Asia (Arslan et al. 2020). Unlike in high-income economies, bond purchases did not take place when the policy rate had reached the zero lower bound, but rather to provide liquidity and stabilize bond markets during a period of dysfunctionality.

The nature of the COVID-19 crisis has tested debt management capacity, because of the need for physical distancing and national or city lockdowns. In some cases, staff have been required to work from home and business continuity plans (BCPs) have been activated. The pandemic has amplified the need for heightened awareness of operational risk, particularly when the period of operating under the BCP extends beyond the time anticipated in the plan. In sum, debt managers have faced a perfect storm of elevated financing requirements, market dislocation, emergency operating procedures, and concerns for personal and family health.

At the time of writing, the COVID-19 pandemic and the associated economic crisis is still evolving, pressing for urgency in strengthening debt management capacity, particularly as governments face rising debt burdens that will be likely to stretch to many years. In addition, the lessons learned from earlier crises suggest that actions in two areas in particular can help economies address the challenges and any possible future shocks. The first is improving transparency in debt management, which can pay dividends within a short time. The other area is more of a long-term endeavor: developing the domestic debt market.

3.1 Improving Transparency

The need for transparency in managing public debt has long been recognized; one-sixth of the Guidelines for Public Debt Management was devoted to the topic. There are three broad reasons for this. First, the effectiveness of debt management operations can be strengthened if the objectives and the DMS are disclosed, and the authorities can make a credible commitment to meeting them.¹² Second, disclosure of the regulations and operating procedures for the primary and secondary markets for government securities assures investors that the markets are well managed. Third, disclosure of the stock and composition of public debt, and projected budget needs and financing intentions reduces uncertainty for investors, which improves outcomes for the government.

The value of transparency was confirmed by the economies' experiences during the global financial crisis of 2008–2009. In 2010, debt managers from 33 high-income economies and emerging market economies met to discuss lessons learned from the crisis and agreed on 10 guiding principles (IMF 2010). Half of them relate to transparency and communication.

While there may be a reluctance to announce negative news, there is little to be gained in the long term from withholding or delaying materially important information. Investors and financial intermediaries closely monitor economic and other relevant developments and, in the absence of official announcements, will infer the implications for the level and mix of government financing. There is a risk that their conclusions may be worse than the reality. Debt managers should coordinate closely with the fiscal authorities and provide guidance to markets as soon as is reasonably practicable. There is also some empirical evidence that improving transparency in the provision of data can lower borrowing costs for emerging market economies (IMF 2017a).

The level and timeliness of disclosures on public debt and its management across economies vary a great deal, as outlined in the section on Debt Management Capacity in Developing Asia. This is an area where there are few exogenous constraints on the authorities; institutional capacity can be built by deciding that transparency is a priority and allocating resources accordingly. While debt managers generate much of the information and data, they must collaborate with the fiscal and political authorities on projections for future borrowing.

Some economies go beyond basic transparency measures by developing an investor relations function, which in practice extends to a range of stakeholders, including rating agencies, financial intermediaries, financial and mainstream media, and the general public. The investor relations program aims, first, to build trust and develop a long-term relationship with investors and other stakeholders by providing relevant data and information and maintaining active dialogue. Second, it seeks to obtain feedback on investors' preferences and how the debt manager could improve performance. These relationships can pay dividends during a crisis and give stakeholders greater confidence in knowing they are receiving accurate and timely information.

The Institute of International Finance (IIF) has developed a framework to assess the quality of investor relations and data dissemination practices of emerging market economies, based on a set of 20 criteria for the evaluation of investor relations practices and a set of 23 criteria for the evaluation of data dissemination practices (IIF 2019). The 2019 assessment covered 38 economies, mostly those that are active in the international capital markets, including eight in developing Asia.¹³ Indonesia had the maximum score for investor relations, together with five economies in other regions; scoring also the highest in Asia for data dissemination practices. The Philippines and Thailand scored strongly for both measures, whereas the PRC and Viet Nam scored the lowest in Asia, with Viet Nam being one of four economies globally with scores in the lowest quartile.

3.2 Domestic Debt Market Development

The importance of a domestic debt securities market for the efficient functioning and resilience of the financial system has long been recognized in Asia, as evidenced by the ABMI. The government securities market plays a central role by providing (1) a benchmark yield curve for pricing private sector debt securities and other contracts, such as derivatives; (2) a low-risk and liquid instrument for use as collateral, which underpins the money markets and supports liquidity management operations of the central bank; (3) an investment alternative with little or no risk of default for investors; and (4) impetus to develop market infrastructure (payment and settlement systems) and a strong legal and regulatory framework. As noted earlier, Singapore and Hong Kong, China developed a local government bond market to derive these benefits, even though they had no fiscal need to borrow. Other economies, too, such as Australia and New Zealand, have made commitments to maintain certain minimum volumes of government bonds outstanding in order to support efficient market functioning.

For the government, a well-functioning debt securities market allows financing in local currency and at long tenors, overcoming balance sheet mismatches.¹⁴ Currency mismatches have played a significant role in most major financial crises that had an impact on emerging market economies since the early 1980s (Committee on the Global Financial System 2007). But the global financial crisis of 2008–2009 was different—major emerging market economies

withstood severe dislocation in currencies, rates and spreads. In part this was attributed to the significant reduction in the share of external debt in government debt portfolios earlier in the decade, particularly in emerging Europe and Latin America.¹⁵ Other factors that supported the favorable outcome were improved macroeconomic management and measures to extend the maturity of domestic debt.

The contrasts across developing Asia on the level of domestic market development could not be more extreme, as discussed earlier: nine economies rely entirely on domestic financing, whereas 13 have no domestic market at all. And the economies in the middle cover the full range—from those just starting on the journey to those with fairly liquid secondary markets. Several enabling conditions shape the potential for market development: macroeconomic performance, scale and structure of the financial sector, and financial sector soundness. For example, high and volatile inflation, high levels of dollarization, high risk of debt distress, or little need by the government to source market financing would inhibit the emergence of a market. Similarly, financial repression, a limited domestic savings base, or an unsound banking sector would militate against a viable market.

The framework for developing local-currency bond markets has been well understood for many years and can be summarized as comprising six building blocks:¹⁶

1. *Money market*: A reliable short-term money market yield curve supports the pricing of longer maturities, and government securities underpin the repo markets. The precondition for a well-functioning money market is a liquid and efficient interbank market.
2. *Primary market*: The choices made by government debt managers will shape the maturity structure and strongly influence the liquidity of the market.
3. *Investor base*: A well-diversified investor base ensures demand for government securities at a range of tenors and under varying market conditions; it also supports liquidity.
4. *Secondary market*: A liquid secondary market provides near-continuous pricing that guides yields at which the government and other issuers can sell in the primary market.
5. *Financial market infrastructure*: This includes payment, settlement, and custody systems that support safe, cost-effective and convenient transacting.
6. *Legal and regulatory framework*: Investors require assurance that the legal and regulatory framework provides sound underpinnings for the operation of the market.

As can be seen, the process of developing a government securities market is complex and involves a broad range of elements and numerous interactions, requiring a collaborative effort with the public debt manager, the regulator, the central bank, and market participants. Economies in developing Asia with no, or with a limited volume of, domestic government securities should consider the enabling conditions carefully. The easing of any constraints in this regard is an important first step and will strongly influence the pace and shape of development to follow.

For the many economies in the middle, the development process can be informed by the “building block” approach, and the IMF and the World Bank are creating indicators to measure the level of development for each (IMF and the World Bank 2020). In addition, there is a wealth of economy experiences that can be tapped in Asia, as well as globally, that can provide guidance on tackling common issues across economies.

Even the high-income economies and others that rely on the domestic market need continuous improvement, as is the case in OECD economies. There is always scope for improving

market efficiency and resiliency in the context of a changing landscape, including technology, shifts in the investor base, evolution of the dealer community, regulatory developments, and introduction of new instruments.

4. NEW OPPORTUNITIES AND CHALLENGES

Institutional capacity to manage public debt needs to keep pace with new opportunities in markets, such as the rise of environmental, social and governance (ESG) investing. It can also be adapted to support governments' efforts to manage fiscal risk, and three areas are outlined in this section: (1) a holistic approach by managing risk in an asset–liability management framework; (2) explicit contingent liabilities; and (3) risk transfer using market instruments.

4.1 Environmental, Social, and Governance

The instruments available to public debt managers continue to expand: Islamic finance has grown rapidly in the last 20 years, with Malaysia an early adopter and a significant issuer. Singapore was the first non-Muslim majority country to issue sukuk in 2009. More recently, governments have starting tapping the ESG investing market. Each innovation requires the development of institutional capacity, as these markets impose greater requirements than those when issuing conventional bonds.

Bond markets have seen increasing interest in ESG investing, particularly in green bonds, as described in Chapter 16 in this volume. This has created opportunities for borrowers to broaden and diversify their investor bases, including governments. In 2017, Fiji was the first developing economy in the world to issue a green bond, and other government issuers in the region include Indonesia; Hong Kong, China; and the ROK.

Issuing in the ESG market requires an expanded debt management capacity, as there are extra steps compared with using the conventional bond market, as fully set out in Chapter 16. The main distinguishing feature of ESG securities is that the proceeds must be allocated to expenditures or investments that are eligible, as defined by global standards. This requires the government debt manager to work with line ministries to identify eligible expenditures and develop a framework to ensure that the allocation process can be monitored and reported, in order to provide accountability to investors. Furthermore, an independent entity must be engaged to provide assurance that the bond issue and framework meet relevant standards. For a first-time issuer the process could be expected to take at least six months.

4.2 Fiscal Risks

Sovereign asset–liability management

Sovereign asset–liability management (SALM) draws insights from the ALM practices of financial institutions, which analyze and manage mismatches between the cash flow of assets and liabilities. In this way, exposure to currency, interest-rate, and liquidity risks can be controlled in line with their business objectives and risk tolerance. The concept has extended to the public sector with similar objectives, and a joint analysis of risks in liability and financial asset portfolios can have advantages over separate management (Das et al. 2012; and Irwin and Parkyn 2009).¹⁷ It allows the identification of opportunities to create hedges across public

debt and asset portfolios, that is, adjusting portfolio composition to reduce risk at an aggregate level. Or, natural hedges may be identified, which could reduce the need for managers of individual portfolios to lay off risks in financial markets.

However, implementing SALM in practice is challenging for two broad reasons. First, unlike a financial institution, many sovereign assets are nonfinancial in nature (such as land, buildings and infrastructure). For most sovereigns this means that there is a net financial liability, that is, liabilities exceed the financial assets, so there are limits on the extent to which conventional ALM can be applied. In response, some practitioners and academics have expanded the boundary of SALM to include fiscal flows, recognizing that the government's revenues are primarily taxes, which do not have a direct financial relationship with the government's fixed assets.¹⁸

The objective of this expanded analysis is to identify a public debt (or net debt) portfolio that "hedges" the primary balance over time. Founded on the economic theory of tax smoothing, it argues that governments should aim to smooth tax rates over time to reduce deadweight losses.¹⁹ If public debt can be structured such that debt-servicing costs co-vary with the primary balance, it would reduce the need to adjust tax rates. A useful instrument to achieve this outcome would be a GDP-linked security, where the government would pay a higher rate of interest when GDP growth is strong and tax revenues are buoyant (and vice versa). The case for GDP-linked bonds, and other state-contingent instruments, has been argued for some time.²⁰ However, in practice their use has been confined largely to sovereign debt restructuring. Some of the reasons for the lack of uptake are lags and revisions in GDP data; a high liquidity premium demanded by investors in the early stage of market development; adverse selection and moral hazard risks; pro-cyclical investor demand; migration of excessive risk to the private sector; and adverse political economy incentives (IMF 2017b).

Instead, governments have analyzed combinations of available instruments that would provide some countercyclicality to the primary balance; and the use of inflation-indexed instruments has increased in recent years, in part due to this property. Other state-contingent instruments, such as those with payouts related to commodity prices, have also seen interest, as discussed in the section, Transfer of risk to markets. In practice this analysis is complex and sensitive to the assumptions made, but it has helped shape portfolio choices in several economies.

A second challenge for SALM is that public sector assets and liabilities are managed by various entities, such as the finance ministry, the central bank, state-owned enterprises, and financial institutions. These entities have a range of governance arrangements, and many enjoy statutory or policy independence—with good reason.

Typically, no entity is assigned the responsibility of overall financial risk analysis—each entity operates separately. Amante et al. (2019) find that in cases where SALM has been successfully implemented, there has been negotiation and a "meeting of minds" between officials in finance ministries and central banks. They characterize SALM principles as being implemented in four situations:

1. *Coordinated management of foreign-currency reserves with foreign-currency debt.* This is based on the portion of the reserves that is regarded as stable through time (examples: Canada, Denmark, Hungary, New Zealand, Turkey, Sweden, and the United Kingdom).

2. *Managing asset levels to cover maturing liabilities during adverse market conditions.* This supports the management of liquidity risk (examples: Denmark, New Zealand, South Africa, Turkey, and Uruguay).
3. *Transactions between the central bank and government that strengthen policy outcomes, reduce cost and reduce risk.* This is usually addressing a sizable build-up of liabilities on a central bank balance sheet, such as sterilizing the buildup of foreign-currency reserves during periods of strong capital inflows (examples: Brazil, Mexico, Uruguay, and the Russian Federation).
4. *Analyzing the variables that drive government revenues as an input to developing debt management strategies.* Based on the economic theory of tax smoothing.

The debt management entity manages the largest financial position—central government debt—and with its skills in financial risk management, it is well placed to take a leadership or coordinating role in analyzing risk across the sovereign balance sheet. Nevertheless, this has implications for institutional capacity, including resources, skill sets, and coordination mechanisms. In Uruguay, this grew organically from a network of officials and then was formalized with a high-level coordinating committee, with broad terms of reference (Amante et al. 2019). Within the Asian region, the Ministry of Finance of Indonesia has analyzed financial risk across the public sector balance sheet for a number of years. A sub-directorate within the Directorate General of Budget Financing and Risk Management was established to focus on this task (see Box 14.2).

BOX 14.2 SOVEREIGN ASSET–LIABILITY MANAGEMENT IN INDONESIA

The Ministry of Finance of Indonesia began analyzing financial risk across the public sector balance sheet in the late 2000s, initially focusing on the balance sheets of the central government and the central bank. In 2015, it established a sub-directorate within the Directorate General of Budget Financing and Risk Management to focus on sovereign asset–liability management (SALM).

In November 2019, it published on the ministry website an analysis of three risks (currency, liquidity and solvency) for the central government, the Bank Indonesia (the central bank), and seven major state-owned enterprises from 2011 to 2018. The analysis showed that while foreign-currency liabilities were over \$150 million equivalent by the end of the period, the foreign-currency assets (mostly reserves) offset much of this exposure: the net liability ranged from around \$7 billion to \$35 billion over the period. Therefore, the exposure of the public sector balance sheet to changes in the value of the Indonesian rupiah was much less than public sector debt figures would suggest.

The data on exposure to currency risk were complemented by a sensitivity analysis, based on a depreciation of the rupiah of 10 percent and 40 percent, which showed the potential impact on net worth. Given the magnitude of net worth, the risk was viewed as manageable. (Information on the exact composition of foreign-currency reserves was limited, but two scenarios were tested.)

The presentation also provided details of how the consolidated balance sheet was constructed, that is, the cross-holdings between entities that needed to be eliminated.

The Ministry of Finance intends to expand the coverage of entities in the analysis and continues to refine the methodology.

Source: Directorate of State Financial Risk Management. 2019. Sovereign Asset Liability Management. <https://www.djppr.kemenkeu.go.id/page/load/2677> (accessed 16 September 2020).

Contingent liabilities

Contingent liabilities may be explicit, that is, the government has entered into a contract to provide support in certain circumstances, such as guarantees, or they may be implicit in nature. Chapter 11 in this volume describes contingent liabilities in detail, as well as their use in Asia.

Given the potential impact of explicit contingent liabilities on public finances, governments require effective institutional capacity to use them as a policy instrument, including a framework that controls their use, for example the circumstances in which they will be utilized and limits on the volumes of guarantees that may be granted. Effective processes need to be established to ensure that individual contracts conform to the policy framework and are recorded and reported appropriately. With procedures in place and a control environment to manage processes and operational risk, the government debt manager is well placed to perform some of these functions.

The OECD's survey of 33 economies revealed that the debt managers' extent of involvement in this area varies widely across economies, as well as by type of contingent liability.²¹ In two-thirds of the economies, they had a role in the management of contingent liabilities, largely credit guarantees (contracts where the government assumes all or part of the credit risk of a loan extended to another party). The predominant function performed was monitoring and reporting guarantees; around half also calculated the expected cost, that is, an analysis of the probability of the guarantee being called and, if so, the probable size of the payment. The survey also showed that debt managers had comparatively little involvement in the management of other contingent liabilities that were considered, such as public-private partnership guarantees, program loan guarantees (e.g., for students or housing), and government insurance schemes.

If the debt manager were assigned to manage contingent liabilities, capacity building would probably be required. While the management of currency, interest-rate and liquidity risks is a core responsibility of the debt manager, usually managing credit risk is not. Assessment of credit risk may be required as part of the decision-making process for granting a guarantee; governments that perform this analysis use a number of techniques, as described in Bachmair (2016). It may also be assessed on an ongoing basis as part of monitoring a portfolio of credit guarantees.

Transfer of risk to markets

It is possible to transfer some fiscal risks to the insurance or capital markets, for example, exposure to commodity price risk and natural hazards. A number of economies have managed risk in this way, as described in Chapter 15 in this volume. This requires government to use financial instruments or structures that may not be part of the existing debt management toolkit, such as swaps, options, reinsurance contracts and catastrophe bonds.

This chapter identifies a number of challenges to the use of these tools, including gaps in the legal framework and clear institutional responsibility for identifying and measuring the risks,

as well as deploying solutions to mitigate them. The public debt management entity would be a logical candidate to perform this role, particularly as tools are typically based in the global capital markets. Nevertheless, significant capacity building would be required to analyze new types of risk and to put in place the enabling environment to transact, including laws, derivatives agreements, risk management framework, and skill sets.

5. CONCLUSION

Poorly managed public debt portfolios can contribute to debt sustainability problems by allowing the build-up of financial risk, such as currency and interest-rate risks, which can threaten the health of public finances as a crisis looms.

Effective debt management capacity is therefore one pillar supporting sustainable public debt levels. However, it is not a guarantee of sustainability—it is possible for a government to have a well-managed and low-risk debt portfolio but face sustainability concerns because of too much debt. Fiscal institutions need to be effective, too.

Many of the 46 developing Asian economies have invested significantly in debt management capacity in recent decades, placing them in a good position to weather the COVID-19 crisis. At one end of the spectrum are those that rely mostly on domestic debt markets to finance government, which increases resilience in turbulent times such as these. At the other end are those that rely on financing from official sources, which highlights the need for an effective international response.

Given these divergent positions, and the diversity of circumstances in between, there are no universal prescriptions on actions needed to strengthen capacity. Each economy requires its own roadmap, and this chapter provides color on the types of challenges they face. Nevertheless, the lessons learned from earlier crises suggest that actions in two areas in particular can help economies deal with this event and shocks that may come in the future. One is to improve transparency about public debt and its management, which can be carried out in the short run. The other is developing the domestic debt market, which has a longer time frame.

There are new opportunities for governments in the borrowing arena and to manage fiscal risks more effectively. This chapter identifies innovations and possibilities in four areas: (1) ESG investing; (2) sovereign asset–liability management; (3) management of explicit contingent liabilities; and (4) transferring risks arising from commodity prices and disasters triggered by natural hazards to markets. While these offer opportunities to reduce costs, increase returns, and reduce risk, investment in institutional capacity is usually required. In some of these areas the case can be made that building that capacity in the public debt management function is an efficient solution, as it has a strong base in risk analysis, transaction execution, and management of operational risk.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. International Monetary Fund (IMF) and the World Bank (2014). The original and revised guidelines were based on wide consultation with public debt managers in economies of all income levels.
3. World Bank (2015). This is a revision of the original, which was finalized in 2009.
4. “Small states” were defined in the study as having a population of less than 2 million. The sample included Samoa, Solomon Islands, Maldives, and Bhutan.

5. In this chapter, data for Afghanistan were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.
6. At least one activity; in some economies there were more (World Bank 2020; ADB 2018).
7. The economies in the initiative are the members of the ASEAN, the PRC, Japan, and the ROK—collectively known as ASEAN + 3.
8. Detailed guides on the structure of each market and descriptions of the development process can be found on the ABMI website: <https://asianbondsonline.adb.org/abmg.php>.
9. India plans to set up a public debt management agency and has been strengthening the capacity of the Ministry of Finance as an interim step.
10. There is no available information on Turkmenistan.
11. In this chapter, data for Myanmar were valid as of 14 December 2020 and may have changed thereafter because of major recent events affecting the country.
12. The same thinking applies to transparency in fiscal and monetary policies. See IMF (1999; 2007).
13. The PRC, Indonesia, the ROK, Malaysia, Pakistan, the Philippines, Thailand, and Viet Nam.
14. For example, see Eichengreen and Hausmann (1999) who used the term “original sin” to describe the situation where debt managers had to choose between two types of risky borrowing: at long-term maturities, but in foreign currencies; or in domestic currency but at very short-term maturities.
15. Anderson et al. (2010). The authors analyzed the largest 24 emerging market economies, and the average level of external debt fell from 75 percent to 22 percent of total public debt between 2000 and 2009.
16. See IMF and the World Bank (2001) and IMF and the World Bank (2020).
17. The term “sovereign” refers to the public sector including the central government, state-owned enterprises, the central bank, pension funds, and other entities over which the government has financial control.
18. See for example Wheeler (2004) and IMF (2018). The combined accounting and fiscal balance sheet has been named “comprehensive” or “inter-temporal”.
19. See Bohn (1990) and Barro (1995).
20. For example, Borensztein and Mauro (2004) and Benford et al. (2018).
21. Ulgenturk (2017). The survey was undertaken in 2013.

REFERENCES

- Amante, A., P. Anderson, T. Jonasson, H. Kamil and M. Papaioannou. 2019. Sovereign Asset and Liability Management in Emerging Market Countries: The Case of Uruguay. *IMF Working Paper*. WP/19/290. Washington, DC: IMF.
- Anderson, P.R.D., A.C. Silva and A. Velandia-Rubiano. 2010. Public Debt Management in Emerging Market Economies: Has this Time been Different? *Policy Research Working Paper*. 5399. Washington, DC: World Bank.
- Arslan, Y., M. Drehmann and B. Hofmann. 2020. Central Bank Bond Purchases in Emerging Market Economies. *BIS Bulletin* No. 20. Basel: Bank for International Settlements.
- Asian Development Bank (ADB). 2017. *The Asian Bond Markets Initiative: Policy Maker Achievements and Challenges*. Manila.
- Asian Development Bank (ADB). 2018. Strengthening Public Debt Management through Policy-Based Operations. *Pacific Economic Monitor*. December. <https://www.adb.org/sites/default/files/publication/471196/pem-december-2018.pdf> (accessed 20 September 2020).
- Asian Development Bank (ADB). 2019. *Good Practices for Developing a Local Currency Bond Market: Lessons from the ASEAN+3 Asian Bond Markets Initiative*. Manila.
- Bachmair, F.F. 2016. Contingent Liabilities Risk Management: A Credit Risk Analysis Framework for Sovereign Guarantees and On-Lending. Country Experiences from Colombia, Indonesia, Sweden, and Turkey. *Policy Research Working Paper*. 7538. Washington, DC: World Bank.
- Barro, R.J. 1995. Optimal Debt Management. *NBER Working Papers*. 5327. Cambridge, MA: National Bureau of Economic Research.

- Benford, J., J.D. Ostry and R. Shiller (eds). 2018. *Sovereign GDP-Linked Bonds: Rationale and Design*. London: CEPR Press.
- Bohn, H. 1990. Tax Smoothing with Financial Instruments. *The American Economic Review*. 8(5), pp. 1217–30.
- Borensztein, E. and P. Mauro. 2004. The Case for GDP-Indexed Bonds. *Economic Policy*. 19(38), pp. 166–216.
- Committee on the Global Financial System. 2007. Financial Stability and Local Currency Bond Markets. *CGFS Papers*. No. 28. Basel: Bank for International Settlements.
- Das, U.S., Y. Lu, M.G. Papaioannou and I. Petrova. 2012. Sovereign Risk and Asset and Liability Management: Conceptual Issues. *IMF Working Paper*. WP/12/241. Washington, DC: IMF.
- Eichengreen, B. and R. Hausmann. 1999. Exchange Rates and Financial Fragility. *NBER Working Paper*. No. 7418 (November).
- Institute of International Finance (IIF). 2019. Principles for Stable Capital Flows and Fair Debt Restructuring: Report on Implementation by the Principles Consultative Group. <https://www.iif.com/Publications/ID/3608/2019-PCG-Report-on-Implementation-of-the-Principles> (accessed 2 September 2020).
- International Monetary Fund (IMF). 1999. Code of Good Practices on Transparency in Monetary and Financial Policies: Declaration of Principles. Washington, DC.
- International Monetary Fund (IMF). 2007. Code of Good Practices on Fiscal Transparency. Washington, DC.
- International Monetary Fund (IMF). 2010. Stockholm Principles: Guiding Principles for Managing Sovereign Risk and High Levels of Public Debt. <https://www.imf.org/external/np/mcm/Stockholm/principles.htm> (accessed 26 September 2020).
- International Monetary Fund (IMF). 2017a. The Effects of Data Transparency Policy Reforms on Emerging Market Sovereign Bond Spreads. *IMF Working Paper*. WP/17/74. Washington, DC.
- International Monetary Fund (IMF). 2017b. State-Contingent Debt Instruments for Sovereigns. *IMF Policy Paper*. May 2017. Washington, DC.
- International Monetary Fund (IMF). 2018. Managing Public Wealth, World Economic and Financial Surveys. *Fiscal Monitor*. October. Washington, DC.
- IMF and the World Bank. 2001. *Developing Government Bond Markets: A Handbook*. Washington, DC.
- IMF and the World Bank. 2014. *Revised Guidelines for Public Debt Management*. Washington, DC.
- IMF and the World Bank. 2019. *Uzbekistan: Developing a Medium-Term Debt Management Strategy*. https://www.mf.uz/media/file_en/debt/MTDS_report_17_10_2019.pdf (accessed 24 September 2020).
- IMF and the World Bank. 2020. Recent Developments on Local Currency Bond Markets in Emerging Economies. Staff Note for the G20 International Financial Architecture Working Group (IFAWG). <http://documents1.worldbank.org/curated/en/129961580334830825/pdf/Staff-Note-for-the-G20-International-Financial-Architecture-Working-Group-IFAWG-Recent-Developments-On-Local-Currency-Bond-Markets-In-Emerging-Economies.pdf> (accessed 25 September 2020).
- Irwin, T. and O. Parkyn. 2009. Improving the Management of the Crown's Exposure to Risk. *Treasury Working Paper Series*. 09/06. Wellington, New Zealand.
- Pacific Association of Supreme Audit Institutions (PASAI). 2016. Pacific Regional Report on Public Debt Management. Auckland, New Zealand. https://static1.squarespace.com/static/57019a6db6aa607cbb909ab2/t/5806f43b20099eaea984c1fb/1476850777461/PASAI+Public+debt+report+19+OCT+2016_WEB.pdf (accessed 21 September 2020).
- Prasad, A., M. Pollock and Y. Li. 2013. Small States Performance in Public Debt Management. *Policy Research Working Paper*. WPS6356. Washington, DC: World Bank.
- Ulgenturk, L. 2017. The Role of Public Debt Managers in Contingent Liability Management. *OECD Working Papers on Sovereign Borrowing and Public Debt Management*. No. 8. Paris: OECD Publishing.
- Wheeler, G. 2004. Sound Practice in Government Debt Management. Washington, DC: World Bank.

- World Bank. 2015. Debt Management Performance Assessment (DeMPA) Methodology. Washington, DC.
- World Bank. 2019. Maldives—Debt Management Performance Assessment (DeMPA). Washington, DC. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/964251564149648484/maldives-debt-management-performance-assessment-dempa> (accessed 25 September).
- World Bank. 2020. Debt Management Monitor: DMF Country Profiles and Debt Management Technical Assistance. Issue 5. May. Washington, DC.
- World Bank and the IMF. 2018. G-20 Note: Improving Public Debt Recording, Monitoring, and Reporting Capacity in Low and Lower Middle-Income Countries: Proposed Reforms. Washington, DC.

15. Fiscal insurance: a new tool of fiscal stability

Luis de la Plaza¹

1. INTRODUCTION AND CONTEXT

Exogenous shocks, ranging from disasters triggered by natural hazards, pandemics, or sudden commodity price adjustments, can have an extremely negative impact on the fiscal balances of both developed and developing economies. When such shocks occur, governments implement the necessary fiscal adjustments, which could be severe and long-lasting, while they mobilize national and international resources to deal with the short-, medium-, and long-term consequences.

Historic trends show that emerging and developing economies (EMDEs) have been the least equipped to prepare for and deal with the aftermath of exogenous shocks. In addition to the obvious lack of resources, these economies typically do not have the necessary expertise and the legal and regulatory frameworks with which to anticipate and deal effectively with consequences of the crisis. Thus, following the initial impact of the shock, EMDEs are forced to divert already scarce resources from their developmental and social agendas, which are often either temporarily postponed or permanently canceled. The inefficient allocation of resources negatively impacts debt levels and sustainability, credit ratings and economic growth.

Disasters that are triggered by natural hazards can have an extremely adverse economic impact on all countries but can be especially calamitous for EMDEs, since they usually have lower construction standards, poorer land use planning, and insufficient levels of insurance penetration. Therefore, the negative impact of disasters on the gross domestic product (GDP) of developing nations has in the past shown to be much higher than that of the advanced economies. With the increasing trend in urbanization and the exacerbating effects of climate change, including the frequency and severity of extreme meteorological events, the fiscal burden on these economies is expected to continue to rise noticeably.

The Southeast Asia and Pacific regions—especially the Philippines, Indonesia, and the Pacific islands—are particularly prone to disasters because they are either located within active seismic regions or because recurrent and strong meteorological events occur periodically in the area. Although almost all Asian economies are now considered to be middle-income, they are the most heavily affected by natural hazards, which turn into widespread catastrophes. They are also among the most exposed to the consequences of climate change. For example, eight out of 10 people affected globally by disasters triggered by natural hazards during 2001–2020 lived in emerging and developing Asia.² Furthermore, Asia's insurance-to-loss ratio of approximately 4 percent in 2020 compared unfavorably to that of the United States (US) (68 percent) or Europe (29 percent) (Dure 2021).

Commodity price volatility also presents a distinct high risk to EMDEs as their economies are often pegged to the export or import of a specific good or small group of products. Commodity prices are highly volatile and unpredictable, and their variability has created havoc in the fiscal balances of EMDEs in the past. For example, Indonesia and India are net exporters and importers of oil, respectively, and subject to pronounced price swings, while Viet Nam's economy is highly geared to and dependent on the production of coffee and is vulnerable to prolonged periods of insufficient or excessive rainfall and other weather-related events.

Exposure and vulnerability to exogenous shocks invariably strain public finances and can lead to potentially sizable debt spikes generated by emergency operations. This, in turn, can have damaging and long-lasting effects on a country's debt rating, overall creditworthiness, and ultimately, perception of financial sustainability. Indeed, the negative impact of disasters has led to limited accessibility to international financial resources by affected countries and significant downgrading of their credit rating, which in the case of EMDEs, create difficulties in financing post-disaster recovery costs compared with developed countries (An and Park 2019). More recently, several EMDEs (such as South Africa) have suffered either specific credit rating downgrades or negative forward outlooks in the aftermath of the COVID-19 global crisis, increasing the debt servicing burden for those countries for years to come.

EMDEs are therefore encouraged—and some have already made significant advances in this area—to take a renewed look at their risk management practices and address their vulnerability to exogenous shocks with a more targeted approach. This necessarily entails that EMDEs (1) better understand, internalize and quantify the risks they face; and (2) formalize in a more systematic manner a process of “risk-layering” to determine which risks (according to their frequency and severity) are worth retaining, which are to be self-insured and/or financed, and which risks ought to be transferred to the market.

To that end, there are persistent calls for EMDEs to engage more actively in programs of targeted “fiscal insurance”, which aim to transfer to the market a specific layer of risk, thus partially insulating a country's fiscal accounts from the harmful impact of exogenous shocks and achieving a greater degree of sustainability in their development programs. These fiscal insurance programs need to be construed not as a complete solution in and of themselves, but rather as focused, partial solutions ingrained within a more comprehensive and systemic risk management strategy.

Consequently, policy actions need to be twofold. First, countries need to shift from an arcane ex-post approach (i.e., crisis response *after* the occurrence of a specific event) to a more explicit ex-ante framework (i.e., risk reduction, preparedness, insurance, etc., *before* the event occurs). Second, policy makers need to take advantage of a readily available full menu of well-tested products and services in international financial markets in order to address the risks more efficiently.

Clearly, EMDEs have a compelling need to engage more actively on the issue of fiscal insurance. Still, and as we will see, a series of obstacles and constraints on both the demand and supply sides are now contributing to these economies' insufficient uptake of readily available financial products and services that are routinely utilized by advanced countries. In this light, there is rekindled pressure for multilateral development banks (MDBs) to step in and correct this “market failure” to remedy the mismatch between supply and demand. While some MDBs have already taken on this challenge, their efforts have proven so far timid and insufficient. This has prompted questions as to whether a specialized, independent, sole-purpose

agency is required to bridge this gap and enable EMDEs a wider and deeper use of fiscal risk management tools.

2. DEVELOPED ECONOMIES AND FISCAL INSURANCE: A WELL-ESTABLISHED FRAMEWORK

Sufficient evidence exists among advanced, industrialized economies of state-run programs for fiscal insurance to provide a “safety net” to the population at large or to specific subsets of that population. These programs are anchored on the concept of risk-layering, a conceptual framework that, within the context of a government’s chosen risk preferences and tolerance, determines the risks to be retained, self-insured, financed, or transferred to the market.

On issues of disaster financing, for example, several successful sovereign programs have been in place for decades (some of them dating back to the 1950s), including the Federal Flood Recovery Fund of Australia, the National Disaster Compensation Fund of France, the Earthquake Reinsurance Program of Japan, the Earthquake Commission of New Zealand, and the Flood Insurance Program of the US.

On issues of commodity price volatility and for agriculture production in particular, advanced economies also provide state-run programs that can be considered fiscal insurance mechanisms. Two prominent programs include the often-maligned Common Agriculture Policy of the European Union (EU), which is essentially a system of subsidies paid to EU farmers for the main purpose of guaranteeing both minimum levels of production and ensuring a fair standard of living for those dependent on agriculture. Similarly, in the US, an elaborate government-run scheme of subsidies, insurance price, disaster aid, and export promotion aim to achieve a similar objective of ensuring price and production stability for US farmers.

Although these advanced economies’ schemes are often not considered instances of strict fiscal insurance, they all nonetheless highlight the fundamental *political*, albeit implicit, premise of the government as “insurer-of-last-resort”, and rest strongly on the almost universal belief that the consequences of exogenous shocks, no matter their frequency and severity and their costs, are ultimately the government’s responsibility. Therefore, rather than react *ex post* after a shock has occurred, advanced economies have deliberately chosen to design policy frameworks (public and/or private) to address their country’s specific vulnerability either in the form of self-insured sovereign funds, government-sponsored insurance pools, or compulsory private sector insurance or reinsurance schemes. These policy frameworks and insurance schemes serve as a “first line” of defense by advanced economies, to some extent, by exonerating them from having to react after an event has occurred.

3. EMERGING AND DEVELOPING ECONOMIES AND FISCAL INSURANCE: A GROWING TREND?

For EMDEs, however, such fiscal insurance programs are exceedingly rare, due to a combination of scarce resources, deficient expertise and, arguably, lack of political will. Few EMDEs, as we shall see, have already started in recent years to address their vulnerabilities to exogenous shocks. A noteworthy example in the developing world is the case of Mexico, which has implemented for many years fiscal insurance programs in both disaster financing as well as commodity (i.e., oil) price volatility.

3.1 Mexico

Disaster risk management

Mexico is exposed to a wide variety of geological and hydro-meteorological phenomena. Ranked as one of the most seismically active countries in the world, it experiences annually an average of more than 90 earthquakes with a magnitude of 4.0 or above on the Richter scale. In addition, approximately two-fifths of Mexico's territory and over a quarter of its population are exposed to storms, hurricanes and floods (World Bank 2012). Within this context, Mexico stands at the forefront of initiatives to develop comprehensive disaster risk management structures and programs, including disaster risk financing and insurance strategies to manage the fiscal risk posed by disasters. Mexico was an early adopter of disaster risk management financing schemes through the establishment in the late 1990s of the Natural Disaster Fund (Fondo Nacional de Desastres Naturales, or FONDEN), which was created as a mechanism to support the rapid rehabilitation of federal and state infrastructure affected by adverse natural events. FONDEN was first created as a budget line in the Federal Expenditure Budget of 1996 before it became operational in 1999. Funds from FONDEN could be used for the rehabilitation and reconstruction of (1) public infrastructure at the three levels of government (federal, state and municipal); (2) low-income housing; and (3) certain components of the natural environment (e.g., forestry, protected natural areas, rivers and lagoons). In the early 2000s, however, in recognition of the need to promote stronger ex-ante disaster risk management, the Government of Mexico began to allocate funding expressly devoted to *preventive* activities. Although resources for prevention remain significantly smaller than those for reconstruction, the Mexican government has continued its effort to shift focus and funding from ex-post response to ex-ante disaster risk management. To that end, in 2005, the Government of Mexico empowered FONDEN to develop a catastrophe risk financing strategy to leverage its resources, relying on a layered combination of risk retention and risk transfer instruments which culminated in 2006 with FONDEN issuing the world's first government catastrophe bond (CAT bond).³ The bond has since been periodically renewed. FONDEN has provided to date one of the most sophisticated disaster-financing vehicles in the world, continuously evolving to meet Mexico's financial requirements for addressing the effects of disasters triggered by natural hazards and it has become an efficient mechanism to partially insulate the government's budgets in the event of such disasters.⁴

Commodity hedging

On the commodity front, as the 12th largest oil producer in the world, Mexico has also been a leader, with the Mexican government systematically hedging oil price risk for at least during the last 20 years through a commodity hedging program. Known to be the largest in the world, this program was formally and officially set up in 2001, although there is anecdotal evidence of Mexico having used market instruments as early as the 1990s to reduce their exposure to oil price volatility.

Mexico's oil sector is controlled by the fully state-owned company, Petroleos Mexicanos (PEMEX), with oil-related risks directly affecting Mexico's public finances. This has prompted the Mexican Treasury to actively conduct oil hedging operations. On average, during 2000–2016, oil-related revenues represented approximately 32 percent of total fiscal revenues, of which 47 percent corresponded to oil exports and the remainder to net domestic

sales of petroleum products. Over the same period, oil exports averaged 11 percent of total exports. While the importance of oil for the economy and Mexico's public finances has deteriorated since the mid-2000s, oil revenues still represented approximately 16 percent of total fiscal revenues and nearly 5 percent of total exports in 2016 (Ma and Valencia 2018).

The Mexican Treasury conducts these operations with the main objective of reducing the risk of fiscal revenue shortfalls during any given fiscal year. It includes in its annual budget an assumption on the export price of its oil for the subsequent fiscal year, computed as the weighted average between historical prices and futures. To reduce the risk of a decline in oil-related revenues, the Mexican Treasury purchases Asian put options with strike prices equal or close to the oil price assumed in the budget.⁵ The use of Asian (e.g., average price) options allows the Treasury to lock in a minimum price for the whole fiscal year. The program is executed through several contracts with private foreign banks as counterparts. While Mexico produced an average of 1 billion barrels of oil annually in 2000–2016, of which it exported roughly half, it also imported about 178 million barrels of petroleum products annually, over the same period. The domestic sale of imported petroleum products at regulated prices, which did not move one-for-one with international prices, compensated losses (or gains) in crude oil export revenues that resulted from fluctuations in international oil prices. After taking these offsetting factors into account, the Mexican Treasury hedged, on average, 29 percent of total production over the past 10 years. Since 2001, the cost of the options has averaged 0.1 percent of GDP per year and they have been exercised only on four occasions—in 2009, 2015, 2016 and 2020—with payoffs reaching, on average, 0.43 percent of GDP.

In addition to the notable case of Mexico, and only starting in recent years, a small subset of EMDEs have already started to address—often on a multi-country, regional basis—their vulnerability to external shocks via sovereign and/or subsovereign fiscal insurance programs. Below is a brief description of their experiences.

3.2 Philippines

The Philippines is among the world's most vulnerable countries to disasters triggered by natural hazards, and expected to incur on average \$3.5 billion in asset losses annually due to typhoons, earthquakes and other natural hazards. In 2013, for instance, the impact of typhoon Haiyan (also known as typhoon Yolanda) resulted in the loss of 6,300 lives and an estimated \$12.9 billion in damages, equivalent to approximately 4.7 percent of the country's GDP that year (World Bank 2020).

The Government of the Philippines embarked on a comprehensive countrywide catastrophe risk model and in 2016 adopted a specific Disaster Risk Finance Strategy. This was followed in August 2017 with the implementation by the government (with support from the World Bank and the Department for International Development of the United Kingdom) of a new catastrophe risk insurance program to help it better respond to losses from climate and disaster risks.

In 2016 this program culminated with the government obtaining the Philippine peso equivalent of \$206 million in insurance coverage against losses from major typhoons and earthquakes to national government assets and to 25 participating provinces against losses from major typhoons. Insurance payouts are made when predefined parametric triggers are met.⁶

Consequently, and for instance, in December 2017, typhoon Vinta triggered a partial payout of ₱83.5 million (\$1.6 million) payable to the province of Davao del Sur.

This payout was four times the premium paid under the insurance contract and highlights the value of market-based catastrophe insurance solutions. This insurance program significantly supported the country in responding to impacts of severe disasters, acting as the last line of defense and complementing other funding sources such as the national and local disaster risk reduction management funds and contingent credit that protect against less severe events. Total annual coverage in the first year of this provincial program (2017–2018) was, as mentioned, \$206 million, with coverage nearly doubling to \$389 million in the program's renewal for the period 2018–2019.

In 2019, the World Bank provided the Government of the Philippines with a nationwide insurance coverage for a maximum of \$225 million (\$75 million for earthquakes and \$150 million for tropical cyclones) for a 3-year period through the issuance of a \$225 million CAT bond. The types of events that will trigger a payout are predefined based on the requirements of the government. If and when a qualifying event occurs, the Philippines will issue a notice to an independent calculation agent to determine the insurance payouts. The World Bank then transfers the payouts to the government as soon as a calculation report is available, within approximately one month for earthquakes and five months for tropical cyclone events, without the need to assess real losses incurred by the country. The Philippines pays an insurance premium for the coverage, which the World Bank transfers to the CAT bond investors. The premium is fixed during the life of the bond, removing the uncertainty of the cost. The CAT bonds are issued under the World Bank's Capital-at-Risk Program, which collects the proceeds from the investors and includes a swap agreement that allows the transfer of the insurance premium from the Philippines to the investor and, in the case of an eligible event, transfers the payout proceeds to the government in a timely manner. The CAT bond attracted 24 global investors, ranging from asset management companies, dedicated CAT bond funds, pension funds, and insurance and reinsurance companies. It is the first CAT bond sponsored by an Asian sovereign and listed on an Asian (Singapore) exchange. This transaction exemplifies a multilateral development bank's ability to help member countries access insurance mechanisms through the international capital markets. This CAT bond is the latest step in the Philippine government's exemplary programmatic, multi-year approach to address and minimize the negative fiscal impact of disasters in the country.

The Government of the Philippines has emerged as a leader among Asian countries in the area of financial preparedness for disasters. To help meet its post-disaster response efforts, the government makes annual allocations to the National Disaster Risk Reduction and Management Fund, standing at ₱20 billion in 2019 and ₱16 billion in 2020. In addition, the Local Government Code of 1991 mandates local government units to set aside a minimum of 5 percent of their estimated revenue from regular sources as an annual lump sum appropriation for use in relief, rehabilitation, reconstruction and other works or services in connection with calamities (ADB 2020b).

3.3 The Pacific and Caribbean Islands: Regional Risk Pooling

Disaster insurance schemes have always benefited from risk diversification across national boundaries. This fact is based on the simple principle that, although the probability of any

specific event (e.g., a typhoon) is broadly considered as *certain*, its specific *location* and *timing* are, by definition, *unknown*. Thus, addressing disasters triggered by natural hazards on a regional rather than on a limited national basis has proven to be a positive value proposition by diversifying risks and reducing premia. To that end, it is worth reviewing the examples of the ad hoc consortia of countries in the Caribbean and the Pacific islands to address their vulnerability to disasters triggered by natural hazards.

Pacific Islands: the Pacific Catastrophe Risk Insurance Company

A notable example of pooled disaster risk management financing at the sovereign level is the group of five Pacific island countries (the Marshall Islands, Tonga, Solomon Islands, Samoa, and Vanuatu), which joined forces in 2013 to address their vulnerability to natural hazards. These countries are among the top 30 countries that are most vulnerable to disasters and where, every year on average, such events cause damages worth an estimated \$300 million. Vanuatu and Tonga, for example, experience annual losses estimated at 6.6 percent and 4.4 percent of their national GDP, respectively. Over any 50-year period, it is also estimated that the region has a 50 percent chance of suffering losses in excess of \$1.3 billion, or 8 percent of the regional GDP (World Bank Treasury 2015a).

In the aftermath of a disaster, governments need immediate cash to start recovery efforts while maintaining essential public services. Traditionally, Pacific island countries have relied on donor assistance to meet such needs. But the disbursement of donor assistance is more suitable for medium-term reconstruction rather than for immediate liquidity following a specific event. Furthermore, it has been difficult for countries to access catastrophe insurance individually because coverage levels are small. As a result, the governments of these small island states often face serious liquidity shortages after a disaster, which has reduced their capacity to respond quickly to emergencies.

Working together since 2007, the Secretariat of the Pacific Community, the Asian Development Bank, the Government of Japan, the Global Facility for Disaster Reduction and Recovery, and the World Bank have helped the Pacific island countries to increase financial resilience to natural hazards and climate-related disasters through the Pacific Catastrophe Risk Assessment and Financing Initiative and also the Pacific Disaster Risk Financing and Insurance Program. A key component of the program was a catastrophe risk insurance pilot operation that was designed to cover a portion of each participating country's fiscal exposure by providing immediate liquidity in the event of a major natural catastrophe.

This pilot operation, in which the World Bank acted as an intermediary between the Pacific island countries and four reinsurance companies, placed the country-specific catastrophe risk policies on the international reinsurance market as a single, well-diversified portfolio and provided aggregate cover of a maximum of \$45 million to the participating countries, with the Government of Japan financing the premia payments. Payouts of this pilot program will be triggered by the impact of an earthquake, tropical cyclone, or tsunami (estimated by an independent modeling agency) after the occurrence of any such event. The affected country or countries will receive funds within two to three weeks.

This operation consolidated the individual country risks and presented to the market a well-diversified pool of risks, helping participating countries to achieve better terms with regard to the cost of the premium and the speed with which the affected countries will receive payment in the event of a disasters triggered by natural hazards. This pilot operation has also

helped build capacity within the participating countries, enabling them eventually to enter into financial contracts for catastrophe risk transfer on their own in the future.

Caribbean Islands: the Caribbean Catastrophe Risk Insurance Facility

The Caribbean Catastrophe Risk Insurance Facility (CCRIF) was established in 2007 with the support of the Government of Japan, the World Bank, and other donors. CCRIF provides insurance coverage against earthquakes, hurricanes and excessive rainfall to several Caribbean and Central American countries by pooling the risks of these countries and transferring a portion of the pooled risks to the reinsurance market. CCRIF's portfolio has grown since 2007 to about \$135 million, with multiple payments made to date to affected countries. CCRIF was designed as a parametric facility, which, as seen before, provides a fast and transparent payment when triggered. As a reference, the payout from CCRIF was the first to reach Haiti in the aftermath of the 2010 earthquake (World Bank Treasury 2015b).

So far, CCRIF has accessed the reinsurance market, leveraging on its portfolio diversification to provide attractive coverage to its members, with the World Bank Treasury intermediating catastrophe swaps between CCRIF and the reinsurance market for the top-risky layer of the portfolio. Additionally, and building on its long-standing operations and reputation, CCRIF decided to approach the CAT bond or insurance-linked securities (ILS) market to diversify its sources of risk capital. This market has grown considerably in recent years, attracting large amounts of capital from new investors looking for attractive returns and uncorrelated risks. The influx of new capital has pushed down pricing and created attractive opportunities for public sector issuers to obtain catastrophe risk coverage.

Consequently, on 30 June 2014, the World Bank issued a 3-year CAT bond with a principal amount of \$30 million linked to hurricane and earthquake risk in CCRIF member countries. Simultaneously, the World Bank entered into a swap with CCRIF that mirrors the terms of the bond. The proceeds of the bond were kept on the World Bank's balance sheet. Had a disaster of the magnitude specified in the terms of the bond contract occurred within its tenor, the World Bank would have passed the proceeds to CCRIF through the swap. If no such event occurred, investors would have received the principal when the bond matured. What made this CAT bond particularly innovative was the elimination of the use of a special purpose insurer. Traditionally, special purpose insurers are used to issue CAT bonds. In this case, the World Bank issued the CAT bond directly, using its new Capital-at-Risk Notes Program under the Global Debt Issuance Facility. Under this approach, the World Bank faced the capital markets, while CCRIF continued to face the World Bank in a swap format. This significantly streamlined the time and cost of the issuance process and provided investors with access to new geographic areas and perils.

Pacific Alliance multi-country catastrophe bond

Another example of risk pooling across national boundaries is the Pacific Alliance, a regional initiative that promotes the economic integration of Chile, Colombia, Mexico, and Peru to foster the mutual growth and development of members. Coincidentally, the four countries of the alliance are situated along the western part of the seismically active Pacific Rim and are prone to earthquakes, along with other disasters triggered by natural hazards. By incorporating disaster risk management as an essential part of development planning, the Pacific Alliance

countries aim to build the foundation that will support long-term recovery and sustainable development.

In 2016, the Pacific Alliance countries started to explore the use of CAT bonds to (1) expand financing options for earthquake risk beyond the scope of budget funds and without increasing sovereign debt; (2) gain access to quick-disbursing and cost-effective financing from the international capital markets; and (3) build governments' technical capacity to make use of market-based risk transfer instruments. This process culminated in February 2018 with the World Bank issuing CAT bonds that provided Chile, Colombia, Mexico, and Peru a total of \$1.36 billion in earthquake cover (World Bank Treasury 2019a). The World Bank worked with each government to accommodate its legal and regulatory frameworks and customize documentation of agreements. Five different bond classes were issued, resulting in more competitive pricing and greater investor appetite.

The 2018 Pacific Alliance CAT bond was the first simultaneous issuance by four sovereign entities, as well as the largest earthquake CAT bond ever issued, offering a combined \$1.36 billion in earthquake cover. The CAT bond attracted more than 45 global investors, ranging from dedicated ILS funds to pension funds to reinsurance companies; and it resulted in approximately \$2.5 billion in investor orders. The high demand resulted in lower premium rates that ranged between 2.5 percent and 8.25 percent of the individual country amounts under coverage (see Table 15.1).

Table 15.1 Transaction summary

Nominal aggregate amount	\$1.36 billion
Bond classes	Chile: \$500 million Colombia: \$400 million Mexico (a): \$160 million Mexico (b): \$100 million Peru: \$200 million
Tenor	3 years for Chile, Colombia, and Peru; 2 years for Mexico
Risk premium	Chile: 2.5% Colombia: 3.0% Mexico (a): 2.5% Mexico (b): 8.25% Peru: 6%

Source: World Bank (2019a).

3.4 Uruguay

Another noteworthy example of fiscal insurance, this time on issues relating to energy dependency and commodity price volatility, is the case of Uruguay, which has since 2013 started to systematically address its vulnerability to both climate change and oil reliance.

Climate change hedging: \$450 million weather derivative transaction

Uruguay's economy is highly dependent on rainfall, not only for agricultural production but also, and arguably more importantly, for energy production. With almost 80 percent of

Uruguay's energy needs being fulfilled by hydropower, the country is highly dependent on rainfall and exposed to the effects of climate change on prevailing weather patterns. When rainfall (and/or accumulated water reserves) is low, Uruguay is forced to purchase alternative fuels (mostly oil and natural gas) to use as inputs for electricity production. When the price of oil is high, generation costs become prohibitively expensive, creating problems for the national budget as these cost spikes are difficult to fully transfer to consumers. In 2012, for instance, water shortages meant that Uruguay needed to purchase other sources of energy, precisely at a time when crude oil prices were comparatively high.⁷ Hence, that year's cost of supplying demand for electricity far exceeded the country's original projections, with the government needing to finance that gap.

To insure against this fiscal and economic vulnerability, in December 2013 Uruguay executed a \$450 million weather and oil price insurance transaction (World Bank Treasury 2015c), which was also intermediated by the World Bank. The transaction insured Uruguay for a period of 18 months against the simultaneous eventuality of a pronounced drought and high oil prices. To measure the extent of a drought and potential insurance payouts to Uruguay, the transaction measured and collected daily rainfall data at 39 weather stations spread throughout the two affected river basins. If precipitation were to fall below the level set up as the trigger of the contract, Uruguay would receive a payout of up to \$450 million based on the severity of the drought and oil price levels, with such payout being larger if oil prices were high, to offset the high cost of fuel purchases. This transaction, still considered today the largest sovereign weather-derivative transaction ever executed in the market, was part of a broader legislative framework approved by the Government of Uruguay to reduce their fiscal vulnerabilities, including stabilization funds and contingent financing with private banks, and the government's commitment to a comprehensive national plan aimed at reducing vulnerability in the energy sector.

Sovereign oil hedging program

Uruguay has embarked on an ambitious, decade-long renewable energy program aimed to eventually derive 95 percent of the country's energy needs from clean, renewable resources. However, while oil makes up a declining share of Uruguay's energy mix, the country still retains a residual reliance on crude oil, importing an average 12–14 million barrels annually. As a result, an unexpected increase in oil prices could force the government to divert budgetary resources from priority areas. It can also negatively impact individual consumers and increase production costs for businesses that rely on oil and its derivative products.

Countries like Uruguay are increasingly facing uncertainty from volatile global economic conditions and are seeking support to reduce fiscal exposure to commodity price shocks. To that end, and in line with the government's risk management strategy, Uruguay's finance ministry wanted to insulate the budget from abrupt and significant increases in oil prices. Consequently, Uruguay's Debt Management Office of the Ministry of Finance designed an oil hedging program as part of the government's comprehensive risk management framework to protect the economy against global volatility and to buttress the country's macro-financial resiliency framework.

This process culminated in June 2016 with the World Bank intermediating, on behalf of the Uruguayan government, the execution of a series of derivative transactions (12-month Asian call options) with market counterparties for an aggregate notional amount of \$330 million

and on an underlying 6 million barrels, or approximately half of Uruguay's total annual oil imports. This hedging program aims to moderate the negative impact of significant oil price increases on Uruguay's fiscal budget and the overall economy. This program continues to be implemented and has since been routinely renewed by Uruguay (World Bank Treasury 2016).

3.5 Tunisia

Also relating to fiscal insurance against oil price volatility, we have the case of Tunisia, another net oil importer. Like Uruguay, Tunisia is vulnerable to increases in the prices of oil products that can impact the government's fiscal and current accounts and diminish its ability to deliver on its social programs and domestic investments.

The Tunisian government has faced significant challenges in the energy sector over the last decade, with demand for energy products growing steadily by 5 percent to 11 percent per year, while crude oil and natural gas production decreased by 15 percent and 5 percent, respectively over the same period. As a result, energy import dependency reached 49 percent of consumption in 2017, while energy subsidies accounted for 2 percent and 2.8 percent of GDP in 2017 and 2018, putting further pressure on the current account and fiscal deficits (World Bank Treasury 2019b). To address this vulnerability, in mid-2018 the country created, with the assistance of the International Monetary Fund and the World Bank, an interministerial task force on energy subsidy reforms and developed a technical assistance roadmap to shift toward market-based hedging of energy prices. The roadmap developed concrete objectives and principles, including the sustainable and progressive reduction in the cost of the country's subsidy program. To support this objective, the government launched an oil insurance program to protect the budget against the risk of large oil price increases and their direct impact on the fiscal accounts.

In December 2018, the World Bank intermediated, on behalf of the Government of Tunisia, the purchase of oil call options from market counterparties for an aggregate notional amount of \$520 million on an underlying 8 million barrels and a tenor of 12 months. This operation brought several benefits to Tunisia, such as (1) protection of the budget and the fiscal accounts from oil price shocks for the duration of the coverage; (2) reduced pressure on the capital accounts due to lower foreign reserves volatility; and (3) fostering of a risk management culture and development of the necessary skill set. This transaction was an essential component of the government's efforts to address the budgetary impact of growing energy demand and to shift the energy mix toward renewable resources.

3.6 Morocco

Finally, and also on the subject of vulnerability to commodity prices, is the case of Morocco, whose fiscal standing is exposed to oil price volatility arising from its butane gas subsidy program. In 2009, the Government of Morocco began eliminating, one by one, the subsidies on oil products, including diesel, gasoline, heating oil, and so on. Butane gas, however, is used by lower-income and remotely located households for cooking and heating purposes, with few environmental, safe and cost-effective alternatives. For this reason, the government decided to continue subsidizing small bottles of butane gas as a social protection program for the lower-income segment of its population. This social program, however, exposes the

government to swings in the price of butane—when market prices rise, the government's cost of maintaining the program also rises, potentially reducing the government's budget for other social and developmental projects. In 2018, the butane subsidy program cost 1.5 percent of GDP but had flared up to 6.6 percent in 2012.

To partially reduce this exposure, in June 2019 Morocco's Ministry of Finance executed the purchase of a series of call options covering an aggregate total volume of 840,000 metric tons of butane, or approximately 80 percent of Morocco's exposure until December 2019.

The government's hedging program caused an immediate improvement in its sovereign credit rating and helped the government solidify its BBB-rating. After the execution of this first round of hedges, S&P improved Morocco's international credit rating outlook from negative to stable, which it partially attributed to the kingdom's effective control of one of its largest ongoing sources of fiscal instability.

4. EMERGING AND DEVELOPING ECONOMIES AND FISCAL RISK INSURANCE: A ROAD STREWN WITH OBSTACLES

As we have seen, unpredictable exogenous shocks constitute a substantial fiscal risk in the form of contingent liabilities in either disaster-prone countries or commodity-dependent economies. If such shocks are not anticipated and financially planned for, there can be considerable delays in post-shock response, significantly exacerbating the adverse human and economic consequences of such an event. Governments may also be compelled to draw heavily on budgets intended for development purposes, hindering long-term growth and development.

Against this backdrop, governments are becoming increasingly aware that they can no longer ignore the fiscal risks posed by such shocks. Many governments face trends of rising disaster losses as capital stocks increase and, while exposure of populations and assets rises, insufficient attention is still paid to resilience against shocks. Increases in the incidence and magnitude of climatological hazards are anticipated because of climate change, fueling the trend of rising agricultural damages and losses. Much greater emphasis on proactive fiscal risk management is essential in stemming this tide.

These facts are particularly true in the Asian context, where the incidence of fiscal insurance measures (with, as we have seen, the notable exceptions of the Philippines and the Pacific islands) has so far been exceedingly hesitant. However, several countries in the region (e.g., Fiji, Nepal, Pakistan, and Sri Lanka) have recently undergone diagnostic assessments relating to the enabling environment for disaster risk financing, with a particularly strong focus on potential insurance mechanisms (ADB 2020a). The region as a whole is highly exposed to natural hazards (both geological and climatological) and is also greatly exposed to commodity price swings with several large importer/exporters of oil and other mining products (such as Indonesia, Malaysia, Kazakhstan, and Mongolia, among others).

4.1 Demand Constraints

Despite the high demand for, and the many potential benefits of, fiscal risk insurance, the abovementioned examples are still few. What prevents a more rapid development of this market? Experiences so far suggest five main obstacles.

1. *Inadequate institutional framework and capacity*

Debt management issues are traditionally handled within each country's ministry of economy and/or finance by the Office of Public Credit, often under the supervision of or in coordination with the country's central bank. However, the Office of Public Credit has traditionally handled matters such as debt issuance levels, debt servicing, treasury operations and settlement, and so on. It is rare, certainly in the context of EMDEs, that such offices' perimeter of supervision and action include the country's level of disaster risk or commodity prices. Specifically, on commodity hedging, it is also typical within the country context to handle commodity export/import issues by ministries other than the Ministry of Finance (e.g., ministries of energy, agriculture, mining, etc.), which significantly complicates coordination and implementation. Therefore, there often exists an institutional vacuum as to which entity is supposed to act; and accordingly, in-country expertise and know-how have not been allowed to develop and prosper. There is clearly a knowledge and capacity gap on issues of fiscal risk management.

2. *Incomplete debt management strategy*

Similarly, developing economies have, in general and over the last decade, made a substantial effort to develop and modernize their respective debt management practices. A cornerstone of this process has been the development and implementation of comprehensive, multi-year, consensual debt management strategies. This strategy characteristically serves three purposes simultaneously. First, it identifies and quantifies the specific risks affecting the government's finances and their level of vulnerability within the context of trade-offs between cost and risk and the government's risk tolerance preferences. Second, it delineates and codifies the actions to be taken to limit such vulnerability. And third, it provides a transparent framework for action for those entities or individuals entrusted to address those risks. However, and as reiterated before, such debt management strategies seldom clearly and explicitly include the management of contingent liabilities such as disasters and/or commodity price volatility. Hence, these "imperfect" debt management strategies have often led to both inaction and lack of expertise.

3. *Unsatisfactory legal and regulatory frameworks*

Developing economies often lack robust legal, regulatory and supervisory frameworks necessary to engage in fiscal insurance. First, specific government agencies (or offices of public credit) have not been given explicit authority on fiscal insurance issues, creating a regulatory void and bureaucratic apathy. And second, EMDEs have not yet modernized their legal and regulatory frameworks to bring them in line with the advanced world in terms of the types of instruments available at their disposal (e.g., ability to transact on derivative contracts and other financial instruments, parametric insurance schemes, etc.), which has clearly limited the execution of these fiscal risk measures.

A good example of this limiting factor is the small number of EMDEs that have signed International Swaps and Derivatives Association (ISDA) agreements with international financial institutions.⁸ The International Swaps and Derivatives Association (ISDA)

Master Agreement is the most-used legal framework for over-the-counter transactions of international derivatives. It is part of a framework of documents, designed to enable derivatives to be documented fully and flexibly. The framework consists of a master agreement, a schedule, confirmations, definition booklets, and credit support documentation. The master agreement sets out the standard terms that apply to all the transactions entered into between two parties, without a need to change the terms. Although it is often viewed as a tool for banks and financial institutions exclusively, ISDA is broadly used by a wide variety of other counterparties, including governments, international agencies, and multilateral development banks. Although the ISDA agreement is quite lengthy, and the negotiation process can be burdensome; once a master agreement is signed, the documentation of future transactions between parties is reduced to a brief confirmation of the material and timely terms of the transaction. The master agreement also helps reduce disputes by providing extensive resources defining its terms and explaining the intent of the contract, thereby preventing disputes from the beginning as well as providing a neutral resource to interpret standard contractual terms. Finally, the ISDA agreement greatly aids in managing risk and credit for the parties. Yet, despite the obvious benefits of having in place such legal and trading frameworks, very few EMDEs have availed themselves of ISDA agreements.

4. *Imperfect procurement frameworks*

Another serious limitation among EMDEs regarding engaging in fiscal insurance schemes has been their inability to effectively and efficiently access the international markets where such hedging products are routinely traded and executed. In addition to the deficient institutional framework mentioned earlier, accessing international markets and multiple investors simultaneously in search of the optimal product and price for any fiscal risk management transaction necessitates an effective procurement process that is often lacking and that has made such access almost impossible. Frequently, EMDEs are constrained by cumbersome and lengthy procurement processes that, while well-intentioned, were not designed for fast-changing and dynamic financial products where timely and efficient execution is essential.

5. *Lack of political will*

Finally, given the inadequate legal, regulatory and institutional frameworks for fiscal risk insurance, there are no clearly delineated “rules of engagement” and coordination among the different entities involved. Since, by definition, the outcome of any insurance scheme is uncertain as it is based on the probability of the event being insured actually occurring, a traditional path has often been that of inaction, perhaps in order to avoid the accusation of diverting public resources from urgent needs if the event does not materialize. This frame of mind is particularly pronounced regarding disasters triggered by natural hazards, which cannot be avoided or prevented. Additionally, there seems to be a deeply ingrained reluctance among governments to engage directly with nonpublic, for-profit financial institutions on a purely reputational basis, and if only to avoid suspicions of favoritism toward some of these private operators.

4.2 Supply Constraints

Private international financial institutions and investors have introduced over the last few decades a multiplicity of products and services relating to risk management. These range from widely used financial derivative contracts to highly specialized hedging instruments for disasters triggered by natural hazards. Yet, the actual penetration of such products and services in the EMDE sphere has been extremely limited. In addition to the abovementioned limiting factors on the demand side, there also exists a certain reluctance—this time on the supply side—from private international financial institutions to engage more fully with EMDEs.

First, private international financial institutions and investors are aware of and concerned about the limited capacity of EMDEs to enter into the highly specialized field of modern risk management transactions and have, so far, been unwilling to make the investment in knowledge transfer and capacity building necessary to enable these countries to enter these markets confidently.

Second, credit considerations have also weighed heavily against private international financial institutions engaging more fully with EMDEs. Since some fiscal risk management schemes might potentially generate adverse credit outcomes against such economies, their comparatively low creditworthiness has often made these insurance products prohibitively expensive.

And, finally, some private international financial institutions (particularly large international banks) might also have a significant local presence and potentially large operations in some of these jurisdictions, and have often shied away from more actively engaging in fiscal risk management operations whose outcome might jeopardize these unrelated, parallel activities, even if only on a purely reputational basis.

5. FISCAL RISK MANAGEMENT INSURANCE: MARKET FAILURE AND POLICY SOLUTIONS

Demand for fiscal risk management insurance is high among EMDEs to hedge against geological, climate, commodity, or financial risks. Conversely, private international financial institutions and investors have developed over the last few decades a full menu of financial products and services exclusively designed to address those risks but have deployed them almost exclusively in the advance world. In other words, a significant market gap exists between pent-up demand for fiscal risk insurance by EMDEs and readily available products that are not being efficiently and effectively deployed among these countries. Enter MDBs!

MDBs are uniquely positioned to correct this market failure, to fill this market gap. First, MDBs' convening power and their ability to bring all parties to the table can and have played a crucial role in connecting supply and demand for fiscal risk management products in a manner that is perceived by all to be safe and fair.

Second, the MDBs' not-for-profit status can ensure that they are seen by all participants as an "honest broker", whose sole motivation is to help their constituent countries achieve their developmental goals. This perception is critical in overcoming the reservations by EMDEs and their distrust toward the always-for-profit private international financial institutions and investors.

Third, MDBs have developed over many decades of involvement—on their own behalf—in international financial markets a significant amount of expertise on risk management issues and a deep and well-developed network of connections among international banks, insurance and reinsurance operators, international and domestic investors, and so on. This know-how and this “Rolodex” are enormously valuable assets that MDBs can and should share with EMDEs.

Fourth, while international financial markets have been so far reluctant to devote the necessary resources to build capacity among EMDEs on issues of fiscal risk management, the MDBs’ very mandate is to ensure knowledge sharing (both “north–south” as well as “south–south”) and capacity building, as a mechanism toward uniform and best-practice risk management among their constituents.

6. CONCLUSIONS: IS THERE A NEED FOR A MULTILATERAL INSURANCE AGENCY?

As we have illustrated, there is a clear need for a broader and deeper penetration of fiscal risk management products among EMDEs, all within the context of existing and well-tested products in the advanced world capable of satisfying that need. MDBs are distinctly designed and particularly adept at becoming a “market maker”, a necessary nexus between EMDEs and private international financial markets on issues of fiscal risk management.

Some MDBs (noticeably, the Asian Development Bank and the World Bank) have already identified the importance of risk management as a strategic priority and pillar within their mandates, based on a self-evident premise: long-term economic development and prosperity is simply unattainable without sustainability.

History reminds us all with stubborn frequency that decades of economic development and poverty alleviation can be wiped out—literally and figuratively—by a tropical cyclone, an earthquake, or a commodity price shock. History also confirms that countries, advanced and emerging and developing alike, need to continue to shift their risk management approaches to emphasize *being prepared* rather than simply *reacting* to a specific event once it has occurred, and its consequences are painfully apparent.

Another fundamental tenet of the MDB community rests on the shared belief that financial strength and expertise need to be shared and deployed among their constituent countries. In the same manner that MDBs have been able to pass on for decades to their borrowing countries the preferential funding levels that they have enjoyed because of their superior creditworthiness, it logically follows that knowledge, expertise, and execution capabilities on risk management issues should be another benefit that also needs to be passed on from MDBs to EMDEs.

It was recognized long ago within the MDB ecosystem that specialized products and services are worthy of independent, stand-alone vehicles exclusively dedicated to delivering these niche products in the most efficient and cost-effective manner. Accordingly, the multilateral community has evolved and organized itself along, for instance, public versus private windows, short-term budget support versus long-term development finance, or straight lending versus credit-enhancing guarantee products.

With this objective in mind, and given its crucial importance, does the issue of fiscal risk insurance deserve a dedicated institutional platform shared equally with some other entities within the multilateral financial architecture? Put differently, if the MDBs identified long

ago the need to, for instance, protect investors on cross-border financing schemes (e.g., the Multilateral Investment Guarantee Agency), or set up an independent platform for conflict resolution (e.g., the International Center for the Settlement of Investment Disputes), the debate is now open as to whether the time has finally come for a dedicated, specialized institutional body to help protect EMDE governments against exogenous shocks. The incidence and devastating impact of the COVID-19 pandemic has also heightened and recast this debate.

This need is particularly acute on issues of disaster risk prevention and financing, a highly sophisticated, multisector, developmentally impactful field with such a rich and complex set of objectives and constraints as to merit a unique, independent implementation and delivery platform.

6.1 The Multilateral Insurance Agency

We strongly believe that the issue of fiscal risk insurance in general and of disaster risk management in particular is indeed worthy of such a specialized platform, to effectively assist EMDEs in addressing their peculiar vulnerability to exogenous shocks.

Such a multilateral insurance agency could achieve several objectives, such as the following:

- Become the “go-to” entity for fiscal insurance issues and products, efficiently connecting EMDE governments with private international financial institutions and investors.
- Offer risk management “market-maker” services between public and private institutions—with negligible capital requirements—by simply intermediating products with EMDEs that are matched by mirror transactions with the private sector.
- Provide a “one-stop” entity for the preparation, execution and settlement of risk insurance products, anchored on the not-for-profit principle, and funded in either a subsidized manner or on a strictly cost-recovery basis.
- Articulate a transparent and standardized legal framework for the execution and documentation of risk management products to all its signatory members (i.e., a multilateral ISDA).
- Establish a forum for capacity building and knowledge transfer and know-how to interested governments, nurtured upon international experiences from both the advanced economies and EMDEs and distilling and disseminating experiences and best practices for the benefit of governments, investors, insurance and reinsurance operators, financial supervisors, regulators, and so on.

To date, the MDBs’ involvement on issues of fiscal risk management specifically designed for EMDEs has been, at best, timid. While the eminent need to assist these countries in their efforts to address fiscal vulnerabilities relating to disaster and commodity risks is universally believed, the implementation of such support has been unenthusiastic. Some MDBs have indeed formally endorsed the strategic significance of fiscal risk management as a sustainable development imperative. Yet, they have all, in our opinion, fallen short of the mark by simply creating ad hoc platforms and “one-off” pilot programs aspiring to create a critical mass of demonstrative examples that will eventually justify a more concerted response. So, we conclude by reiterating a simple question: is there a need for a fully dedicated, independent multilateral insurance agency?

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. Centre for Research on the Epidemiology of Disasters, Université Catholique de Louvain. EM-DAT: The International Disaster Database. www.emdat.be.
3. A catastrophe (CAT) bond is a high-yield debt instrument that allows the issuer to receive funding from the bond only if specific conditions, such as an earthquake or tornado, occur. If an event protected by the bond activates a payout to the insurance company, the obligation to pay interest and repay the principal is either deferred or completely forgiven. CAT bonds have short maturity dates of between three to five years. The primary investors in these securities are hedge funds, pension funds and other institutional investors. CAT bonds are used by governments, property and casualty insurers as well as reinsurance companies to transfer risk to investors. These bonds offer insurance and reinsurance companies an alternative mechanism of offsetting the risk associated with underwriting policies. Institutional investors can receive a higher interest rate from CAT bonds than from most other fixed-income securities. CAT bonds are a type of insurance-linked security (ILS)—an umbrella term for financial securities that are linked to pre-specified events or insurance-related risks.
4. In late 2019, FONDEN was set to be dismantled after Mexico's lawmakers in the senate voted to reform that area of public funding. However, the coverage provided remains in place to date.
5. An Asian option is a type of derivative instrument where the payoff depends on the average price (*strike*) of the underlying asset over a certain period of time as opposed to standard options (American and European) where the payoff depends on the price of the underlying asset at a specific point in time (maturity). These options allow the buyer to purchase (or sell) the underlying asset at the average price instead of the spot price, reducing uncertainty over its payout in cases of particularly volatile markets and/or products.
6. Parametric insurance is a type of insurance that makes a specified payment upon the occurrence of a triggering event, satisfying pre-agreed characteristics, such as the magnitude of an earthquake or the intensity of a typhoon. Since the payment of claims depends on parametric triggers, and not on actual losses which would take time to assess in the field, claims can be paid much more efficiently and promptly. Payments can materialize within weeks compared with several months for traditional insurance. Parametric catastrophe risk insurance can therefore be used to provide prompt financing support to governments facing risks from disasters triggered by natural hazards and reduce the moral hazard inherent in all insurance mechanisms.
7. Average annual crude oil closing prices during 2012 were \$94.05.
8. ISDA is a trade organization of participants in the market for over-the-counter derivatives. It is headquartered in New York City, and has created a standardized contract (the ISDA Master Agreement) to enter into derivatives transactions which is considered to be the industry standard.

BIBLIOGRAPHY

- Abrigo, M.R.M. and A. Brucal. 2019. National-to-Local Aid and Recovery from Extreme Weather Events: Evidence from the Philippines. *ADB Economics Working Paper Series*. No. 598. Manila: Asian Development Bank (ADB).
- An, J. and B. Park. 2019. Natural Disasters and International Financial Accessibility in Developing Countries. *Asian Economic Papers*. 18(1), 245–61.
- Asian Development Bank (ADB). 2018. *Economic and Fiscal Impacts of Disasters in the Pacific*. Manila.
- Asian Development Bank (ADB). 2019. *Asian Development Outlook 2019: Strengthening Disaster Resilience*. Manila.
- Asian Development Bank (ADB). 2020a. *Assessing the Enabling Environment for Disaster Risk Financing: A Country Diagnostics Toolkit*. Manila.

- Asian Development Bank (ADB). 2020b. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loan to the Republic of the Philippines for the Disaster Resilience Improvement Program*. Manila.
- Dagli, S. and B. Ferrarini. 2019. The Growth Impact of Disasters in Developing Asia. *ADB Economics Working Paper Series*. No. 585. Manila: ADB.
- Dure, E. 2021. Natural Disasters Cost \$210 Billion Worldwide in 2020. *Investopedia*. January. Accessed at: <https://www.investopedia.com/natural-disasters-cost-usd210-billion-worldwide-in-2020-5094629>.
- Faraglia, E., A. Marcet and A. Scott. 2007. Fiscal Insurance and Debt Management in OECD Economies. *Centre de Referència en Economia Analítica, Barcelona Economics Working Paper Series*. No. 333. Barcelona Graduate School of Economics.
- Freeman, P. 2004. Government Natural Catastrophe Insurance Programs. Paper presented at OECD Conference on Catastrophic Risks and Insurance. 22–23 November.
- Freeman, P., K. Scott, L. Westerberg and J. Dais. 2004. Disaster Financing in OECD and Emerging Countries. Paper presented at Fifth Conference on Insurance Regulation and Supervision in Latin America. 26–27 May.
- Gerling, K. 2017. The Macro-Fiscal Aftermath of Weather-Related Disasters: Do Loss Dimensions Matter?. *IMF Working Paper*. No. 17/235. Washington, DC: IMF.
- Guerineau, S. and H. Ehrhart. 2012. The Impact of High and Volatile Commodity Prices on Public Finances: Evidence from Developing Countries. *Centre D'Etudes et de Recherches sur Développement International Working Paper*. halshs-00659098. HAL.
- Ma, C. and F. Valencia. 2017. *Macro-Hedging and Sovereign Default for Commodity Exporters*. Johns Hopkins University and International Monetary Fund.
- Ma, C. and F. Valencia. 2018. Welfare Gains from Market Insurance: The Case of Mexican Oil Price Risk. *IMF Working Paper*. No. 18/35. Washington, DC: IMF.
- Noy, I. and W. duPont, IV. 2016. The Long-Term Consequences of Natural Disasters—A Summary of the Literature. *SEF Working Paper*. Victoria University of Wellington.
- Noy, I. and A. Nualsri. 2010. Fiscal Storms: Public Spending and Revenues in the Aftermath of Natural Disasters. *Environment and Development Economics*. Cambridge University Press.
- Organisation for Economic Co-operation and Development (OECD). 2016. *Global Insurance Market Trends*. Paris: OECD.
- Strobl, E. 2019. The Impact of Typhoons on Economic Activity in the Philippines: Evidence from Nightlight Intensity. Department of Economics and Oeschger Centre for Climate Change Research. University of Bern.
- United Nations Conference on Trade and Development (UNCTAD) Secretariat to the G20 Commodity Markets Working Group. 2012. Excessive Commodity Price Volatility: Macroeconomic Effects on Growth and Policy Options. Geneva.
- World Bank. 2012. *FONDEN: Mexico's Natural Disaster Fund – A Review*. Washington, DC.
- World Bank. 2020. The Philippines: Transferring the Cost of Severe Natural Disasters to Capital Markets. Feature Story. 13 April. Accessed at: <https://www.worldbank.org/en/news/feature/2020/04/09/the-philippines-transferring-the-cost-of-severe-natural-disasters-to-capital-markets>.
- World Bank Treasury. 2015a. Helping Small Island States Cope in the Aftermath of Natural Disasters. Case Study. Washington, DC. Accessed at: <http://pubdocs.worldbank.org/en/572971523567884235/case-study-financial-products-Pacific-Islands-2015.pdf>.
- World Bank Treasury. 2015b. Facilitating Catastrophe Risk Transfer. Case Study. Washington, DC. Accessed at: <http://documents1.worldbank.org/curated/en/463201468015629255/pdf/93909-CCRIF-CatBond-2015.pdf>.
- World Bank Treasury. 2015c. Mitigating the Impact of Drought on Energy Production in Uruguay. Case Study. Washington, DC. Accessed at: <http://documents1.worldbank.org/curated/en/510901468142790487/pdf/93908-Uruguay-Weather-Derivative-2015.pdf>.

- World Bank Treasury. 2016. Managing Exposure to Oil Price Volatility in Uruguay. Case Study. Accessed at: <http://pubdocs.worldbank.org/en/764671523566970532/case-study-financial-products-Uruguay-2016-Oil-Hedge-Case-Study.pdf>.
- World Bank Treasury. 2019a. Super-Sized Catastrophe Bond for Earthquake Risk in Latin America. Case Study. Washington, DC. Accessed at: <http://pubdocs.worldbank.org/en/192341554318525877/case-study-financial-products-Pacific-Alliance-final-4-1-2019.pdf>.
- World Bank Treasury. 2019b. Insuring Tunisia Against Commodity Price Fluctuations. Case Study. Accessed at: <http://pubdocs.worldbank.org/en/587001566570810307/Case-Study-Tunisia-8-23-2019.pdf>.

16. Thematic bonds to diversify fiscal sources

Farah Imrana Hussain¹

Emerging market sovereigns have access to a variety of debt financing, such as bilateral and multilateral loans, domestic financing, and international commercial financing, depending on a country's level of financial development. The financial terms vary in concessionality, currency and tenures and result in exposure to various types of risks, such as refinancing, interest rate, currency, and operational risks.² Managing such risks is critical for maintaining macro-economic stability and falls within the purview of public debt management offices (DMOs) in the ministries of finance, which are responsible for raising the required amount of funding for the government “at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk” (IMF 2014). Ideally, the DMO executes a funding strategy based on an approved debt management strategy that considers all reasonable financing alternatives.

Just as sovereign debt managers optimize the cash flow characteristics of debt instruments to trade off borrowing costs against refinancing risk, so do they target different investor segments to match issuances to potential demand and reduce refinancing risk and cost of funding.³ Evolutions in investor preferences, priorities, and strategies—including the consideration of environmental, social, and governance (ESG) risks in the investment process—and the rise of investment approaches that contribute to a sustainable and resilient economy, have led to opportunities for different financial instruments.⁴ Since the World Bank issued a bond labeled “green” in 2008 with a specific process to allocate proceeds to projects that support the transition to low-carbon and climate-resilient development in client countries, sovereign debt managers have become acutely aware of the potential to attract investors who would not otherwise have engaged with them, by issuing similar bonds known as “thematic bonds” (World Bank 2018a).

1. WHAT ARE THEMATIC BONDS?

Thematic bonds are fixed income securities that aim to meet environmental and social objectives and commit funds to programs, projects or assets that are deemed environmentally and/or socially beneficial, and are labeled as such. Although some jurisdictions such as the Association of Southeast Asian Nations (ASEAN) have outlined specific guidelines for thematic bonds, these bonds are in general subject to the same capital market and financial regulations as other listed fixed income securities. Most of them are backed by the issuer's full credit and therefore have the same risk and return profile as conventional bonds by the same issuer. Because they have the same characteristics as conventional bonds and are subject to the same laws and regulations, they do not constitute a new asset class. Many of these securities would not even qualify as a new sub-asset class since they are “use-of-proceeds” securities

rather than “project finance” securities, and repayment comes from the issuer’s entire balance sheet. Just like traditional bonds issued by the entity, thematic bonds are backed by the full faith and credit of the issuer; therefore, the credit risk to the investor is the same for thematic and traditional (non-thematic) bonds.

Thematic bonds differ from others in the way the specific use of funds is described in the prospectus or other offering document as well as the information about the issuer’s environmental and social objectives, which appeals to investors with similar interests and investment mandates. Before issuance, issuers are generally expected to obtain an independent review of the types of projects the bond proceeds will support and the governance processes they will adopt, to ensure there is no slippage, intentional or unintentional. While any such slippage would not lead to a default (which is usually limited to nonpayment) under the bond terms described in the prospectus, if an issuer were to renege on its commitment to use the proceeds of the bond as described, the reputational damage would be considerable and generally acts as a deterrent. There is no known case of a sovereign willfully misrepresenting the use of a thematic bond’s proceeds.

The most recognized type of thematic bond is the green bond, which stipulates that all the funds raised are to be used to finance projects that are designed to achieve positive environmental impact. Blue bonds are a subset of green bonds and focus on marine- and ocean-based projects that have positive environmental, economic and climate benefits. Green bonds have also inspired the development of other sustainable and responsible debt products such as the social bond, which supports new and existing projects with positive “social” outcomes. Sustainability bond proceeds support a combination of both green and social projects (ICMA 2020c; G20 Green Finance Study Group 2016).

Like any other bond, thematic bonds are priced according to market conditions at the time of issuance. Given that they are use-of-proceeds bonds based on the issuer’s credit rating, these bonds are generally priced in line with existing yield curves. The 15-year sustainability bond issued by Thailand in August 2020, for instance, was priced in the same way as its conventional 15-year benchmark bond. Nevertheless, differential pricing for thematic bonds relative to other bonds is expected to emerge in the future depending on demand and supply trends in specific markets. Some sovereign thematic bonds have already seen tighter pricing compared with initial pricing guidance due to larger order books. Egypt sold its \$750 million 5-year green bond (the first in the Middle East and North African region) 50 basis points below their original target after receiving \$3.7 billion of investor orders and 12.5 basis points below the 5-year yield curve (Bloomberg 2020). The Mexico DMO also confirmed that its innovative Sustainable Development Goal (SDG) bond priced 45 basis points lower than initially expected (*The Telegram* 2020).

From a debt sustainability point of view, there is no difference between thematic bonds and conventional bonds. Thematic bonds may finance green or social projects, but they are backed by the full faith and credit of the government, not the projects financed. The issuance of thematic bonds adds to a country’s debt burden. As with conventional bonds, any new borrowing in the form of thematic bonds should be consistent with fiscal spending and deficit plans to keep public debt on a sustainable path. A country’s public debt is considered sustainable if the government can meet all its current and future payment obligations, which is no different for thematic bonds. This is an important concern for emerging markets, given the risks to debt sustainability in many countries.

Some national treasuries such as that of the United Kingdom (UK) argue that issuing thematic bonds potentially fragments the market's thematic and conventional debt issuance and reduces liquidity and efficiency (*Financial Times* 2020). Such concerns could be addressed by carefully designing a borrowing plan that does not overlap conventional and thematic bonds and focuses on building benchmark size issuances to support liquidity.

Even without a distinct pricing advantage, the issuance of thematic bonds can be beneficial to sovereign issuers because it signifies the issuer's strong commitment to environmental and social priorities and overall sustainability. This may explain the recent reversal of policy in the UK confirmed by Chancellor Rishi Sunak's announcement that the UK government would in fact be issuing sovereign green bonds (UK Debt Management Office 2020).

The importance of engaging with investors on sustainability issues cannot be minimized in an environment where ESG criteria are used to filter out sovereigns that may pose a financial risk due to unsustainable practices, price in the risks, or to seek out investment opportunities in line with specific mandates (Hussain et al. 2020b). The Indonesian green sukuk issued in 2018 and 2019 expanded and diversified their investor base by attracting investors with green mandates (29 percent of the order book). Egypt's green bond was five times oversubscribed, attracting new investors in Europe, the United States, East Asia and the Middle East.

2. HISTORY OF MARKET DEVELOPMENT

In 2006, the International Finance Facility for Immunisation Company (IFFIm) issued a \$1 billion bond to accelerate funding for Gavi, the Vaccine Alliance to immunize more than 500 million children before 2015. The World Bank as treasury manager for IFFIm introduced the bond to the market. Proceeds were used to scale up GAVI Alliance, boost vaccine use, and improve health systems. Since then, these bonds have come to be known as vaccine bonds (IFFIm 2006). In 2007, the European Investment Bank issued a climate-awareness bond to finance renewable energy and energy-efficiency projects. A structured product, the 5-year bond offered a return linked to an equity index, the FTSE4 Good Environmental Leaders Europe 40 Index (European Investment Bank 2007). In 2008, the World Bank issued the first labeled green bond, establishing the eligibility criteria and governance structure in a "Green Bond Framework", a second opinion from the Center for International Climate Research in Oslo (CICERO), and commitment to report annually the allocation of proceeds and expected impact. Other multilateral development banks such as the International Finance Corporation and public entities (agencies and municipalities) came to the market in 2010. In the early years, supranationals championed the development of the market by issuing green bonds to finance environmental projects. Over time, however, private entities (both financial and nonfinancial corporates) dominated the market (Box 16.1 and Figure 16.1) By 2019, new issuance of green bonds reached a record \$280 billion; by October 2020, more than \$1 trillion of green bonds had been issued since 2007, accounting for 1 percent of the total bond market, according to research company BloombergNEF (2020).

BOX 16.1 MULTILATERAL DEVELOPMENT BANKS LED THE DEVELOPMENT OF THE THEMATIC BOND MARKET

Asian Development Bank

The Asian Development Bank (ADB), a leading AAA-rated borrower in international and domestic capital markets, launched its Green Bond program in 2015 and raised approximately \$7.6 billion, as of December 2019. Its Green Bond Framework defines eligible projects as those that help to mitigate the impact of climate change such as (1) renewable energy (i.e., solar, wind, geothermal, small hydropower < 20 megawatts); (2) energy efficiency; (3) sustainable transport (excluding roads), as well as adaptation projects under the following sectors: (a) energy, (b) water and other urban infrastructure and services, and (c) transport.

Source: ADB. 2020. ADB Green Bonds Newsletter. Issue No. 5. Manila. Accessed at: <https://www.adb.org/sites/default/files/publication/297141/adb-green-bonds-newsletter-2020.pdf>.

African Development Bank

The African Development Bank (AfDB) launched its Green and Social Bond Programs in 2013 and 2017, respectively. As of December 2019, AfDB raised approximately \$2.5 billion in green bonds through nine transactions. Green bond proceeds are allocated to support the financing of renewable energy (solar, wind, hydro, geothermal); energy efficiency (energy distribution systems and vehicle energy efficiency); clean transportation (low-carbon transport infrastructure); biosphere conservation (forestry conservation); and sustainable water and wastewater management (water and wastewater management, agriculture), among others. Eligible adaptation projects include water use management; water supply and access; urban water drainage systems; and agriculture. As of December 2019, AfDB had issued three social bonds, raising approximately \$2 billion. Social bond proceeds support affordable housing, health care, electricity connectivity, education and vocational training, employment, financial inclusion, gender equality, and food security, among others.

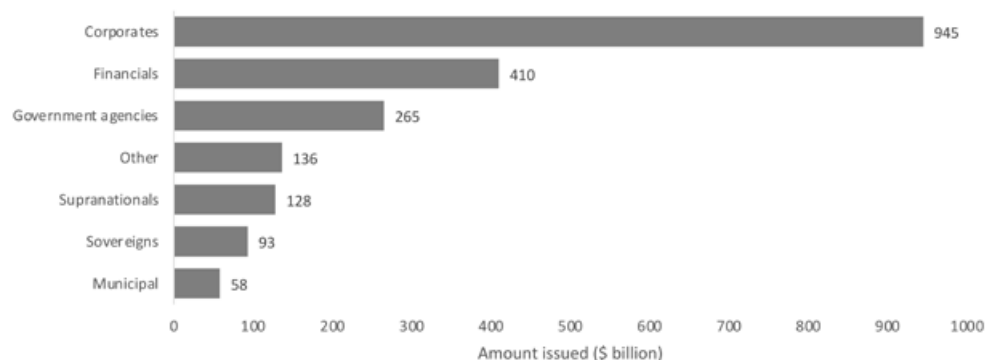
Source: AfDB. 2020. Green and Social Bond Newsletter. Issue No. 6. Abidjan. Accessed at: <https://www.afdb.org/en/documents/green-and-social-bond-newsletter-issue-ndeg6-march-2020>.

World Bank

The World Bank issues on average \$55–\$65 billion in sustainable development bonds per year. It issued the first labeled “green bond” in 2008, and followed that with more than 150 transactions in over 20 currencies for a total of approximately \$15 billion. The World Bank’s processes served as the blueprint for the Green Bond Principles (GBP) that are coordinated by the International Capital Markets Association (World Bank 2008). Its sustainable development bonds raise awareness for and support projects related to gender, water and oceans, food loss and waste, and other themes linked to the Sustainable Development Goals (SDGs), as well as pandemics and other development initiatives.

Sources: The World Bank. IBRD Funding Program. Accessed at: <https://treasury.worldbank.org/en/about/unit/treasury/ibrd/ibrd-green-bonds>; and International Finance Corporation. 2019. Green Bond Impact Report: Financial Year 2019. Washington, DC. Accessed at: https://issuu.com/ifcinvestors/docs/ifc-greenbondimpact-2019-final_updated?fr=sYtQ3YjI1OTU5Mw.

Other multilateral development banks and agencies that have issued green and other thematic bonds include the European Bank for Reconstruction and Development, the International Finance Corporation, the Inter-American Development Bank, the Islamic Development Bank, and the Nordic Investment Bank.

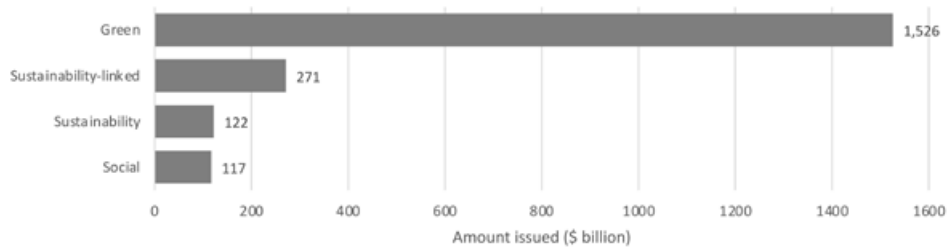


Source: Bloomberg.

Figure 16.1 Thematic bond issuances by issuer type, 2007–September 2020

As the range of issuers widened, so did the variety of sustainability-themed bonds (Figure 16.2). The issuance of sustainability bonds grew from \$2.6 billion in 2014 to \$44.2 billion in 2019. Social bonds increased from \$0.6 billion to \$16.5 billion during the same period. While still small compared with green bonds, investor support for financial products with positive impact during the COVID-19 pandemic in 2020 demonstrated that green bonds have revolutionized the way investors assess their investments and ignited their interest in a wider range of sustainability-related issues (BloombergNEF 2020; Hussain 2020).

Sovereign issuers began tapping the market in 2016. By December 2020, many of them had issued green bonds, including Poland (2016), France (2017), Fiji (2017), Nigeria (2017), Belgium (2018), Lithuania (2018), Ireland (2018 and 2019), Indonesia (2018, 2019, and 2020), the Netherlands (2019), Chile (2019), Hungary (2020), Sweden (2020), Thailand (2020), Germany (2020), and Egypt (2020). Hong Kong, China also issued a green bond in 2019. Seychelles issued the first blue bond in the world in 2018 with support from the World Bank. In 2020, Ecuador and Guatemala issued social bonds while Thailand issued a sustainability bond, and Mexico an SDG bond. Sovereign issuances are expected to increase in the near term as Colombia, Denmark, Kenya and the UK make their debut. Box 16.2 presents examples of sovereign thematic bonds.



Source: Bloomberg.

Figure 16.2 Thematic bond issuances, 2007–September 2020

BOX 16.2 SOVEREIGN ISSUER HIGHLIGHTS

Indonesia Green Sukuk

The Government of Indonesia issued the first sovereign green sukuk in the world in March 2018 with a \$1.25 billion offering, followed by a \$750 million green sukuk in February 2019, and a savings retail sukuk (the first green retail sukuk in the world) in November 2019.⁵ The three instruments appealed to traditional emerging market investors, dedicated green funds, and the Islamic finance market. The 2018 offering saw prices tighten by 30 basis points from the initial pricing guidance (Dunkley 2018). The second offering also came in 25 to 30 basis points lower than initial guidance and was oversubscribed 3.8 times.

Indonesia’s Green Bond and Green Sukuk Framework is aligned with the GBP and was awarded a Medium Green Shade by Second Party Opinion provider, CICERO. The proceeds are financing projects in line with national strategies on mitigation, adaptation and biodiversity. The government introduced a climate budget tagging mechanism to identify government expenditures that deliver the specified climate change benefits in accordance with the government’s climate objectives.

Source: Government of Indonesia, Ministry of Finance.

Thailand Sustainability Bond

The Government of Thailand issued its first thematic bond, a sustainability bond, in July 2020. It was the first sovereign sustainability bond issued in the ASEAN region. Bond proceeds were directed toward expenditures related to green and social projects, specifically the refinancing of capital expenditures for the Mass Rail Transit Orange Line and COVID-19-related spending for public health, support for small and medium-sized enterprises, and cash handouts for people affected by the outbreak. The framework was aligned with the International Capital Market Association’s Green and Social Bond Principles (SBP) and Sustainability Bond Guidelines as well as the ASEAN’s Green, Social, and

Sustainability Bond Standards. Sustainalytics provided a second opinion on the framework. The groundbreaking transaction (B30,000 million 15-year tenure) was highly successful. A diverse group of investors, including banks, asset management companies, financial institutions, insurance companies and offshore investors, submitted orders for more than three times the announced offering. A larger proportion of nonresident investors compared with conventional bonds participated in the transaction.

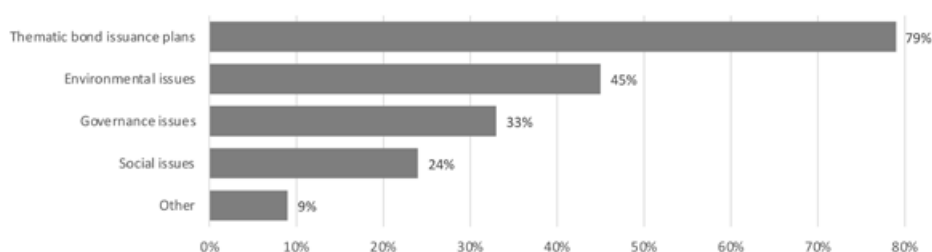
Source: Government of Thailand, Ministry of Finance.

3. WHO BUYS THEMATIC BONDS AND WHY?

In Europe, the first green bond investors were institutional investors such as pension funds and insurance companies, and in the United States investors with strong environmental focus. As issuances increased, the types of investors grew increasingly diverse, including asset managers, central banks, companies, foundations, and religious organizations looking for investments that can generate measurable social or environmental impact alongside financial return. The Global Impact Investing Network estimates the current size of the impact investing market to be \$715 billion.⁶

An even larger number of players in the investment community are assessing the impact of ESG factors on the financial performance of their investments. More than 3,000 signatories representing more than \$100 trillion who have signed up to the United Nations Principles for Responsible Investment fall into this category.⁷ Signatories are required to incorporate ESG issues into investment analysis and decision-making processes. Investors using ESG analysis in their investment decisions may use thematic bonds such as green bonds as part of their risk management strategy to offset the carbon intensity of their portfolios, for instance.

A survey conducted by the World Bank in 2020 found that public debt managers receive the most questions from investors on thematic bond issuance plans (Figure 16.3) (Hussain et al. 2020b).



Note: ESG = environmental, social and governance.

Source: The World Bank.

Figure 16.3 Top ESG topics investors asked debt managers (% of all questions)

Very few domestic market investors in emerging markets have developed impact investing or ESG frameworks. Given that the financial characteristics of thematic bonds are no different

from conventional bonds, thematic bonds in emerging markets are usually bought by the traditional investor base, mainly local banks and institutional investors, although foreign investors also participate in some well-developed emerging bond markets.

The experience of Fiji, Nigeria, and Thailand shows that local investors are very interested in supporting national development priorities and drive up subscription to thematic bonds significantly (Government of Fiji 2017).

BOX 16.3 INVESTOR HIGHLIGHTS

PGGM

PGGM manages the pensions of various pension funds, mainly for the Dutch health-care sector, affiliated employers, and their employees. On 30 June 2020, PGGM managed pension assets worth €246 billion for 4.4 million participants. The not-for-profit cooperative pension fund service provider is a strong supporter of the thematic bond market, with exposure to €3 billion in such bonds across sovereign, supranational and corporate bond portfolios for both developed and emerging markets. Its current focus on increasing portfolio exposure and impact on climate, water, food and health is based on the recognition that the financing gap for areas such as renewable energy, water and sanitation, public transportation, and sustainable agriculture is large and even larger in emerging economies. PGGM supports the International Capital Markets Association's green, social and sustainability bond frameworks. Clear thematic bond frameworks, use of proceeds, reporting, and second party opinions raise the credibility of thematic bonds and attract more foreign long-term investors. PGGM expects exposure to such thematic bonds to grow further as the market develops and as PGGM aligns its investments along the SDGs.

Source: PGGM.

Nuveen

Nuveen is one of the world's largest asset managers, with over \$1 trillion in assets under management. As a firm, Nuveen is dedicated to responsible investing and as part of its commitment manages over \$6 billion in impact investments, of which over \$5 billion is in dedicated public fixed income impact strategies. These fixed income impact investments pursue positive social and environmental impact alongside competitive financial returns, with increasing opportunity in emerging markets. As of 31 July 2020, Nuveen invested over \$100 million in emerging market sovereign bonds and \$470 million in emerging market corporates and agencies.

Nuveen's fixed income impact investing framework is grounded on the principles of direct and measurable impact. Therefore, bond proceeds must fund specific projects or initiatives that deliver a clearly defined environmental or social benefit, and the issuer must be able and willing to disclose key performance indicators (KPIs) through impact reporting for the project or initiative on an annual basis. Nuveen's public fixed income impact objectives focus on four themes: affordable housing; community and economic development; renewable energy and climate change; and natural resources. In 2018, Nuveen participated in the

blue bond issued by the Republic of Seychelles, providing guidance to the World Bank and the issuer on the structuring of risk mitigation factors and specific KPIs for impact reporting that would ensure the asset manager's participation. The bond is the first financial instrument designed to support sustainable marine and fisheries projects. Nuveen believes these types of risk-sharing mechanisms that leverage public-private partnership are innovative ways to increase capital flow to emerging markets where positive social and environmental projects can have the most impact on making progress toward achieving the SDGs.

Source: Nuveen.

4. ISSUING PROCESS

Thematic bonds are useful tools for debt managers as they seek to maximize opportunities to close funding gaps for sustainable development. As with any funding decision, proper due diligence is paramount when considering the issuance of thematic bonds. The first step is to carefully explore whether the issuance fits the fiscal framework. As with any other bond, the decision to issue thematic bonds should be anchored in a broader debt management strategy, which takes into consideration the availability and pros and cons of different funding sources and the impact on debt sustainability. An important consideration is whether to issue in the international or domestic market. Domestic issuances are simpler. Issuing in the international capital markets allows sovereign issuers to issue at longer maturities than they generally can in their domestic markets in similar volumes, diversify their investor base by accessing impact investors who are located largely in Europe and the United States, and generate more visibility for their sustainability commitments. On the other hand, international issuances expose issuers to currency risk (see Chapter 14 in this volume). Adherence to a debt management strategy allows debt managers to stay within their risk appetites and signals to rating agencies and capital markets that a government's liabilities are well managed. As with any other bond issuance, market circumstances will determine the timing of the transaction, that is, an issue should be launched only under favorable market circumstances.

To issue a conventional bond, the issuer goes through the following steps (assuming an international issuance):

- Secure a country and/or bond rating.
- Hire an independent advisor.
- Select a lead manager.
- Hire legal counsel.
- Prepare documentation (base prospectus).
- Communicate with investor (roadshows).
- Execute and settle the transaction.

Issuing a thematic bond includes additional steps, based on widely accepted international standards. Investors expect issuers to follow these steps (Box 16.4) to ensure transparency and accountability:

- Prepare a framework document.
- Select eligible expenditures.

- Set up the process to manage bond proceeds.
- Track and report the allocation of bond proceeds and impact (post-issuance).

DMOs are recommended to establish a dedicated task force or steering committee, composed of different departments in ministries of finance and relevant line ministries, to develop a thorough understanding of the requirements; discuss the value proposition; conduct a detailed analysis of eligible expenditures; and design a work plan. While the time required from the start to end is case-dependent, a first-time issuer can expect to take at least six months to complete the process. The DMO can seek advice from multilateral development banks or investment banks with recognized expertise to understand the requirements, develop the bond framework, and identify eligible projects in line with national priorities.⁸

BOX 16.4 THEMATIC BOND STANDARDS

International standards and guidelines for thematic bonds have developed over time to promote transparency and ensure accountability. Dedicated platforms created by the London Stock Exchange and the Luxembourg Stock Exchange restrict entry to issuers that comply with recognized standards such as the GBP and the SBP—guidelines developed by the International Capital Markets Association in collaboration with market participants. The key recommendations are as follows:

- Allocate bond proceeds in the case of green bonds to environmental (or “green”) projects, and in the case of social bonds to projects that “aim to address or mitigate a specific social issue and/or seek to achieve positive social outcomes especially but not exclusively for a target population(s)”.
- The issuer must disclose its overall sustainability objectives, the process used to determine eligibility of projects, and the approach to manage environmental and social risks of these projects.
- The issuer must disclose how bond proceeds will be managed.
- The issuer should report annually the amounts allocated to eligible projects and the expected impact of the projects until “full allocation, and on a timely basis in case of material developments”.

The GBP and SBP have been used as bases for several national and regional standards and guidelines, such as the People’s Republic of China’s Green Bond Project Catalog, Indonesia’s Financial Services Authority Green Bond Regulations, and Malaysia’s SRI Sukuk Guidelines. The ASEAN Capital Markets Forum, comprising capital market regulators from 10 ASEAN jurisdictions, launched the ASEAN Green Bond Standards in 2017, followed by the ASEAN Social and Sustainability Bond Standards in 2018. Issuers who wish to issue and label bonds as ASEAN green, social or sustainability bonds must demonstrate compliance with the ASEAN standards.

Sources: ASEAN Capital Markets Forum (ACMF). ASEAN Green Bond Standards. Accessed at: <https://www.theacmf.org/initiatives/sustainable-finance/asean-green-bond-standards>; ACMF. 2018. ASEAN Social Bond Standards. Accessed at: <https://www.theacmf.org/images/downloads/pdf/ASBS2018.pdf>; and ACMF. ASEAN Sustainability Bond Standards. Accessed at: <https://www.theacmf.org/initiatives/sustainable-finance/asean-sustainability-bond-standards>.

In line with the core components of the GBP and SBP, the issuer needs to:

- *Prepare a framework.* The framework outlines the process that will be used to disclose eligible expenditure items and stipulates how they are selected, monitored and reported on, so that investors can easily follow where the bond proceeds go and evaluate their intended impact from an environmental and social perspective. The DMO must work with relevant ministries and departments to establish these processes and develop the framework document disclosing the issuer's commitment to follow the procedures outlined in it.
- *Identify and select eligible expenditures.* An amount equivalent to the bond proceeds will fund government budget expenditure items that are linked to sustainable investments and projects. Green expenditure items will be selected based on the country's environmental and climate policy objectives (Box 16.5).

BOX 16.5 IDENTIFYING ENVIRONMENTALLY BENEFICIAL EXPENDITURES OR PROJECTS

Green bond investors are interested as much in the strategic sustainability approach of the issuer as they are in the environmental benefits of the investments and/or projects financed with the bond. It is therefore important to select projects that are in line with national environmental objectives and those that resonate with the country's overall sustainable development priorities and agenda. These may include promoting a cleaner urban environment; protecting the country's natural resources (water, land, forests); and pursuing a low-carbon and climate-resilient future. These objectives should be in accordance with existing environmental plans, policies and regulations, including commitments to international agreements such as the Paris Agreement. Currently there is no standardized global definition of "green" (or "social"), which makes it more challenging for issuers and investors alike. The European Union has developed a "green taxonomy" that applies to its jurisdiction. However, national circumstances, sustainable development agendas, and local priorities differ from country to country, making it difficult to apply the same definitions across countries.

Given the lack of clarity on what "green" means, regulators must consider developing a "national green taxonomy". A structured and well-defined classification of what the country considers to be green is essential for better-informed and more efficient decision-making by the Ministry of Finance as well as other public and private green bond issuers and direct capital toward national environmental objectives (Hussain et al. 2020a).

Source: World Bank.

Similarly, social expenditure items will be selected based on national priorities and SDGs such as affordable housing (Target 1.4); socioeconomic advancement and empowerment (Targets 1.1, 1.2, 1.3, 1.4, and 1.5); and food security (Targets 2.1, 2.2, 2.3, and 2c) (ICMA 2020a). The legal documentation for the security should appropriately describe the utilization of bond proceeds.

The size of the issuance will depend on the total expenditure items defined as eligible under the framework. The identified expenditures should exceed the issuance volume to ensure that there is a margin in case some expenditure items are removed. Debt managers

must therefore balance the need to meet minimum volume requirements in line with investor preferences for tradability or liquidity and inclusion in international bond indices (such as the J.P. Morgan Emerging Market Bond Index or other) and ensure that the size of the bond does not exceed borrowing requirement.

- *Establish the process of managing the proceeds.* DMOs are expected to segregate and track the flow of funds from the bond to eligible expenditures. Issuers can segregate bond proceeds in a (1) separate account; (2) subaccount; or (3) virtual account or cash account (World Bank 2018b). Segregating proceeds into a separate account is not an option for many DMOs, in which case they can allocate an amount equivalent to the proceeds of the bond to the portfolio of eligible green expenditures, record it in a register/virtual account, and report on the allocation and expected impact of the expenditure in accordance with the framework.
- *Obtain an external review of the framework.* Investors expect the framework to be reviewed by a specialized independent entity who will provide a second opinion or certify/verify that the bond meets relevant standards and acceptable best practices (Box 16.6). The external review of the framework has implications for both cost and time. A typical external review takes two–five weeks to finalize and involves intensive decisions and several iterations before the framework and the reviewer's assessment is finalized. The cost of a review by an international provider typically ranges between \$20,000 and \$50,000. Some countries like Malaysia have encouraged the development of local external review providers for domestic issuances, which are more economical.⁹

BOX 16.6 EXTERNAL REVIEW OF THEMATIC BOND FRAMEWORKS

Thematic bond issuers are expected to obtain an independent external review of the sustainability credentials of their labeled bonds. This review can take the form of a second party opinion, a certification against a recognized external green/social/sustainability standard or label, a verification of alignment to a specific standard, or a scoring/rating based on environmental and/or social performance data, processes or benchmarks. A credible institution with environmental/social/sustainability expertise that is independent from the issuer is expected to perform the external review. A variety of institutions perform this task, including research institutes, accounting firms and credit rating agencies. The International Capital Markets Association has published guidelines to promote best practice in external reviews (ICMA 2020b).

Independent external reviews by qualified entities, based on sound practice, assure investors that the bond is in line with market expectations and industry best practices. It gives them confidence in the nature of the issuance and “promotes the integrity of the market” (Ceres Investor Network of Climate Risk and Sustainability 2018).

Source: World Bank.

- *Prepare reports.* Issuers of thematic bonds are required to provide investors with information about the allocation of proceeds to eligible projects and expected environmental and/or social benefits. This information allows investors to quantify the benefits of investing in thematic bonds and provides them with the confidence to commit long-term capital.¹⁰ The issuer must define how and at what level of detail they plan to disclose information about the projects or portfolio. DMO staff are not engaged or familiar with such technical details of projects. Therefore, they need to coordinate with the line agencies and operational units overseeing the projects to obtain the required information. The first report is expected no later than the fourth quarter of the year following the issuance of the bonds. Some issuers have the proceeds allocation and environmental impact report audited and/or verified by an independent third party, which investors highly value.
- *Prepare a communication strategy.* In addition to the above, the issuer should be ready to proactively and transparently communicate with investors on the issuance plan. The lead manager will arrange roadshows to meet investors face to face and present and market the transaction. In addition to the usual economic outlook and debt management activities (debt profile, structure, borrowing plan objectives), the issuer should prepare a presentation offering detailed information on the sustainability characteristics of the bond. It is advisable to include representatives from line ministries who are able to communicate the government's sustainability objectives. Typically, the DMO will organize a broader marketing campaign targeting the general public and interested stakeholders such as the development community, other DMOs, and international media.

5. CONCLUSION

An increasing number of investors—many of whom are buy-and-hold investors who may react differently to market conditions from traditional investors—are looking to finance projects that aim to achieve environmental and social sustainability.¹¹ Given the opportunity to attract and expand the investor base, DMOs should include thematic bonds in their medium-term debt management strategies to maintain a wide range of options regarding funding alternatives. At the same time, DMOs should keep in mind that these instruments contribute to levels of debt in the same way as conventional bonds. They should look at the potential risks and returns and assess the demand and benefits of such products as they would any other debt instrument.

When considering the issuance of thematic bonds, issuers should also keep in mind that their overall sustainability profile and commitment to reducing their carbon footprint and other credentials relating to ESG are important to this investor segment and relevant market participants. Investors avoid bonds when they see a clear disconnect and may sell positions and/or communicate their disapproval publicly if they determine that the issuer is not committed to a sustainable future. Netherlands-based asset manager NN Investment Partners decided that Poland's Green Bond was not eligible for their green bond portfolio because the government had an inadequate policy for phasing out coal-fired electricity (Allen and Shotter 2018; NN Investment Partners 2019). The Amundi Planet Emerging Green One fund, the first green bond fund focused on emerging markets, announced publicly that it would sell off its State Bank of India green bonds if it went ahead with plans to finance a thermal coal mine in Australia (*National Herald* 2020). Such actions would have implications for the issuer's reputation and future funding plans.

The issuance of thematic bonds involves steps related to disclosure and transparency, which are not required for conventional bonds. Diligently following these steps is important to ensure that the bond can be identified as a labeled thematic bond. Exchanges such as the London Stock Exchange withdraw thematic bonds that do not comply with defined requirements from its sustainability bond market. In preparation for the issuance of thematic bonds, the issuer needs to adopt a framework that sets the basis for identifying, selecting, verifying and reporting of the expenditures or projects eligible to be financed by the bond, and the management of such proceeds. The framework should follow internationally accepted standards and guidelines. Establishing the governance processes and preparing the formal documentation take time and consume resources. It is recommended that an interministerial working group oversee the development of the framework, with participation of the Ministry of Finance; Ministry of Environment; Ministry of Planning and Investment; and ministries in charge of energy, transportation, and climate change.

Eligible expenditures should be selected from the previous year's realized expenditure and the current year's expenditure in the government's budget and in line with the government's environmental and sustainable development objectives and priorities. DMOs have several options for segregating and tracking the use of bond proceeds. The issuer is expected to engage a credible independent reviewer to assess the framework, and the opinion provided by the reviewer should be publicly available. Thematic bonds are bought by traditional investors as well as those with specific mandates or frameworks for impact investing. Investors who pursue positive impact look for tangible and measurable social and environmental impact, aligned with the SDGs, as well as risk-adjusted financial returns. If the DMO wishes to attract these investors, they must market the bond to investors accordingly and provide detailed information on impact. While DMOs play a central role in engaging with the investor, they will need to enlist the help of line ministries to communicate the sustainability credentials of the bond and the issuer. The final step of post-issuance reporting should take place in coordination with line ministries, project owners, and overseers to ensure the timely collection of robust data.

While the entire process takes time, resources and considerable collaboration within government departments initially, subsequent issuances are easier. Based on the track record of sovereign-issued thematic bonds, the resulting issuance sees strong demand from investors, including new and long-term investors, and allows the issuer to lock in new financing sources and position itself as a leader in the sustainable finance market. It is also a good start to engage with investors on ESG more broadly, which is a growing trend with investors focused on minimizing ESG risks in their investment portfolio (Hussain et al. 2020b).

Thematic bonds deliver efficiencies beyond sustainability-related issues. With enhanced transparency and accountability credentials, these bonds have created appetite and interest in both issuers and investors for greater openness with regard to the use of proceeds of all bonds. The increasing importance of transparency in public debt has been well documented by experts (see Chapter 14 in this volume). Investors are asking more questions and looking for more reporting. The design and preparation process of thematic bonds encourage DMOs to improve and enhance transparency and governance for all issuances, coordinate more effectively with line ministries, and integrate funding strategies with development plans.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. For a full description of the risks to sovereign debt portfolios, see Jonasson and Papaioannou (2018).
3. See IMF Primer on Managing Sovereign Debt-Portfolio Risks (Jonasson and Papaioannou 2018) and IMF (2014).
4. In this chapter, “sustainability” refers to environmental and social sustainability, unless indicated otherwise.
5. Sukuk are bonds that conform to Islamic investing principles. See Corporate Finance Institute. Sukuk. Accessed at: <https://corporatefinanceinstitute.com/resources/knowledge/trading-investing/sukuk/>.
6. Global Impact Investing Network. What You Need to Know about Impact Investing. Accessed at: <https://thegiin.org/impact-investing/need-to-know/#who-is-making-impact-investments>.
7. Principles for Responsible Investment (PRI). PRI Update Q4 2020. Accessed at: <https://www.unpri.org/pri/about-the-pri>.
8. The World Bank Treasury advised Egypt, Fiji, Indonesia, Kenya, and Nigeria, among others, to support the development of sustainable capital markets and facilitate demonstration transactions. The World Bank. Sustainable Finance Advisory. Accessed at: <https://treasury.worldbank.org/en/about/unit/treasury/client-services/sustainable-finance-advisory>.
9. RAM Consultancy. Sustainability Services. Accessed at: <https://www.ram.com.my/sustainability>.
10. Emerging Markets Dialogue on Finance. Investor Network on Climate Risk. A Statement of Investor Expectation for the Green Bond Market. Accessed at: http://www.emergingmarketsdialogue.org/wp-content/uploads/2018/02/Statement_of_Investor_Expectations_for_Green_Bonds.pdf.
11. As Amundi Asset Management and IFC (2020) states, “So far, investment flows since the start of the crisis have proven more resilient towards green investments when compared to their traditional counterparts. It is possible that investors view green issuers as more long-term oriented and able to weather short-term volatility”.

REFERENCES

- African Development Bank (AfDB). 2020. Green and Social Bond Newsletter. Issue No. 6. Abidjan. Accessed at: <https://www.afdb.org/en/documents/green-and-social-bond-newsletter-issue-ndeg6-march-2020>.
- Allen, K. and J. Shotter. 2018. Environmental Qualms Cloud Poland’s Green Bond Sale. *Financial Times*. 5 February. Accessed at: <https://www.ft.com/content/634b4fe8-074b-11e8-9650-9c0ad2d7c5b5>.
- Amundi Asset Management and International Finance Corporation (IFC). 2020. *Emerging Markets Green Bonds Report 2019*. Washington, DC. Accessed at: <https://www.ifc.org/wps/wcm/connect/a64560ef-b074-4a53-8173-f678ccb4f9cd/202005-EM-Green-Bonds-Report-2019.pdf?MOD=AJPERES&CVID=n7Gtahg>.
- Asian Development Bank (ADB). 2020. ADB Green Bonds Newsletter. Issue No. 5. Manila. Accessed at: <https://www.adb.org/sites/default/files/publication/297141/adb-green-bonds-newsletter-2020.pdf>.
- Bloomberg. 2020. The Middle East’s First Sovereign Green Bond Sees Strong Demand. 30 September. Accessed at: <https://www.msn.com/en-us/money/companies/egypt-gets-strong-demand-for-debut-sovereign-green-bond/ar-BB19wqUw?ocid=uxbilliondlbing>.
- BloombergNEF. 2020. Record Month Shoots Green Bonds Past Trillion-Dollar Mark. 5 October. Accessed at: <https://about.bnef.com/blog/record-month-shoots-green-bonds-past-trillion-dollar-mark>.
- Ceres Investor Network on Climate Risk and Sustainability. 2018. A Statement of Investor Expectations for the Green Bond Market. Accessed at: http://www.emergingmarketsdialogue.org/wp-content/uploads/2018/02/Statement_of_Investor_Expectations_for_Green_Bonds.pdf.
- Dunkley, E. 2018. Indonesia Issues World’s First Green Sukuk Bond. *Financial Times*. 22 February. Accessed at: <https://www.ft.com/content/e38ea51c-184c-11e8-9376-4a6390addb44>.

- European Investment Bank. 2007. EPOS II – The “Climate Awareness Bond”: EIB Promotes Climate Protection via Pan-EU Public Offering. Press release. 22 May. Accessed at: https://www.unicreditgroup.eu/content/dam/unicreditgroup/documents/inc/press-and-media/FOR_DISTRIBUTION_MAY_22_2007_EPOSeng.pdf.
- Financial Times*. 2020. UK Bond Chief Stheeman Expresses Doubts on Green Gilt. 20 January. Accessed at: <https://www.ft.com/content/b0b31764-3932-11ea-a6d3-9a26f8c3cba4?shareType=nongift>.
- G20 Green Finance Study Group. 2016. *G20 Green Finance Synthesis Report*. Accessed at: https://unepinquiry.org/wp-content/uploads/2016/09/Synthesis_Report_Full_EN.pdf.
- Government of Fiji. 2017. Fiji's Green Bond Launch Sees Unprecedented Support. News release. 2 November. Accessed at: <https://www.fiji.gov.fj/Media-Centre/News/FIJI%e2%80%99S-GREEN-BOND-LAUNCH-SEES-UNPRECEDENTED-SUPPOR>.
- Hussain, F.I. 2020. Sovereign Social Bonds to Protect Lives and Livelihoods. *Environmental Finance*. May 2020. Accessed at: <https://www.environmental-finance.com/content/analysis/sovereign-social-bonds-to-protect-lives-and-livelihoods.html>.
- Hussain, F.I., L. Tlaiye and M. Jordan. 2020a. *Developing a National Green Taxonomy: A World Bank Guide*. Washington, DC: World Bank Group. Accessed at: <http://documents.worldbank.org/curated/en/953011593410423487/Developing-a-National-Green-Taxonomy-A-World-Bank-Guide>.
- Hussain, F., A.G. Lee, M. Jordan and R. Cabral. 2020b. *Engaging with Investors on Environmental, Social and Governance (ESG) Issues: A World Bank Guide for Sovereign Debt Managers*. Washington, DC: World Bank. Accessed at: <http://pubdocs.worldbank.org/en/375981604591250621/World-Bank-ESG-Guide-2020-FINAL-11-5-2020.pdf>.
- International Capital Market Association (ICMA). 2020a. *Green, Social and Sustainability Bonds: A High -Level Mapping to the Sustainable Development Goals*. Paris. Accessed at: <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2020/Mapping-SDGs-to-Green-Social-and-Sustainability-Bonds-2020-June-2020-090620.pdf>.
- International Capital Market Association (ICMA). 2020b. *Guidelines for Green, Social and Sustainability Bonds External Reviews*. Paris. Accessed at: <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2020/External-Review-GuidelinesJune-2020-090620.pdf>.
- International Capital Market Association (ICMA). 2020c. *Sustainable Finance: High-Level Definitions*. Zurich. Accessed at: <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Sustainable-Finance-High-Level-Definitions-May-2020-110520v4.pdf>.
- International Finance Corporation (IFC). 2019. *Green Bond Impact Report: Financial Year 2019*. Washington, DC. Accessed at: https://issuu.com/ifcinvestors/docs/ifc-greenbondimpact-2019-final_updated?fr=sYTQ3YjI1OTU5Mw.
- International Finance Facility for Immunisation (IFFIm). 2006. *International Finance Facility for Immunisation Issues Inaugural Bonds*. 7 November. London. Accessed at: <https://iffim.org/press-releases/international-finance-facility-immunisation-issues-inaugural-bonds>.
- International Monetary Fund (IMF). 2014. Revised Guidelines for Public Debt Management. IMF Policy Paper. Washington, DC. Accessed at: <https://www.imf.org/external/np/pp/eng/2014/040114.pdf>.
- Jonasson, T. and M.G. Papaioannou. 2018. A Primer on Managing Sovereign Debt-Portfolio Risks. *IMF Working Paper*. No. 18/74. 6 April. Washington, DC. Accessed at: <https://www.imf.org/en/Publications/WP/Issues/2018/04/06/A-Primer-on-Managing-Sovereign-Debt-Portfolio-Risks-45746>.
- National Herald*. 2020. French Giant Amundi Threatens to Divest SBI Bonds if Loan Granted for Adani Coal Project. 29 November. Accessed at: <https://www.nationalheraldindia.com/national/french-giant-amundi-threatens-to-divest-sbi-bonds-if-loan-granted-for-adani-coal-project>.
- NN Investment Partners. 2019. Green Bond Bulletin: Market Growth, Green QE and Beware of Greenwashing. *Speciale Green Bond Series*. 5 December. Accessed at: <https://www.nnip.com/it-IT/advisor/insights/green-bond-bulletin-market-growth-green-qe-and-beware-of-greenwashing>.
- The Telegram*. 2020. Mexico Issues “World's First” Sovereign Bond Linked to U.N. Sustainability Goals. 15 September. Accessed at: <https://www.thetelegram.com/business/reuters/mexico-issues-worlds-first-sovereign-bond-linked-to-un-sustainability-goals-496978/>.

- UK Debt Management Office. 2020. UK Government Announces its Intention to Issue its First Sovereign Green Bond in 2020. 9 November. Accessed at: <https://www.dmo.gov.uk/media/17077/sa031120.pdf>.
- World Bank. 2008. *The World Bank Green Bond Implementation Guidelines*. Washington, DC.
- World Bank. 2018a. *From Evolution to Revolution: 10 Years of Green Bonds*. Feature Story. 27 November. Accessed at: <https://www.worldbank.org/en/news/feature/2018/11/27/from-evolution-to-revolution-10-years-of-green-bonds>.
- World Bank. 2018b. *Green Bond Proceeds Management and Reporting Guide: A World Bank Guide for Public Sector Issuers*. Washington, DC. Accessed at: <http://pubdocs.worldbank.org/en/768111536944473808/WB-Green-Bond-Proceeds-Management-and-Reporting-Guide.pdf>.

Index

- Abenomics 71, 84
- ABMI *see* Asian Bond Markets Initiative
- “above-the-line” fiscal measures 49, 64
- ABP (annual borrowing plan) 377
- Adalet McGowan, M. 208
- ADB *see* Asian Development Bank
- additionality problem 120
- AfDB (African Development Bank) 412
- Afghanistan 23, 117, 370, 371
- African Development Bank (AfDB) 412
- aging populations *see* population aging
- agricultural production subsidies 391
- Ahearne, A.G. 207
- aid, forms of 131
- aid dependency 10, 141, 143, 146–7
- Akyüz, Y. 121
- Alam, Z. 205
- Amante, A. 382
- amortized cost of debt 302
- Andrews, D. 207, 208
- annual borrowing plan (ABP) 377
- Armenia 374
- arrears, deficit financing through 179
- ASEAN *see* Association of Southeast Asian Nations
- Asia
 - anatomy of debt 31–65
 - diagnosis of debt 3–15
 - evolution of debt 31–65
 - largest economies in 301, 302–8
 - policy change 22–7
- Asian Bond Markets Initiative (ABMI) 372, 376
- Asian Development Bank (ADB)
 - data sources 61
 - DSSI countries 115, 126, 130
 - forecasting errors 17, 263–5
 - labor income 355
 - life-cycle wealth 352, 354
 - Pacific islands and 10, 144–5
 - public investment 270, 275
 - relationships with 3
 - thematic bonds 412
 - see also* developing member countries
- Asian options 393, 406
- Association of Southeast Asian Nations (ASEAN)
 - 368, 385, 419
- Azerbaijan 245, 258, 287, 374
- Baba, N. 72
- Bachmair, F.F. 384
- Balakrishnan, R. 199
- balance sheet mismatches 379
- Banerjee, R. 206
- Bangladesh 20, 112–13, 115, 336–7, 350–351, 374
- bank assets 195
- bank loans
 - bonds comparison 167
 - subnational debt 168, 171, 173, 180
- banks, contingent liabilities 308
- Basel Credit Gap 219, 221
- “below-the-line” fiscal measures 49, 64
- Belt and Road Initiative (BRI) 115, 272–3, 338
- Bhutan 19, 23, 33, 41, 44, 117, 370–371
- bid–ask spreads 373, 376
- bilateral debt 115, 125, 126, 131, 144
- Blanchard, O. 79, 81
- blue bonds 410, 413, 417
- bond markets
 - CAT bonds 394, 396–7, 406
 - COVID-19 response 81
 - debt management 368, 372–3, 376, 378, 380–381
 - ESG principles 27
 - subnational debt 14–15, 167, 170–173, 175–6, 178, 180, 184
 - see also* thematic bonds
- bond restructuring 124
- Bova, E. 241
- Brady Plan 119, 128
- BRI *see* Belt and Road Initiative
- Brixi, H. 240
- Brunei Darussalam 370, 371–2
- Buchheit, L.C. 299, 303
- budget balance
 - ADB members 263
 - definition 260
 - fiscal risks 239
 - forecast errors 242, 244–5, 249–50, 254–5

- Budina, N. 241
 butane gas subsidies 399–400
- Calderon, C. 272
 Cambodia 23, 47–8, 370–371
 Campos, C. 240–241, 259
 Canuto, O. 169
 capacity-building 367–88
 capacity reduction, SOEs 95
 capital markets
 building 24
 debt management 377
 indirect financing 90
 risk transfer to 384
 subnational debt 167
 Caribbean islands 140, 394–7
 Carson, M. 190
 catastrophe (CAT) bonds 394, 396–7, 406
 catastrophe risk insurance 392, 393, 395–6
 Caucasus 4
 Cebotari, A. 241
 Cecchetti, S.G. 215
 China, People's Republic of; see Hong Kong, China; Taipei, China
 China–Pakistan Economic Corridor (CPEC) 338
 circular debt 329, 334, 336, 339
 Clark, J. 190
 climate-awareness bonds 411
 climate change hedging 397–8
 climate change mitigation 412, 414
 climate change shocks 400
 commercial banks 170, 184
 “commercial lenders” 125
 commodity hedging 392–3, 401
 commodity price volatility 259, 390–391, 399–400
 commodity risk management 405
 common pool
 bond markets 15
 subnational debt 173
 concessional debt
 lower-income countries 7–9, 108–35
 Pacific island states 10, 145–7, 149, 151, 154, 159
 consolidated liabilities 306–7
 consolidation, fiscal accounts 311–12
 consumption gap, old-age 348–9
 contingent liabilities 2–3, 18–20, 299–316
 COVID-19-related 10
 debt management 384, 401
 fiscal risks 239, 241
 gross amount measurement 309
 Japan's public debt 76, 85
 Pacific island states 152
 subnational debt 179–81
 contractual agreements, PPP projects 180
 corporate bonds 167, 170–171, 184
 corporate debt 188–213
 in developing Asian economies 34, 39, 44
 empirical analysis 197–204
 financial volatility 11–12
 growth reduction 235
 macroeconomic management 6–7
 in PRC 6–7, 87–107, 188–9, 195, 204, 212
 Corsetti, G. 190–191
 countercyclical policies
 financial crisis 197
 financial instruments 209
 fiscal impact 208
 forecast errors 251
 subnational debt 182
 COVID-19 pandemic 3–5, 7–9, 204–6
 contingent liabilities 10
 countercyclical policies 208
 debt impact 49–60
 debt management 23, 377–8
 DSSI countries' debt 124–8
 EMDEs 390
 energy subsidies 338–9
 financial crisis combination 11, 189, 195, 198
 fiscal space collapse 17–18, 269–70, 275–84
 household debt 13, 214–16, 221, 231, 234
 infrastructure investment gap 271
 in lower-income countries 108–9, 118
 Pacific islands' recovery 136–66
 policy solutions 2, 32, 293
 profitability effects 100–101
 public debt sustainability 66–86, 300
 SNG borrowing 167, 182
 solvency effects 102–3
 PEC (China–Pakistan Economic Corridor) 338
 credit guarantees 384
 credit market, use of term 184
 credit risk 384
 credit supply shocks 215–16, 224–5
 currency mismatches 379
 currency risk 383
- De Soyres, F. 272
 debt, definitions 19, 312–13
 debt burdens
 COVID-19 pandemic 2–4
 developing Asian economies' 51, 53
 real interest rates 28
 debt distress
 DSSI countries 111, 124–6
 estimation methods 133
 lower-income countries 109, 118, 120
 Pacific island states 141, 146–7

- debt dynamics
 - developing Asian economies 40
 - equation of 70
 - fiscal risk 247–9
 - forecast errors in 245–50
 - Pacific island states 145–6
 - SNGs 178
- debt fragility 108, 115
- debt instruments, data sources 302, 304
- debt management
 - achievements 2–3
 - DSSI countries 129–30
 - thematic bond issuance 416, 421
- debt management capacity 22–4, 41, 44–5, 367–88
- debt management offices (DMOs) 409, 410, 418–21
- Debt Management Performance Assessment (DeMPA) 368–9, 371, 374–6
- debt management strategy (DMS) 377–8, 401, 417
- debt overhang 119–20, 208
- debt relief 18, 118–24, 284, 290
- debt reporting heat maps 129
- debt restructuring
 - DSSI countries 115, 123–4, 130
 - exogenous shocks 290
 - holdout problem 119
 - subnational debt 179
- Debt Service Suspension Initiative (DSSI) 109–18, 120, 122–31, 284, 290
- debt stocks
 - COVID-19 association 83
 - developing Asian economies 40, 41
 - subnational debt 172
- debt structure, developing Asian economies 40
- debt surprises 251–4
- debt sustainability
 - definition 10
 - levels of debt 367
 - restoring 289
- debt-to-export ratio 117–18
- debt-to-GDP ratio
 - ADB members 263–5
 - fiscal risks 239, 248–51
 - forecast errors 242–4, 245–6, 247, 253–5
 - household debt 214–15, 217, 222, 224, 228
 - India 169
 - Japan 68–9, 73–5, 77–9, 81, 85
 - lower-income countries 110–111
 - Pacific island states 148, 154–5, 161
 - PRC 87–95, 97–8, 101–3
 - public debt 66–7, 70
- debt-to-output ratio 197, 200–203, 206, 212
- debt-to-service-income (DSTI) ratios 235–6
- debt-vulnerabilities 40–49, 109–18
- decentralization, subnational debt 13–14, 167, 173, 184
- defaults
 - household debt 216, 220, 228–31, 235
 - subnational debt 169, 184
 - triggers 123
- deficit ages 348
- deficit financing 179
- deleveraging 6–7, 35, 92, 94
- demand-driven debt
 - aging populations 343–8, 352–6
 - households 216, 224–5
- demand shocks 224
- demographic changes 21–2, 342–3, 348–51, 356
- demographic data 347
- DeMPA *see* Debt Management Performance Assessment
- developing Asia
 - classification system 369
 - definition 260
 - Group 1 countries 370–371
 - Group 2 countries 370, 371–3
 - Group 3 countries 370, 374–6
- developing member countries, ADB 3–5, 31–65
 - debt management capacity 370
 - debt outlook 32
 - external debt 35–8, 47–9, 54, 58–60, 63–4
 - forecasting errors 17, 239–40, 243, 245, 247, 249, 252, 254–5
 - global perspective of debt 32–40, 61
 - investment rates 62
 - private debt 34–8, 44, 46, 61, 63
 - public debt 32–3, 36–8, 40–45, 51–9, 61–2
 - subregions 28
- development banks
 - COVID-19-related assistance 139
 - DRM process 130
 - fiscal insurance 25
 - fiscal space creation 18
 - see also* multilateral development banks
- development partners, Pacific islands 137, 139, 143–7, 157–8
 - see also* official development assistance
- direct finance 90, 318, 324, 326
- direct taxation 356–7
- disaster risk management 392–7, 400, 405
- disasters, impact of 389
- disbursements
 - concessional debt 147
 - cumulative loan flows 144
 - external debt 112–13
- DMOs *see* debt management offices

- DMS *see* debt management strategy
domestic bond markets 368
domestic debt market development 379–81
domestic resource mobilization (DRM) 130
downward bias 242
DRM (domestic resource mobilization) 130
DSSI *see* Debt Service Suspension Initiative
DSTI (debt-to-service-income) ratios 235–6
- East Asia
aging populations 28, 351, 353, 357
debt management capacity 372
financial crisis 8, 368
forecast errors 16, 243–5, 247, 249
private debt 34, 40
public debt 33, 54
economic flow projection 345–6
economic growth projection 57
economic recovery
developing Asian economies 51, 54, 58
Japan 79
Pacific island states 156–60
post-COVID-19 234
PRC enterprises 104
economic shock 275–6
Ecuador 413
Egypt, green bonds 410–411
Eichengreen, B. 119
electricity subsidies 20–21, 317–41
see also energy subsidies
emerging and developing economies (EMDEs)
82–3
commodity price volatility 390
COVID-19 effects 269–70, 280, 283
data sources 292
exogenous shocks 389–90, 405
fiscal insurance trend 391–405
fiscal space 284, 287–8
fiscal sustainability gap 279
public debt 278
endogenous shocks 198–9
energy policy 317–18, 326–30, 333–8
energy sector performance 327–31
energy subsidies 20–21, 317–41, 399–400
environmental protection, good governance, and
social progress (ESG) 24, 26, 381, 409,
411, 415–16
environmentally beneficial projects 419–20
equity finance 90–92
ESG *see* environmental protection, good
governance, and social progress
ex-ante policy actions 390, 392
ex-post policy actions 390, 392
exchange rate depreciations 85, 121, 152, 252–4
exchange rate shocks 240–241
exogenous shocks 188, 198–9, 290, 389–91, 400,
405
explicit debt guarantees 302–3, 309, 312
explicit liabilities 85, 299, 384
exports 138, 195, 338, 392–3
external debt
COVID-19 4
developing Asian economies 35–8, 47–9, 54,
58–60, 63–4
disbursements 112–13
DSSI countries 111–14, 117–18, 128, 131
lower-income countries 8, 119–20, 122, 123
macroeconomic management 6
Pacific island states 143, 146, 150–151, 152,
154
revenue ratio 161
types of 31
external GFN 63
external solvency 63
- FC (Finance Commission) 184
FCS (fragile and conflict-affected states) 370
fee charge revenues 177
Fiji 10, 51
debt management capacity 376
post-COVID-19 recovery 137–9, 143, 145–6,
148–51, 156, 158–9, 161
thematic bonds 416
Finance Commission (FC) 184
financial crises 189–91
ABMI establishment 372
coordinated responses to 122–4
COVID-19 combination 11, 189, 195, 198
debt management 22–4
external debt 31
household debt 12
insolvency 120–121
institutional changes 191
PRC, effects on 87
risks of debt 15
subnational debt 182
see also global financial crisis
financial fragility 44, 63
financial imbalances, insolvency 120–121
financial instruments
countercyclical policies 209
COVID-19 recovery 9
debt relief 118
diversification 290
for risk transfer 384
subnational debt 181
financial margin (FM) indicator 226–8
financial public corporations 304–5, 308

- financial stability, household debt 219
- financial stress index (FSI) 188, 195–6, 199–200, 202–5, 207, 211–12
- fiscal accounts
 - forecast errors 16–17
 - measures of 310–311
- fiscal consolidation 240, 261
 - countercyclical policies 208
 - India 174
 - Japan 72, 77, 79, 84
 - Pacific island states 150
 - revenue-based 336–7
- fiscal decentralization 13
- fiscal forecasting 16–17
- fiscal insurance 24–6, 389–408
 - legal/regulatory frameworks 401–2
 - procurement frameworks 402
- fiscal policies
 - debt management 377
 - for developing Asian economies 54, 56, 58
 - forecast errors 251
 - Japan 72–3, 75–6, 83
 - PRC 87, 101
 - subnational debt 173–4, 182
- fiscal risks 3, 239, 381–5
 - correlates of 251–5
 - debt dynamics 247–9
 - defining 16, 239
 - exposure to 23
 - forecast errors 239–68
 - insurance against 25
 - outliers 255–9
 - subnational debt 179–81
 - worldwide outlook 242–5
- fiscal shock 275–6
- fiscal space 2, 17–18, 269–98
 - countercyclical policies 208
 - countries analysed 297–8
 - COVID-19 impact 49
 - definition 270, 276
 - financial crisis 197
 - ODA flows 120
 - public debt 41
- fiscal statistics 311
- fiscal stimulus 156–7
- fiscal sustainability gap 17, 279–81, 284, 287–8
- fiscal transfers 168, 177–8
- fiscal uncertainty 16–17
- fixed assets, SOEs 95
- fixed effects, forecast errors 246, 254
- fixed income securities 409
- FM (financial margin) indicator 226–8
- Fondo Nacional de Desastres Naturales (FONDEN) 392
- forecast errors 16–17, 239–68
- foreign-currency bonds 84
- foreign debt 370, 377, 382–3
 - coordinated management 382
 - developing Asian economies 35, 58
 - DSSI countries 111
 - EMDEs 83
 - energy subsidies 317, 335–6, 339
 - fiscal risk 259
 - interest rates 339
 - Japan 82
 - Pakistan 320–322, 324–6
 - SNGs 182
 - Sri Lanka 320–322, 324–6
 - see also* external debt
- foreign exchange risks 181
- fragile and conflict-affected states (FCS) 370
- free-riders 124, 173
- FSI *see* financial stress index
- Furman, J. 79
- G20
 - concessional debt 8
 - debt relief 126–7, 290
- GDP growth
 - ADB members 264–5
 - energy policy 331–2, 334
 - forecast errors 245, 246–7, 249–50, 251–4
 - population aging 343
 - tax smoothing 382
- Georgia 374
- GFC *see* global financial crisis
- GFI *see* government financial institutions
- GFN *see* gross financing needs
- global financial crisis (GFC)
 - contingent liabilities 299
 - corporate debt 11, 188, 191–7, 204
 - debt management 378–80
 - developing Asian economies' reaction to 4, 32–3
 - fiscal sustainability gap 280, 288
 - household debt 12, 214–15, 217
 - Japan, effects on 69
 - macroeconomic management 6
 - mitigation efforts 122
 - public investment 289
 - subnational debt 182
- government accounting 240–241, 311, 330
- government budget balance 260
- government debt
 - definition 84
 - liquidity crisis 290
 - see also* public debt
- government financial institutions (GFIs) 173, 176

- gradualism 14, 18
- grant financing 131, 147, 159, 161
- green bonds 26–7, 376, 381, 409–14, 418–20
- “green taxonomy” 419–20
- gross financing needs (GFN)
 - developing Asian economies 40, 43, 47–8, 62–3
 - foreign debt 324, 326
- growth deceleration, developing Asian economies 33, 34, 61, 64
- growth forecast errors 245–7, 249–54, 264–5
- growth shocks 248, 276
- guarantees 19–20, 299–300
 - debt management capacity 384
 - DSSI countries 115–16
 - energy subsidies 322–3, 331, 334
 - explicit debt 302–3, 309, 312
 - fiscal statistics 311
 - gross amount measurement 309
 - Japan’s public debt 76
 - probability-dependent measurements 310
 - public/foreign debt 319
 - SOE debt 340
 - subnational debt 176
- Guatemala 413
- Gulati, G.M. 299, 303
- health-care liabilities 181
- Heavily Indebted Poor Countries (HIPC)
 - initiative 119–20
- hedging
 - climate change 397–8
 - commodities 392–3, 401
 - identifying opportunities 381–2
 - insurance supply constraints 403
- HIPC (Heavily Indebted Poor Countries)
 - initiative 119–20
- Hofmann, B. 206
- holdout problem 119
- Hong Kong, China 62
 - aging population 353
 - debt management capacity 371–3, 379
 - financial crisis 196–7
 - foreign debt 35
 - green bonds 413
 - household debt 236
- household debt
 - aging populations 352–3
 - COVID-19 recovery 189
 - demand-driven 216, 224–5
 - in developing Asian economies 34, 39, 44
 - econometric models 221–31
 - in PRC 88, 90
 - supply-driven 12–13, 214–37
- household financial vulnerability 221–31
- household survey 221–31
- hydropower 330, 333
- IDA (International Development Association) 125
- IEA concept 338, 340
- ILS market *see* insurance-linked securities market
- IMF *see* International Monetary Fund
- impact investing 415–17
- implicit debt guarantees 309
- implicit liabilities 85, 179–81, 299, 304, 312, 384
- independent power producers (IPPs) 326
- India
 - aging population 350–351
 - bilateral debt 115
 - bond issuance 14
 - commodity price volatility 390
 - contingent liabilities 19, 303–6, 309
 - corporate debt 195, 212
 - COVID-19 impact 51, 284
 - debt management capacity 44, 371, 373, 386
 - energy subsidies 336–7
 - financial stress 203
 - household debt 217, 219–20, 231
 - public debt 33
 - sovereign bond spreads 283
 - subnational debt 168, 169–70, 174, 178–9, 181, 184–5
- indirect finance 90
- indirect taxation 356
- Indonesia
 - aging population 350–351, 357–8
 - commodity price volatility 390
 - contingent liabilities 19, 299, 301, 303–6
 - debt management capacity 375–6, 379
 - decentralization process 184
 - disasters, impact of 389
 - energy subsidies 336–7
 - financial crisis 190–191, 195
 - green bonds 411, 414
 - household debt 217, 220, 231
 - nonfinancial corporate debt 212
 - public debt 33
 - sovereign asset-liability management 383–4
 - subnational debt 14, 170–171, 174–5, 185
- inflation shocks 248–9, 252–4
- infrastructure investment 270, 292
 - energy subsidies 331–2
 - inefficiencies/capacity constraints 273–5
 - long-term effects 272–3
 - scaling up 271–5
 - subnational debt 167, 170, 172–3, 177, 180, 185

- infrastructure investment gap 269, 271
- innovative finance instruments 124, 128, 130, 131
- insolvency
 - causes of 120–121
 - subnational debt 179
 - zombie firms 207
- institutional debt management capacity 368, 370, 374–5, 377, 379, 381, 401
- institutional reforms 169, 191
- insurance, fiscal risks 384
 - see also* fiscal insurance
- insurance-linked securities (ILS) market 396, 406
- interest coverage ratio 7, 97, 101
- interest rates
 - aging populations 343
 - debt burdens 28
 - debt sustainability 290
 - EMDEs 82–3
 - external debt 119
 - foreign debt 321, 324–6, 339
 - growth and 5–6
 - household debt 224–5
 - post-COVID-19 79–81
 - public debt 69–70, 339
 - secular decline 66, 69
- interest-rate–growth rate differential 66–7, 70, 73, 78–81, 83
- intergovernmental finance system 168, 177–8, 185
- International Development Association (IDA) 125
- International Energy Agency (IEA) 338, 340
- international institutions, fiscal insurance 26
- International Monetary Fund (IMF)
 - data sources 61, 303
 - debt service relief 126, 284, 290
 - financial crisis 121, 191
 - fiscal risk analysis 241
 - Guidelines for Public Debt Management* 367
 - Pacific islands ratings 145–57, 161
 - public investment 269
 - SOE debts 321–2
- international reserves, developing Asian economies 35, 48–9, 63–4
- International Swaps and Derivatives Association (ISDA) 401–2, 406
- inventory pressure, SOEs 95–6
- investment efficiency measures 34–5
- investment plans, design of 291
- investor relations program 379
- IPPs (independent power producers) 326
- Iran, energy subsidies 318, 337
- ISDA *see* International Swaps and Derivatives Association
- Japan
 - aging population 350–351, 357–8
 - contingent liabilities 301, 303–6, 307
 - debt management 368
 - financial stress 199–200
 - household debt 219
 - old-age gap 21, 351
 - public debt 5–6, 66–86
 - zombie firms 189, 207
- Jedwab, R. 272–3
- Jordà, Ò 222
- Kato, Takatoshi 195
- Kazakhstan 35, 47–8, 58, 245, 258, 374
- Khandker, S.R. 273
- Kim, S. 208
- Kose, M.A. 118, 122, 278
- Kyrgyz Republic 35, 41, 44, 47–8, 56, 58, 112–13, 245, 374
- labor income, aging and 348–50, 354–6, 357
- labor supply, energy policy 331
- land asset-based finance 171, 180, 186
- Lao PDR 41, 44, 47–8, 54, 56, 115, 375–6
- Lee, C.S. 194
- Lee, J. 195, 208
- Lee, N. 130
- legacy debt 179, 347, 357
- legal reforms, subnational debt 169, 174, 180
- Leo, B. 120
- LGUs *see* local government units
- liability management 24, 180–181, 381–3
 - see also* contingent liabilities
- Lian, W. 83
- LICs *see* low-income countries
- life-cycle needs, demographic change 344, 348–51
- life-cycle wealth, aging populations 344, 346–8, 351–3
- life expectancy, increase in 342
- liquid assets 226, 235
- liquidity
 - bond markets 373
 - definition 62–3
 - external debt 48
 - IMF recommendations 151
 - local market 373
 - shortfall consequences 120–121
 - subnational debt 182
- liquidity crisis 271, 290
- liquidity risk 383
- Liu, L. 167–9, 171, 173, 181
- LMICs *see* lower-middle-income countries
- loan-to-collateral ratio 231

- loan-to-value (LTV) ratio 231–2, 235–6
- loans as aid 131
- local government debt, PRC 88, 105
- local government units (LGUs), Philippines 172–3, 176, 184–5
- local market, development of 373
- long-term debt 91
- low-income countries (LICs)
 - aging populations 342, 361
 - concessional debt 108–35
 - concessional rescue 7–9
 - debt management capacity 369
 - debt vulnerabilities 109–18
 - risk indicators 290
 - see also* Pacific island states
- lower-middle-income countries (LMICs), debt management 369
- LTV ratio *see* loan-to-value ratio
- “M1” 6
- macro-financial risks 217, 226–31
- macroeconomic adjustment programs 119
- macroeconomic management 6–7, 167–8, 181–2
- macroeconomic performance
 - developing Asian economies 40
 - DSSI countries 115, 117
- macroeconomic policies 121–2
- macroeconomic shocks 239, 241, 275–6
- macroprudential policies 198, 204–5, 207–9, 231–3
- Malaysia
 - aging population 353
 - debt management capacity 371, 373, 381
 - financial crisis 190–191, 195
 - financial stress 203
 - household debt 220
 - nonfinancial corporate debt 212
 - thematic bonds 420
- Maldives 41, 44, 47–8, 51, 54, 58, 112, 374–5
- Mann, F.K. 300
- manufacturing sector growth 331–2
- market-based borrowing 167–87
- market failure 390, 403–4
- market fiscal risk 3, 384–5
- market-implied interest rates 80
- market pricing, energy 317, 334–5, 337, 339
- market values, guarantees 310
- Marshall Islands 395
- MDBs *see* multilateral development banks
- MDRI (Multilateral Debt Relief Initiative) 119–20
- Mercado, R. 195, 199
- Merton, R.C. 300
- Mexico
 - fiscal insurance 25, 391–3
 - preventive activities 392
 - thematic bonds 410, 413
- Mian, A. 214, 221–5
- migrant remittances 138
- mixed-ownership SOEs 99
- monetary policy
 - financial crisis 191
 - Japan 72, 83
 - PRC 87, 101
 - subnational debt 182
- money markets 380
- Mongolia
 - debt management capacity 44, 375
 - external debt 35, 47–8
 - GFN ratio 41
 - public debt 54, 56
- moral hazard 173, 179
- Morocco 25, 399–400
- mortgage defaults 220, 229, 231
- mortgage-sovereign spreads 13, 224–5
- multilateral debt 131
- Multilateral Debt Relief Initiative (MDRI) 119–20
- multilateral development banks (MDBs)
 - COVID-19-related assistance 139
 - DRM process 130
 - fiscal insurance 25, 403–5
 - fiscal space creation 18
 - market failure response 390
 - Pacific island loans 144–5, 147, 149, 153–5, 161
 - syndicated lending 291
 - thematic bonds 411–13
- multilateral institutions 190, 290
- multiplier effect 11, 157–8
- Myanmar
 - concessional debt 113–14
 - debt management capacity 375–6
 - debt vulnerabilities 110
 - energy subsidies 20
 - external debt 112
- National Transfer Accounts (NTA) 22, 345, 347–8, 356
- Nauru 51, 138
- Nepal 112, 115, 117, 374–5
- Nigeria 414, 416
- nominal growth rate 5, 70–71
- nominal interest rates 71
- non-listed firms, PRC 91–3
- nonequity liabilities 302–3, 305–7

- nonfinancial corporate debt 188–213
 - in developing Asian economies 34, 39, 44
 - in PRC 88–90, 92, 105
- nonfinancial public corporations 304–5, 313
- NTA *see* National Transfer Accounts
- Nuveen asset management 416–17
- ODA *see* official development assistance
- official debt
 - developing Asia 370–371
 - Pacific island states 9–11
- official development assistance (ODA) 120, 139, 143, 146
- oil hedging programs 392–3, 398–9
- old-age gap 21, 348–56
- old-age transfer wealth 343–4
- operating debt, COVID-19 impact on 101
- opportunity costs, energy 318, 333
- Pacific Alliance multi-country catastrophe bond 396–7
- Pacific island states
 - case studies 148–56
 - debt management capacity 370–371, 375–6
 - debt types 9–11
 - disasters, impact on 389
 - economic recovery 156–60
 - external debt dependency 4
 - forecast errors 244–5, 247, 258
 - pooled risk disaster management 394–7
 - post-COVID-19 recovery 136–66
- Pakistan
 - aging population 350–351
 - debt management capacity 374–5
 - energy subsidies 20–21, 317–18, 326–9, 330, 331–8, 339–40
 - fiscal policies 54
 - foreign debt 320–322, 324–6
 - public debt 319–26, 334–6
- Panizza, U. 254
- Papua New Guinea (PNG) 10
 - debt management capacity 376
 - external debt 112
 - post-COVID-19 recovery 136–41, 143, 145–6, 148, 151–3, 156, 158–60
- parametric insurance 406
- Paris Club 8, 115, 125, 127, 140, 322
- Park, C.-Y. 194, 195, 199
- pension fund management 416
- pension liabilities 181
- pension wealth 343, 346, 347–8, 351–3
- People's Republic of China (PRC)
 - aging population 21, 350–351, 353, 361
 - bilateral debt 115, 126
 - concessional debt 10
 - contingent liabilities 19, 301, 303, 305
 - corporate debt 6–7, 87–107, 188–9, 195, 204, 212
 - COVID-19 response 284
 - debt burden share 4
 - debt management 368, 370, 371–2, 373, 379
 - debt vulnerabilities 110
 - DSSI implementation 125
 - energy subsidies 322, 339
 - fiscal space 49
 - foreign debt 35
 - growth slowdown 61, 64
 - household debt 13, 216–17, 219, 226–31
 - infrastructure investment 273
 - investment rates 62
 - Pacific island assistance 138, 140, 143–4, 159
 - private debt 44
 - public debt 33, 54, 56
 - sovereign bond spreads 283
 - subnational debt 14, 168, 171–2, 175–6, 178–9, 181
- Petrie, M. 241
- Petroulakis, F. 207
- PGGM pension fund management 416
- Philippines
 - aging population 358
 - contingent liabilities 309
 - debt management capacity 375–6, 379
 - disasters, impact of 389
 - financial crisis 190–191, 195
 - fiscal insurance 25, 393–4
 - household debt 233
 - subnational debt 14–15, 172–3, 176, 184–5
- Pistor, K. 122
- PNG *see* Papua New Guinea
- policy shocks 239
- pooled risk disaster management 394–7
- population aging 21–2, 342–65
 - data sources 347–8, 364
 - economies studied 365
 - extensions 360–361
 - projecting debt 345–7
- power purchase agreements 327, 330
- PPPs *see* public–private partnerships
- Prasad, A. 170, 174, 371
- PRC *see* People's Republic of China
- precarious debt 9–11
- present value (PV) of debt 148, 161
- primary balance shocks 248–9

- primary budget balance, definition 260
- primary deficit
 - foreign debt 324, 326
 - IMF debt 321
- primary fiscal balance 332–6
- primary market
 - bond issuance 373, 380
 - transparency 378
- private debt
 - aging populations 343, 352–3
 - decentralization policy 173
 - in developing Asian economies 34–8, 44, 46, 61, 63
 - DSSI countries 113, 127
 - financial crisis 120, 197–8
 - financial stress and 202–4, 206
 - in PRC 98
 - shocks 199–202
 - types 31
- private–public partnerships *see* public–private partnerships
- probability-dependent measurements 310
- productivity growth 356
- profitability
 - COVID-19 impact on 100–101
 - of SOEs 96
- prudential rules, land asset-based finance 180
- public assets, forms of 347
- public corporations 19, 304–7, 308, 313
- public debt
 - aging populations 342–4, 347, 353, 357–9
 - composition of 367
 - COVID-19 effects 300
 - developing Asia 371–3
 - in developing Asian economies 3–4, 32–3, 36–8, 40–45, 51–9, 61–2
 - energy subsidies 317, 334–9
 - fiscal space and 277–8, 280, 284
 - interest rates 339
 - Japan 5–6, 66–86
 - lower-income countries 8, 108–35
 - Pacific island states 141, 148–51, 153, 156
 - Pakistan 319–26, 334–6
 - SNGs' debt dynamics 178
 - Sri Lanka 319–26, 334–6
 - thematic bonds 410
 - types of 31
- public debt management 367–88, 416
- public investment
 - aging populations 356–61
 - cost inflation 274
 - GFC effects 289
 - infrastructure 269–75, 292
 - time delays 274
- public–private partnerships (PPPs) 180, 307–8
- public sector solvency 151–5
- public transfer inflows 347
- PV *see* present value of debt
- Qiao, B. 171
- Rangarajan, C. 170, 174
- Rashid, H. 119
- real house price index (RHPI) 219–20, 222
- real interest rates
 - debt burden 28
 - foreign debt 324
 - SOE debts 321
- “recovery packages” 137, 157–9
- refinancing risk 409
- Reinhart, C.M. 68
- remittances 138
- Republic of Korea (ROK)
 - aging population 353, 357, 360–361
 - contingent liabilities 19, 303–6
 - debt management 368, 371, 372, 373
 - financial crisis 190–191
 - growth/financial stress 199
 - household debt 13, 216, 224, 226–31, 236
 - private debt 44
 - public debt 54
- reserve accumulation 240
- revenue, COVID-19 effects 100
- revenue-based fiscal consolidation 336–7
- revenue bonds 172, 178, 180
- revenue systems 177–8
- RHPI *see* real house price index
- Ricardian offset 335–6
- risk-layering 390, 391
- risk transfer to markets 384–5
- Rogoff, K.S. 68
- ROK *see* Republic of Korea
- Rosenkranz, P. 195, 208
- rule-based framework, subnational debt 174
- SAIs (supreme audit institutions) 371
- SALM *see* sovereign asset-liability management
- Samoa 10–11
 - catastrophe risk insurance 395
 - post-COVID-19 recovery 137–8, 140, 142, 147–8, 153–6, 158–60
- Samuelson, P. 344
- Saudi Arabia, energy subsidies 322
- Schick, A. 240
- SDGs *see* Sustainable Development Goals
- SEBI *see* Securities and Exchange Board of India
- secondary market
 - bond issuance 373, 380
 - transparency 378

- secular stagnation 343
- Securities and Exchange Board of India (SEBI) 170, 184, 185
- securities markets
 - debt management capacity 372–4, 379–80
 - subnational debt 168, 170, 184
 - use-of-proceeds 409–10
- semi-concessional debt 145, 149, 153, 159, 160
- Seychelles 413, 417
- Shinada, N. 207
- short-term debt 91, 113
- Shularick, A. 215
- Singapore 62, 200
 - aging population 357–8
 - COVID-19 impact 51
 - debt management capacity 370, 371, 373, 379, 381
 - foreign debt 35
- small island states 4, 9–11
 - catastrophe risk insurance 395
 - debt management capacity 370–371, 375, 376
- small and medium-sized enterprises (SMEs) 92, 101, 104, 105
- small states, defining 385
- SMEs *see* small and medium-sized enterprises
- SNGs *see* subnational governments
- social bonds 410, 412–13, 415, 418–19
- SOEs *see* state-owned enterprises
- Solomon Islands 138–9, 376, 395
- solvency
 - COVID-19 impact 102–3, 148
 - creditworthiness 62
 - external debt 47–8, 63
 - IMF recommendations 151–5
 - public debt 51
- solvency crisis 290
- sovereign, use of term 386
- sovereign asset-liability management (SALM) 381–3
- sovereign asset management 24
- sovereign bond spreads 283–5
- sovereign bonds 81, 167, 170–171, 182, 184, 374, 410–411
- sovereign debt
 - fiscal consolidation 208
 - lower-income countries 119, 123
 - Pacific island states 145
 - payment suspension 125
 - SNG's debt space 178
 - thematic bonds 409, 413–15
- sovereign oil hedging program 398–9
- special purpose insurers, CAT bonds 396
- special purpose vehicles (SPVs) 61, 180, 185
- Sri Lanka
 - debt management capacity 374–5
 - energy subsidies 20–21, 317–18, 329–38, 339–40
 - foreign debt 320–322, 324–6
 - public debt 319–26, 334–6
- state-contingent debt instruments 291
- state debt securities 170
- state-owned enterprises (SOEs) 61, 91–2, 94–9, 105–6
 - contingent liabilities 300–301, 305, 312
 - energy subsidies 317–19, 329, 334–5, 338–40
 - IMF debt 321–2
 - reporting on 133
- Stiglitz, J. 119
- stimulus packages 138–9, 156–8
- stock-flow adjustments 84
- stock-flow reconciliations 16, 247–8, 261
- Storeygard, A. 272–3
- strategic forecasts 239
- “structural deleveraging” 94
- structural reforms
 - fiscal space creation 18
 - PRC 4, 7, 94–9
- structural vulnerability 140–142
- subnational, use of term 184
- subnational debt 13–15, 19, 167–87
 - regulatory framework 170–171, 173–7, 180, 182, 185
- subnational governments (SNGs) 167–84, 301, 303–4
- subsidies
 - agricultural production 391
 - energy 20–21, 317–41, 399–400
- Sukuk bonds 411, 414, 423
- Summers, L. 79
- supply-driven household debt 12–13, 214–37
- supply-driven public debt 344, 347
- supply shocks *see* credit supply shocks
- supply-side capacity, fiscal insurance 25–6
- supply-side structural reform 4, 7, 94–9
- supreme audit institutions (SAIs) 371
- surplus ages 348
- sustainability, use of term 423
- sustainability bonds 410, 412–15, 419, 423
- sustainability risk 225
- Sustainable Development Goals (SDGs) 269, 271, 275, 284
 - energy subsidies 317
 - thematic bonds 410, 416–17, 420
- syndicated lending 291

- T&D *see* transmission and distribution
 Taipei, China 21–2, 144, 231, 357, 371
 Tajikistan 18, 35, 47–8, 112, 258, 283, 287, 374
 tariffs 327, 330
 tax reforms, DRM process 130
 tax revenues 177
 tax smoothing 382, 383
 tax-to-GDP ratio 84
 taxation, aging populations 342, 347, 356–7, 360–361
 Taylor, A.M. 215
 Thailand
 aging population 357–8, 361
 contingent liabilities 299
 COVID-19 response 284
 debt management capacity 371–2, 373, 379
 energy subsidies 337
 financial crisis 121, 190–191, 195
 sustainability bonds 413–15
 thematic bonds 416
 thematic bonds 26–7, 409–25
 debt management 24
 framework review 420–421
 investors in 415–17
 issuing process 417–21
 market development 411–15
 market fiscal risk 3
 standards for 418–19
 Tonga 10–11
 catastrophe risk insurance 395–6
 post-COVID-19 recovery 137–42, 147–8, 153–6, 158–60
 tourism 138, 149–50
 traditionally defined debt 302, 304–6
 transmission and distribution (T&D) 330, 339
 transparency 11–12, 23, 145, 374–6, 378–9, 418
 transportation investments 272–3
 Truman, E. 119
 Tunisia 25, 399
 ULBs *see* urban local bodies
 United Nations' DSSI expansion 125–6
 urban local bodies (ULBs), India 170, 184
 Uruguay 25, 383, 397–400
 use-of-proceeds securities 409–10
 Uzbekistan 283, 287, 374
 vaccine bonds 26, 411
 Vanuatu
 catastrophe risk insurance 395
 concessional debt 114
 debt management capacity 376
 post-COVID-19 recovery 138–42
 Vienna Initiative 122
 Viet Nam
 commodity price volatility 390
 COVID-19 response 18, 284
 debt management capacity 375–6, 379
 energy subsidies 337
 private debt 44
 volatility 15
 commodity prices 259, 390–391, 399–400
 Pacific economic growth 142
 Waibel, M. 167–8
 wealth demand, aging populations 343–4, 346–8, 351–3
 Webb, S. 173
 weighted average method 106
 World Bank
 country classifications 260, 265–8
 data sources 61
 debt service relief 126
 fiscal insurance coverage 394–9
 Guidelines for Public Debt Management 367
 Pacific island assistance 144–5
 sustainable development bonds 412–13, 423
 Yang, G. 272
 yield curve control policy 79–80, 173
 Zabai, A. 214–15
 zombie firms 12, 96, 106, 189, 206–8

