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An integrated and smart ASEAN: Overcoming adversities and achieving sustainable and inclusive growth

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ADB Working Paper Series

AN INTEGRATED AND SMART ASEAN: OVERCOMING ADVERSITIES AND ACHIEVING SUSTAINABLE AND INCLUSIVE GROWTH

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Bernard Yeung

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Abstract

Asia's economic significance has risen substantially over the past several decades. Further economic development in ASEAN, with its massive population, requires very efficient utilization of resources and cross-border cooperation. While ASEAN has much to gain from economic cooperation and integration, it faces non-trivial growth and integration barriers: (i) an infrastructure development gap; (ii) an education gap; and (iii) a market institutions gap, especially in financial sectors, which is very much related to governance issues such as government inefficiency and policy ineffectiveness. The paper offers an overall perspective on maintaining sustainable and inclusive development in ASEAN—the broad trend and the barriers. Three lessons emerge for ASEAN to seize the economic opportunities. First, the governments can gain great mileage in sustainable development from building sound market institutions, catering to financial and economic stability, and establishing sound health care and redistribution programs. Second, governments should promote deeper regional economic integration, invest in digital infrastructure and wireless access, and invest in training workers and companies to tune into the virtual technology. They should partner with the private sector to multiply the gains from the opportunities arising from crises. Finally, governments should embrace digital–IOT–AI technology while considering strategies to address the associated challenges.

Keywords: ASEAN, economic cooperation and integration, the digital–IOT–AI transformation, COVID-19, geopolitical tensions

JEL Classification: F00, F02, F15, F5, F63, O1

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1. ASIA IN THE 21ST CENTURY

There is an expectation that the 21st century will be the Asian century. Indeed, Asia's economic significance has risen substantially over the past several decades, despite the 1997 Asian financial crisis and the 2008 global financial crisis. The People's Republic of China (PRC) has experienced phenomenal development, for example in GDP growth, in the expansion of the middle class, and in elevating millions of people above the poverty line. The ASEAN countries have achieved much too, such as reducing poverty and developing a middle class. Further economic development in the region, with its massive population, requires very efficient utilization of resources and cross-border cooperation. Given the varying stages of development and complementary capabilities and resources, Asia has much to gain from economic cooperation and integration.

The recent geopolitical tension produces economic and political uncertainties with negative spillovers on a global scale. However, the silver lining is that the ongoing episodes increase the region's desire for more economic integration. Businesses tend to configure their activities where they expect market growth and where they can better control production and operation costs and risks. This tendency may lead to actions that bring about economic integration in Asia.

The COVID-19 pandemic has also led to devastating negative global demand and supply shocks and disruptions to the global trade and supply chains. To combat the pandemic and mitigate the precipitous economic damage, governments around the world have increased their fiscal spending, incurred large deficits, borrowed substantially, and expanded their money supply. Most Asian countries have contained the spread of the disease better and are recovering from the negative shock earlier than the West. However, the world economy has to watch dominant developed countries' management of their deficit, debt, and large central bank balance sheets. Any missteps may spoil the global recovery and generate financial volatility.

Amid the pandemic, however, the adoption of the digital–Internet of Things (IOT)–artificial intelligence (AI) transformation has accelerated. Widespread adoption of these technologies will enhance productivity growth. These technological advancements may help ASEAN to bridge the infrastructure gap and the education gap and improve its market institutions and government efficiency and effectiveness, all of which have been significant hurdles to further growth that is inclusive and sustainable. However, turning these possibilities into reality relies on effective investment in digital infrastructure and connectivity. In addition, governments ought to be wary of potential regressive distributional effects of the digital–IOT–AI transformation.

In this essay, we first offer an overall perspective on maintaining sustainable and inclusive development in ASEAN—the broad trend and the barriers. We then discuss why ASEAN needs to become a more integrated economic system, counteracting the US–PRC geopolitical tension. Afterward, we discuss the multi-faceted impacts of the COVID-19 pandemic. In the end, governments can play a crucial role in maintaining sustainable and inclusive development. The conditions are there, and the desires are there, but the political will and leadership are wanting.

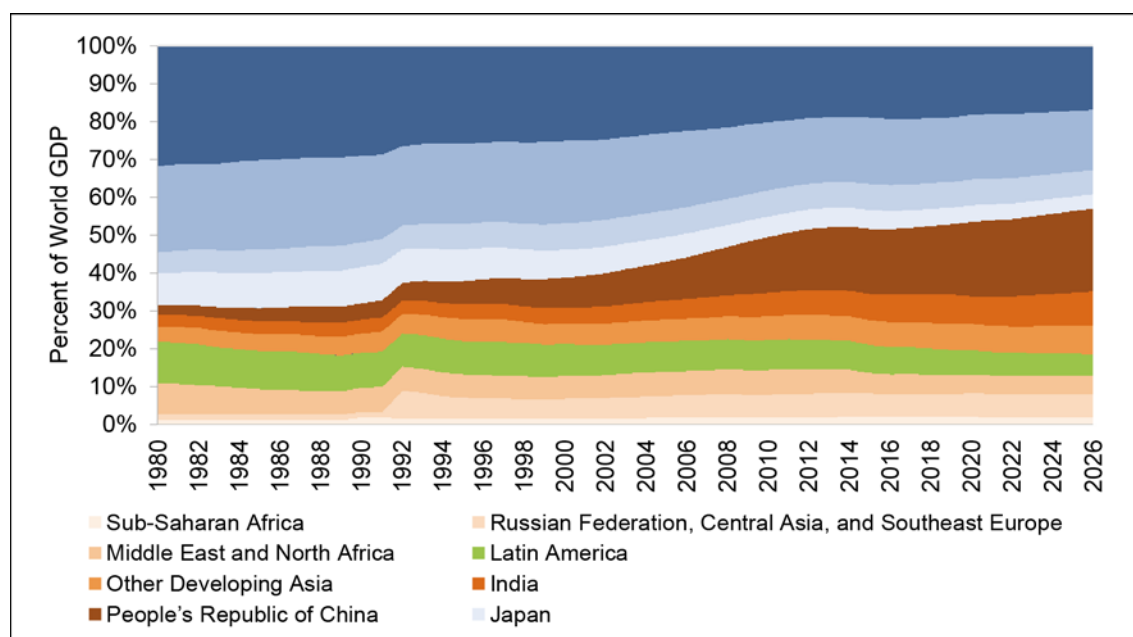
2. THE RISE OF ASIA, THE PATH FOR ASEAN, AND THE BARRIERS

2.1 Historical Rise

The world economy's center of gravity is now shifting back toward the East after the First Industrial Revolution turned Europe into the global center of industrialization at the beginning of the 18th century. Industrialization first spread from the West to Japan in the second half of the 19th century, and later the four Asian Tigers, namely Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China, embarked on export-driven industrialization in the 1960s. However, it was not until the economic liberalization of the People's Republic of China (PRC), the world's most populous country, triggered its exponential growth after the 1980s that Asia reemerged in global economic history. In the 21st century, the PRC has enjoyed headline-grabbing phenomenal growth. Its per capita GDP grew by 10 times from 2000 to 2018; its total GDP surged to around US\$13 trillion. Economic spillovers from the PRC's growth have brought prosperity to the rest of Asia as well through strong intra-Asia trade and increased direct investment. ASEAN has been growing rapidly, with a per capita GDP that almost doubled from 2000 to 2018. India also joined, showing high growth rates since the turn of the 21st century.

Asia, with a population of billions, is now poised to become an integrated growing economy. Altogether, developed and emerging Asian economies nowadays make Asia economically the most significant continent. Figure 1 presents the percentage breakdown by regions of the world's GDP since 1980, validating the emerging significance of the Asian economies since the start of the 21st century.

Figure 1: Regional Distribution of the Gross Domestic Product, 1980–2026

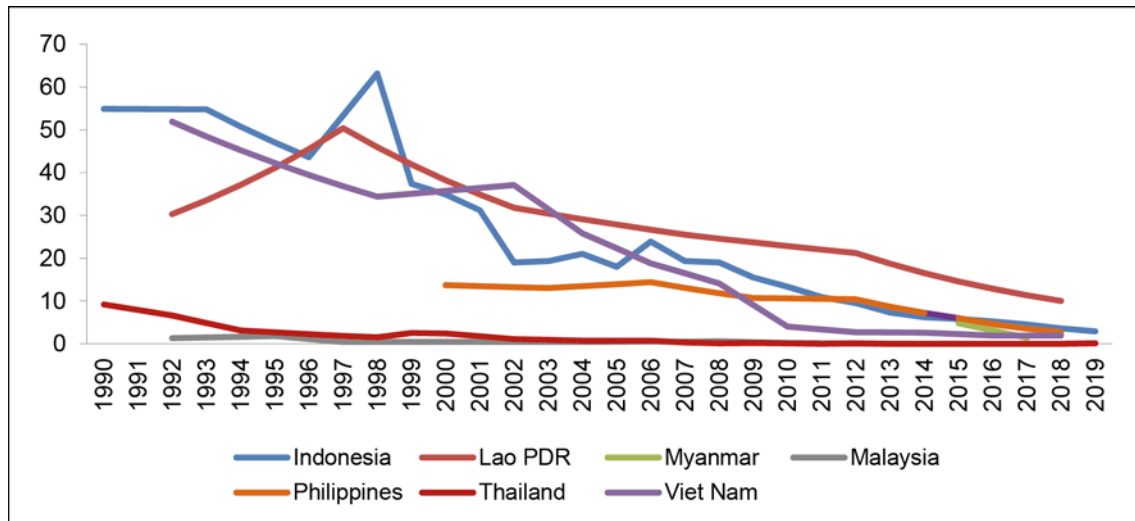


Notes: Europe includes the euro area (15 economies) plus other Europe (the Czech Republic, Denmark, Hungary, Iceland, Norway, Sweden, Switzerland, and the United Kingdom). Other mature economies include Australia; Canada; Hong Kong, China; Israel; New Zealand; Singapore; the Republic of Korea; and Taipei, China. Other developing Asia includes Indonesia, Malaysia, Pakistan, the Philippines, Thailand, and Viet Nam.

Source: International Monetary Fund. World Economic Outlook April 2021 Database. Accessed 8 April 2021. <https://www.imf.org/en/Publications/WEO/weo-database/2021/April>.

The region's spectacular growth has generated positive results in reducing poverty and lifting the living standards for more than a billion people. Figures 2a and 2b showcase the poverty reduction in ASEAN and the PRC. The numbers may have noise, but the trends are nevertheless impressive. The average growth has a positive impact even on the poorest.

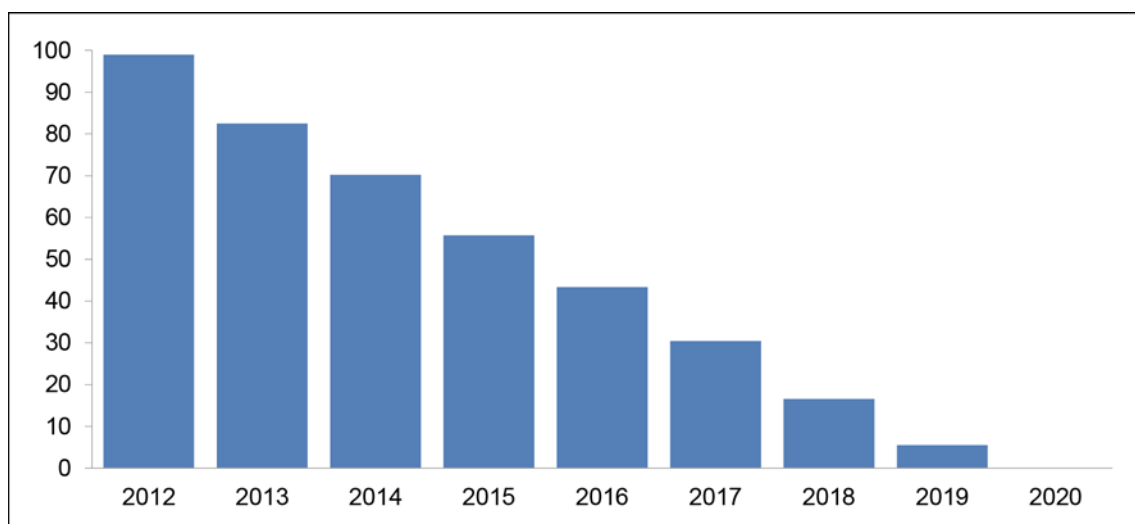
Figure 2a: The ASEAN Poverty Headcount Ratio at \$1.90 a Day (2011 PPP), 1990–2019
(Percentage of the Population)



Lao PDR = Lao People's Democratic Republic.

Source: UN data. Accessed 7 April 2021. <http://data.un.org/>.

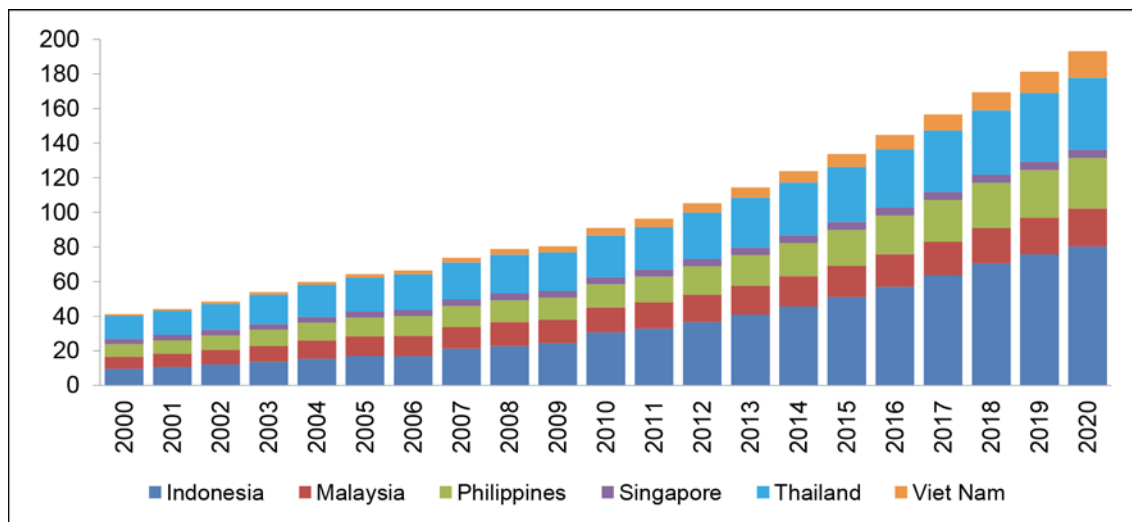
Figure 2b: The Number of Rural Residents in Poverty—The People's Republic of China, 2012–2020



Source: The State Council Information Office of the People's Republic of China. 2021. *Poverty Alleviation: China's Experience and Contribution*. Beijing: Foreign Languages Press Co. Ltd.

These regions' growth has also created a sizeable middle class. Figure 3a shows that ASEAN has around 190 million middle-class residents (earning or spending \$10–\$100 per person per day). The PRC's middle class consisted of 588 million people in 2020. Figure 3b shows that Asia had 54% of the world's middle class in 2020, and projections indicate that it will have 65% in 2030 (Buchholz 2020). These macro data prompt optimism about further development in Asia.

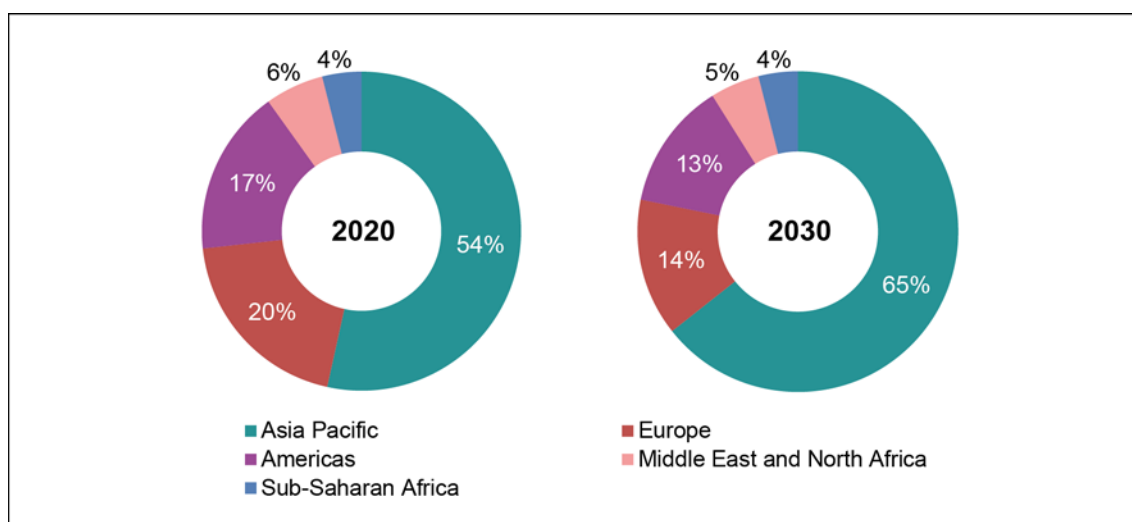
Figure 3a: The Rise of the ASEAN Middle Class: Middle-Class Population, 2000–2020 (Million)



Note: Middle class refers to the number of people living in households earning or spending between \$10 and \$100 per person per day (2005 \$ purchasing power parity).

Source: Brookings. "Development, Aid, and Governance Indicators." Accessed 10 April 2021. <https://www.brookings.edu/interactives/development-aid-and-governance-indicators-dagi/>.

Figure 3b: The Rise of the Asian Middle Class: The Share of the Global Middle Class by Region

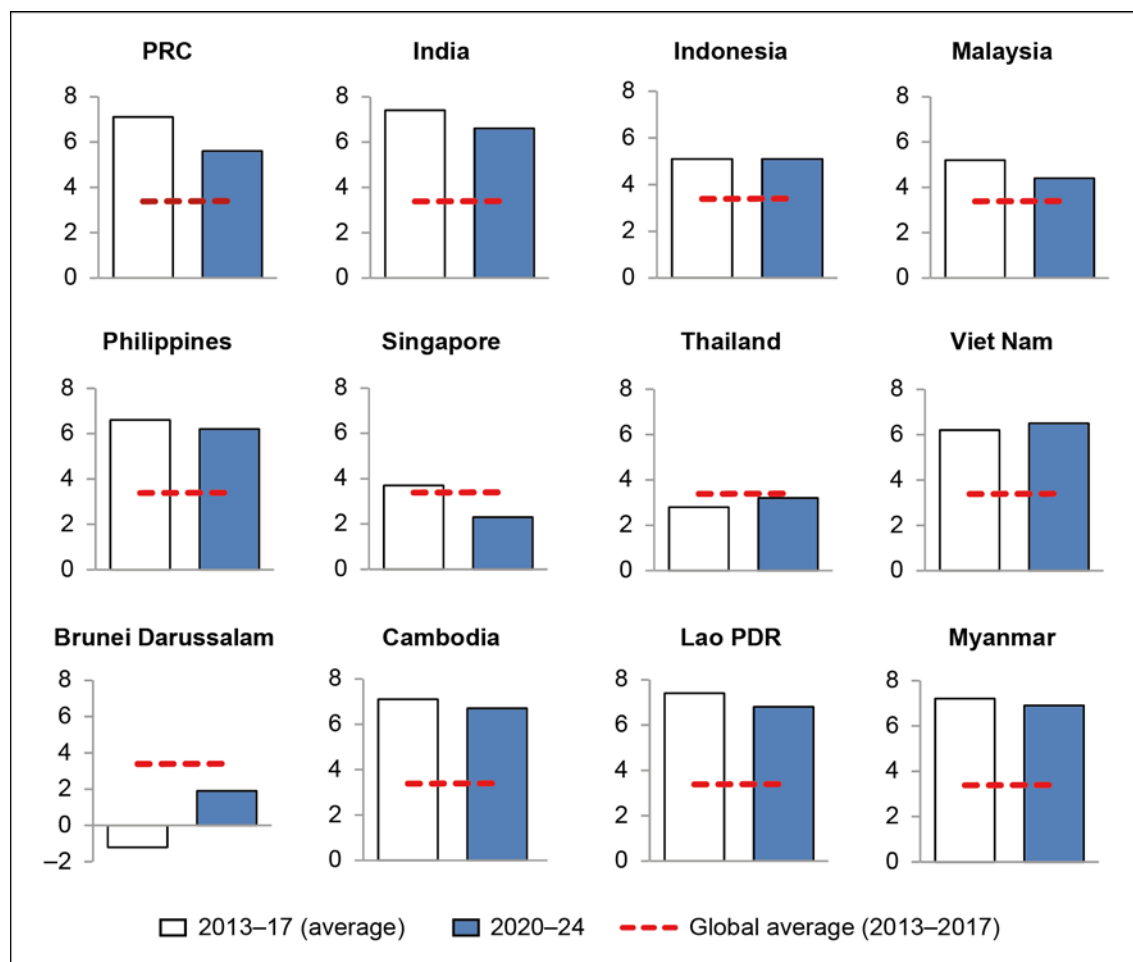


Note: Middle class refers to households with incomes between \$11 and \$110 per person per day (purchasing power parity) in 2011.

Source: Brookings Institution as cited in Buchholz, K. 2020. *This Chart Shows the Rise of the Asian Middle Class*. World Economic Forum: Agenda. 13 July. <https://www.weforum.org/agenda/2020/07/the-rise-of-the-asian-middle-class>.

The growth of the middle class feeds back into further growth. Figure 4 shows the Organisation for Economic Co-operation and Development (OECD) Development Center's (2019) GDP growth projection for the PRC, India, and ASEAN. Their GDP growth rates and their projected growth rates from 2020 to 2024 all surpass the global average of 3.4% in 2013–2017 except for Brunei Darussalam, Thailand, and Singapore. (Singapore's per capita GDP is already among the top 10 highest in the world in 2019.)

Figure 4: ASEAN, PRC, and India: GDP Growth, 2013–2017 and 2020–2024



Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

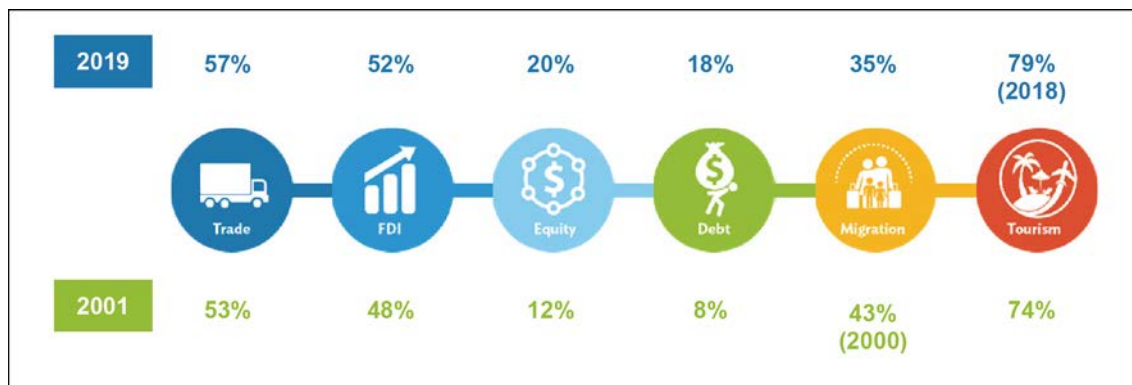
Source: OECD Development Center. 2019. *Economic Outlook for Southeast Asia, China and India 2020*.

2.2 An Integrating Asia Economic System?

The above data support the idea that Asia has become a significant consumer market in its own right. The large Asian consumption markets elevate Asia's economic integration. Businesses contribute to economic integration because they tend to cluster their value chains around their markets. Figure 5 contains ADB's report of measures indicative of Asia's regional integration. It shows that intra-Asia trade, direct investment, equity holdings, debt, and tourism have all increased in the past two decades (ADB 2021). The report commented that, despite the COVID-19 pandemic, "Asia immensely benefited from open trade and investment, with the region's export-driven growth

strategy and attractiveness to foreign direct investment (FDI) lifting millions out of poverty over half a century” (p. 3).

Figure 5: Asia’s Regional Integration: Intraregional Shares, 2001 and 2019
(% of total)



Equity = equity asset holdings (stock data); Debt = debt asset holdings (stock data); FDI = foreign direct investment (flows data). Migration is based on outbound data. Tourism is based on arrivals data.

Note: Where 2019 and 2001 data are not available, the latest year with available data is indicated in parentheses.

Source: ADB. 2021. *Asian Economic Integration Report 2021 Highlights*. Manila.

However, there is still a significant gap between the living standards in Asia, including most ASEAN countries, and those in the advanced Western economies. In 2020, the populations of Asia, North America, and Europe were, respectively, 4.3 billion, 0.369 billion, and 0.748 billion. These numbers show that Asia's share of the world's population is substantially larger than its share of the world's GDP. While Asia as a whole is gaining economic significance, many Asian countries, including the PRC, India, and ASEAN, have much catching up to do, for example as measured by the per capita GDP. The PRC also faces increasingly tight internal growth constraints, rising labor wages, and an aging population, like Japan and the Republic of Korea.

2.3 Reality Check

Strong economic growth and rapid progress in economic integration give a positive outlook for ASEAN. However, encompassing the populous PRC and India, Asia has more than 3.4 billion people, accounting for around 55% of the global population. ASEAN has an estimated 667 million people. Supposing that the growth goal of ASEAN economies, together with the PRC and India, is to attain middle-income-country status, or slightly above, they have to increase their per capita GDP by about \$5,000. A flow of new GDP per capita of \$5,000 translates into an annual flow of \$17 trillion, roughly 81% of the total US factor earnings in 2020. For these countries to attain an advanced income country status, they need to have further per capita income growth of about \$5,000. That is another \$17 trillion per annual factor earnings, more than the PRC's earnings in 2020 of \$14.7 trillion. Highly efficient and effective utilization of resources is the only way to enable our world to support the massive Asian populations in attaining developed country living standards. To achieve these, Asia has to adhere to sound economic principles and to overcome growth barriers.

Modern-day economic concepts suggest that economic prosperity relies on specialization and cooperation, following, for example, Smith (1776) and Ricardo (1817). These sound economic thoughts suggest extending the production scale to the

minimum efficient scale and conducting trustworthy rule-based cooperation across specialized firms and trading nations. The implication is that the path to sustainable convergent growth in Asia, especially for emerging Asian countries, is market integration and the adoption of the principle of comparative advantage.

The potential of economic benefits from regional integration is huge, given the economic and demographic diversity across the region. Highly developed and capital-intensive regions in East Asia, like Japan, the Republic of Korea, and coastal areas of the PRC, are already feeling the pressure of the aging population and rising wages. In addition, to varying degrees, they are resorting to robotization in some industries. However, in the region as a whole, many countries have an abundance of labor and idle laborers. ASEAN remains young, and its population is still growing.

With broader and deeper economic integration, the region can exercise greater economies of scale and individual economies can benefit from comparative advantages by offering businesses and consumers unfettered access to markets while allowing free flows of physical, human, and financial resources. In this way, labor-abundant countries can serve labor-scarce countries; capital can flow to wherever the investment return is the highest; and goods and parts can flow to the users offering the best prices. The vision is a world of free competition where the first fundamental welfare theorem applies, as economists would surely recognize.

Reality, however, is less rosy. Capital-intensive aging countries are either adopting robotization or moving production to the less-developed areas within their borders, for example inland areas in the PRC. ASEAN economies have been benefiting from the relocation of production facilities and the redirection of investment from some multinational companies in a limited way. Some ASEAN economies accept migrant workers, but most deny them resident rights. Nevertheless, ASEAN economies face non-trivial growth and integration barriers: (i) an infrastructure development gap; (ii) an education gap; and (iii) a market institutions gap, especially in financial sectors, which is very much related to governance issues such as government inefficiency and policy ineffectiveness.

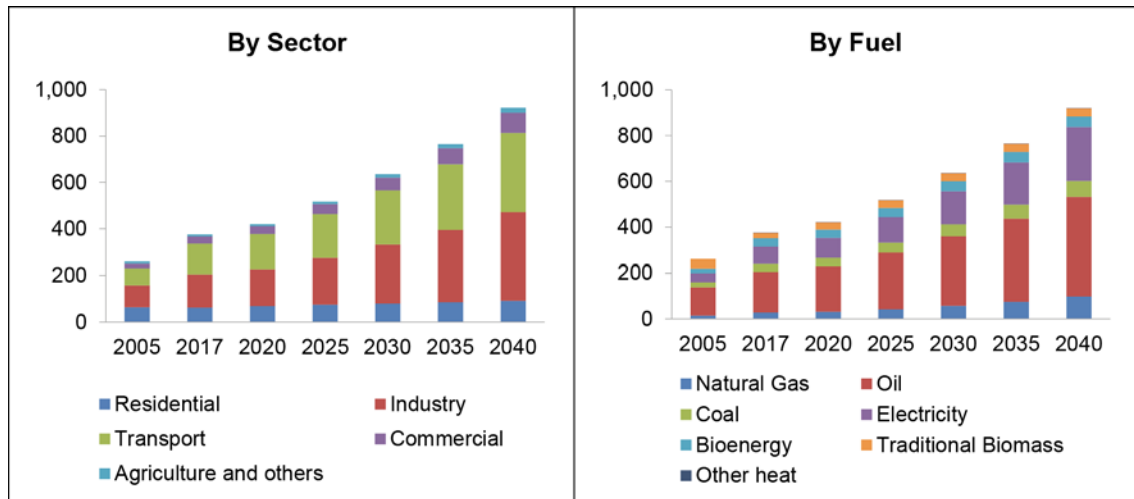
Below we discuss some of these challenges in ASEAN economies.

2.3.1 The Infrastructure Gap

ASEAN needs to invest more in infrastructure and upgrade its quality. The lack of an adequate supply of water, drainage, power, railroads, highways, piers, and airports will continue to cause under-utilization of resources, including labor, stifle productivity, and constrain growth in ASEAN. Figure 6a shows ASEAN's total final energy demand by sector and by fuel according to the baseline scenario in the *6th ASEAN Energy Outlook* of the ASEAN Centre for Energy (Association of Southeast Asian Nations (ASEAN), 2020). To power its manufacturing and to meet rising consumption needs, ASEAN has to invest about \$490 billion cumulatively between 2025 and 2030 under the Sustainable Development Scenario, according to the International Energy Agency (IEA) *World Energy Outlook 2020* (IEA 2020).

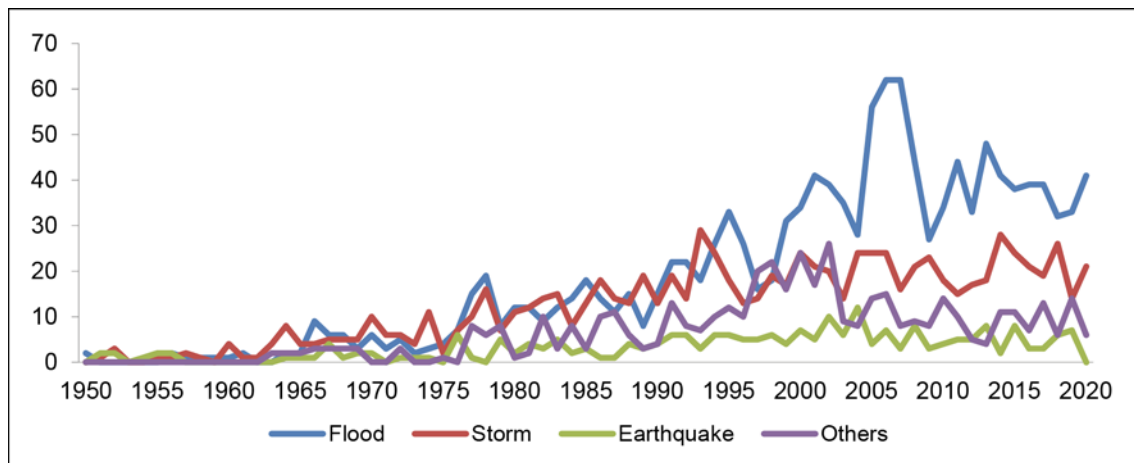
Infrastructure development is more than empowering production and transportation. Based on data from the Centre for Research on the Epidemiology of Disasters, developing Asia experienced 20.2% of the global disaster events in 2010–2020. Figure 6b shows a surge of incidents of flooding and storms in developing Asia. The cause could be global warming. ASEAN needs to build waterway infrastructure and other similar infrastructure to protect property and lives. Improved living conditions and protection for physical property, just like the power supply, attract both plant development and outside professionals to build businesses.

Figure 6a: Total Final Energy Demand by Sector and by Fuel, Baseline Scenario
(Million Tonnes of Oil Equivalent)



Source: ASEAN Centre for Energy. 2020. *The 6th ASEAN Energy Outlook 2017–2040*. Jakarta. <https://aseanenergy.org/category/publications/>.

Figure 6b: Recorded Occurrence of Disasters in Developing Asia, 1950–2020



Notes: Other disasters include drought, epidemics, volcanic activity, landslides, extreme temperature, insect infestation, wildfire, and mass movements (dry). Developing Asia includes Afghanistan; Azerbaijan; Bangladesh; Bhutan; Cambodia; Georgia; Hong Kong, China; India; Indonesia; Kazakhstan; Kiribati; the Kyrgyz Republic; the Lao People's Democratic Republic; Malaysia; the Maldives; Mongolia; Myanmar; Nepal; Pakistan; the People's Republic of China; the Philippines; the Republic of Korea; Sri Lanka; Taipei, China; Tajikistan; Thailand; Timor-Leste; Uzbekistan; and Viet Nam.

Source: Centre for Research on the Epidemiology of Disasters (CRED). "Emergency Events Database." Accessed 9 April 2021. <http://emdat.be/database/>.

ADB estimated that the infrastructure investment needs will be around \$26 trillion between 2016 and 2030, \$1.7 trillion per year, in the Asia and the Pacific region to maintain the region's strong growth momentum, continue the pace of poverty reduction, and make the necessary adjustments to climate change (Asia's total GDP is about US\$31.6 trillion in the 2019 US dollar). While that is affordable, the financing need is beyond the affordability of most governments. There is a need for a public–private partnership: combining public money and private sector investment to turn infrastructure investment needs into bankable project investments.

2.3.2 The Education and Skills Gap

As the ASEAN region makes advances in economic development, there is an increasing demand for skills, innovation, and knowledge. Most ASEAN economies have achieved middle-income status and are now striving to attain high-income status through skills, technology, and innovation (Singapore is an exception and is already at the top stage). Accordingly, ASEAN economies have to nurture the development of skilled labor. According to the World Bank's data on secondary enrollment, ASEAN countries have a mixed degree of educational attainment; many have attained a reasonably high level, although some still need to catch up. The gap is much more significant in terms of tertiary school enrollment.¹ To become a valued part of the value chains that developed countries lead and to advance in development, the region must continue to improve the education quality and skills training to meet the growing demand for skills. That means that the educational attainment level, especially in science, technology, engineering, and math (STEM) areas, has to catch up with countries with a higher level of development. The OECD Development Center estimated significant skilled labor shortages in Cambodia, Indonesia, and Thailand, as Figure 7 shows.

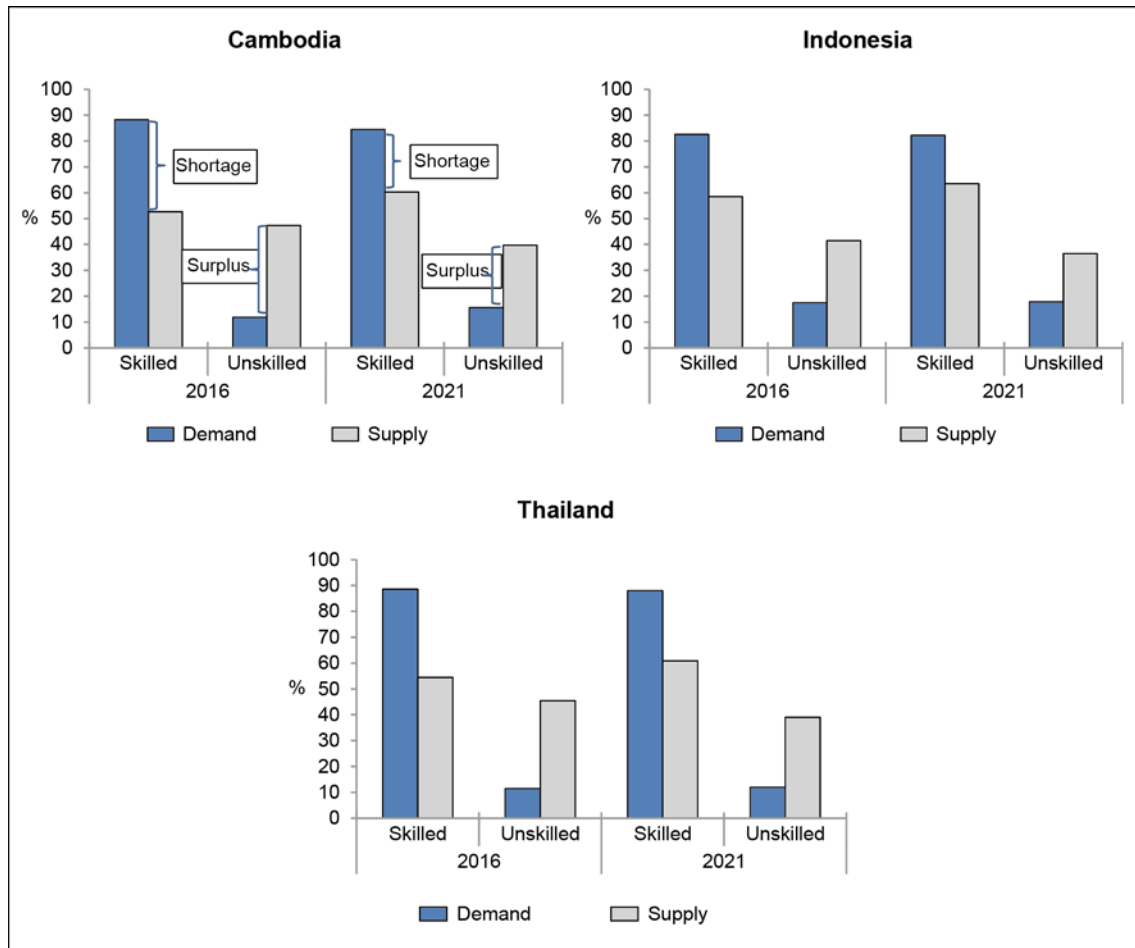
2.3.3 The Market Institution and Governance Gap

Successful businesses seize economic opportunities to create value added, thereby contributing to economic growth and cross-border economic cooperation. Businesses only thrive in an "ease-of-doing-business" environment. Table 1 presents the World Bank's "Ease of Doing Business" ranking in 2020. The ranking includes sub-categories showing how easily a business can start up, including registering and obtaining electricity, building permits, and credit. There are also measures to improve trust between businesses, for example protecting investor rights and contractual rights and resolving insolvency. Furthermore, the ranking includes the ease of trading across borders. Typically, the higher the ranking, the higher a country's development, for example as measured using the per capita GDP. Of course, other factors, like social stability, play a role too. The rankings in the sub-categories are illuminating. They indicate that starting a business in ASEAN, except Singapore and Brunei Darussalam, is challenging. Registering property is testing in all ASEAN economies but Singapore.² Businesses in countries like Brunei Darussalam, Viet Nam, the Philippines, Cambodia, the Lao People's Democratic Republic (Lao PDR), and Myanmar have low access to credit. Some ASEAN countries, like Indonesia, the Philippines, Cambodia, and the Lao PDR, can use improvements in enforcing contracts. Finally, no ASEAN countries have a high rank in trading across borders. The table, together with the overall ranking, indicates that ASEAN countries, except for Singapore, need to improve their business environment significantly, especially the institutional quality. They must all also put more effort into facilitating cross-border trade.

¹ The World Bank reported that, in 2019, the average secondary school enrollment rate was 76% for the world, 99% for the US, 100% for the EU, 88% for the PRC, and 99% for the Republic of Korea. For ASEAN, the rates were as follows: Brunei Darussalam 92%; Cambodia 45%; Indonesia 89%; the Lao PDR 66%; Malaysia 84%; Myanmar 68%; the Philippines 84%; Singapore 100%; Thailand 100%; and Viet Nam 87% (ASEAN Secretariat 2013). The average tertiary school enrollment rate was 38% for the world, 89% for the US, 75% for the EU, 54% for the PRC, and 96% for the Republic of Korea. For ASEAN, the rates are as follows: Brunei Darussalam 31%; Cambodia 15%; Indonesia 36%; the Lao PDR 14%; Malaysia 43%; Myanmar 19%; the Philippines 35%; Singapore 89%; Thailand 49%; and Viet Nam 29%.

² Interestingly, obtaining electricity is easiest in Thailand.

Figure 7: The Current and Future Skills Demand and Supply in Three Emerging Asian Economies: Simulation



Notes: Skilled refers to all occupations above ISCO-08 level 1 and levels of education above ISCED 1997 level 1, while unskilled refers to all occupations of ISCO-08 level 1 and education ISCED 1997 level 1. Forward-looking data points are based on linear projections. We obtained the skill levels on the demand side by mapping ISCO-08 occupational categories from the Labour Force Surveys into the ISCO-08 skill levels according to the International Labour Organization (2019), merging levels 2, 3, and 4 as "skilled." The demand for skills refers to the occupational structure of employment. We obtained the skill levels on the supply side from the educational attainment variable in the Labour Force Surveys and mapped them to the ISCO-08 skill levels based on International Labour Organization (2012). We then compared the supply-side structure of skills with the demand-side data to determine mismatches.

Source: OECD Development Center. 2019. *Economic Outlook for Southeast Asia, China and India 2020: Rethinking Education for the Digital Era*. Paris: OECD Publishing. <https://doi.org/10.1787/1ba6cde0-en>.

Table 1: Ranking of Ease of Doing Business, 2020

Economy	Global Rank	Starting a Business	Dealing with Construction Permits	Obtaining Electricity	Registering Property	Obtaining Credit
New Zealand	1	1	7	48	2	1
Singapore	2	4	5	19	21	37
Denmark	4	45	4	21	11	48
Korea, Rep. of	5	33	12	2	40	67
United States	6	55	24	64	39	4
United Kingdom	8	18	23	8	41	37
Norway	9	25	22	44	15	94
Malaysia	12	126	2	4	33	37
Thailand	21	47	34	6	67	48
Germany	22	125	30	5	76	48
Canada	23	3	64	124	36	15
Japan	29	106	18	14	43	94
PRC	31	27	33	12	28	80
Brunei Darussalam	66	16	54	31	144	1
Viet Nam	70	115	25	27	64	25
Indonesia	73	140	110	33	106	48
Philippines	95	171	85	32	120	132
Brazil	124	138	170	98	133	104
Cambodia	144	187	178	146	129	25
Lao PDR	154	181	99	144	88	80
Myanmar	165	70	46	148	125	181
Iraq	172	154	103	131	121	186
Somalia	190	188	186	187	153	186

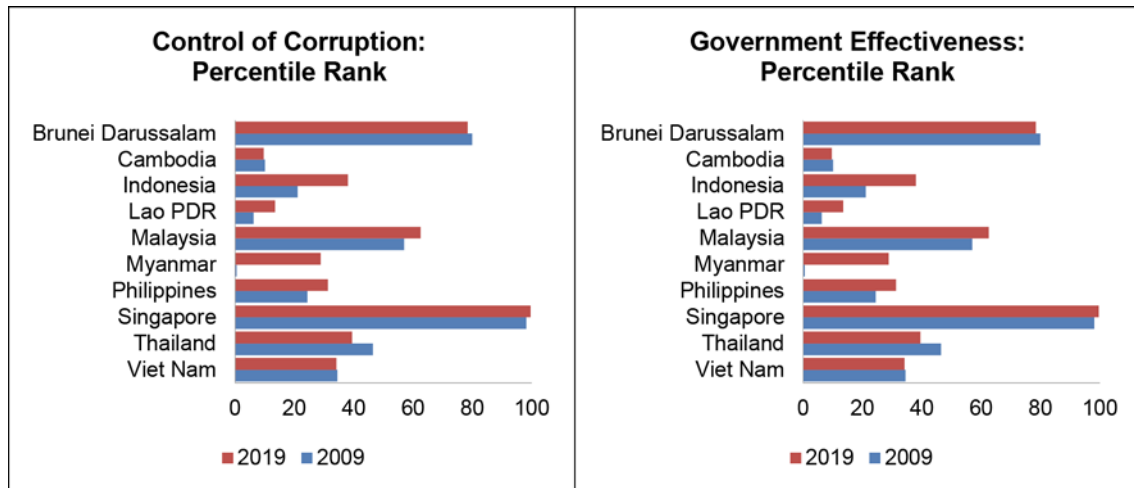
Economy	Protecting Minority Investors	Paying Taxes	Trading across Borders	Enforcing Contracts	Resolving Insolvency
New Zealand	3	9	63	23	36
Singapore	3	7	47	1	27
Denmark	28	8	1	14	6
Korea, Rep. of	25	21	36	2	11
United States	36	25	39	17	2
United Kingdom	7	27	33	34	14
Norway	21	34	22	3	5
Malaysia	2	80	49	35	40
Thailand	3	68	62	37	24
Germany	61	46	42	13	4
Canada	7	19	51	100	13
Japan	57	51	57	50	3
PRC	28	105	56	5	51
Brunei Darussalam	128	90	149	66	59
Viet Nam	97	109	104	68	122
Indonesia	37	81	116	139	38
Philippines	72	95	113	152	65
Brazil	61	184	108	58	77
Cambodia	128	138	118	182	82
Lao PDR	179	157	78	161	168
Myanmar	176	129	168	187	164
Iraq	111	131	181	147	168
Somalia	190	190	166	116	168

Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

Source: World Bank Group. 2020. *Ease of Doing Business Ranking*.

Governance is intimately related to the development of the business environment; that is, a low ranking in “Ease of Doing Business” reflects the underlying quality of the government. Figure 8 shows the World Bank’s assessment of ASEAN’s public governance; the longer the horizontal bar, the better the score.

Figure 8: Public Governance in ASEAN Economies, 2009 and 2019



Lao PDR = Lao People's Democratic Republic.

Notes: Control of corruption captures perceptions of the extent to which people exercise public power for private gain, including both petty and grand forms of corruption, as well as elites' and private interests' "capture" of the state. Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The percentile rank indicates the country's rank among all the countries that the aggregate indicator covers, with 0 corresponding to the lowest rank and 100 to the highest rank. We adjusted the percentile ranks to correct for changes over time in the composition of the countries that the World Bank's Worldwide Governance Indicators cover.

Source: World Bank. "Worldwide Governance Indicators." In *World Development Indicators*. Accessed 8 April 2021. <https://databank.worldbank.org/reports.aspx?source=World-Development-Indicators>.

The graphs show two noteworthy points. First, a country in which the government controls corruption and is more effective has a higher score in the Ease of Doing Business ranking in Table 1. The observation supports the assertion that the quality of public governance is related to the ability to nurture sound businesses and attract both domestic and foreign investment. For example, Singapore's Government has the best score in controlling corruption and being effective, and Singapore ranks second globally in the Ease of Doing Business. In the same manner, Malaysia is a distant second among the ASEAN countries in the World Bank's global "Ease of Doing Business" ranking; its control of corruption and government effectiveness are only behind Singapore and Brunei Darussalam of the ASEAN countries. (Brunei Darussalam's low ranking in the "Ease of Doing Business" is likely to have a connection to its cultural and religious environment.)

Second, notice that ASEAN countries have not improved their public governance much over the last decade. They need to rein in corruption and raise government efficiency and policy effectiveness. While the positive external pull factors, such as strong growth and the rising middle-income class, in Asia are eliciting development in ASEAN, strengthening the intrinsic push factor can be critical for all ASEAN economies to achieve inclusive and sustainable growth and advance in the quality of living standards.

In summary, ASEAN has a growing economic system that has become more integrated over the last two decades. While ASEAN economies, in general, have made visible

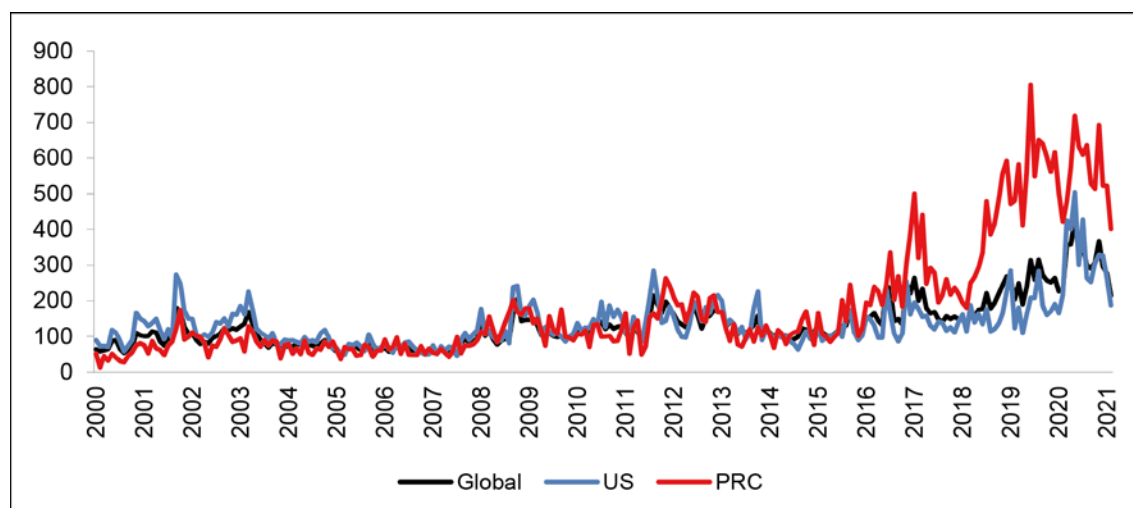
progress in socio-economic development, especially in reducing poverty and growing a middle-income class, significant variation remains in their achievements across and within economies. To facilitate economic growth and development further and achieve the region's economic convergence, ASEAN has to overcome gaps in quality infrastructure and educational attainment. ASEAN countries also have to improve their domestic business environment, including allowing easier business entries, better access to credit, better contract enforcement, and easier cross-border trading. More importantly, ASEAN governments need to improve their institutional quality while strengthening their efficiency and effectiveness.

3. GEOPOLITICAL TENSION, DECOUPLING, AND RCEP

The rise of Asia, particularly with the PRC emerging as the world's largest economy (on a purchasing power parity basis) and competing as a global superpower, has been reshaping the global economic and political landscape over the past two decades. Heightened geopolitical tension and economic competition between the world's largest economies and trading partners have economic consequences for the rest of the world, particularly Asia. The tension is not going to ease soon, and ASEAN is caught in the middle. The impact on ASEAN's convergent growth is more complicated.

Multiple factors drive this tension. On the economic and commercial side, competition has intensified for the globally dominant status on goods and financial markets. Losing global market shares can potentially weaken the US dollar's dominance in the international payments system and the T-bills' dominance and unique position as safe assets (Brunnermeier, Merkel, and Sannikov forthcoming (2021); Gourinchas (2021)). Furthermore, both economies have a strong awareness of a change in the technology landscape. Leading technology companies from the PRC and the US compete fiercely in sectors with very significant dynamic economies of scale, that is, the "winners take all" sectors. The competition escalates to debates on the superiority of political systems, social beliefs, and even values. The tension has led to non-cooperative policies between the US and the PRC. The consequence is uncertainty in global economic policies, especially in cross-border trade and investment. Figure 9 shows the Economic Policy Uncertainty Indices for the PRC and the US.

Figure 9: Economic Policy Uncertainty Index, Jan. 2000–Feb. 2021



PRC = People's Republic of China, US = United States.

Source: Economic Policy Uncertainty. Accessed 7 April 2021. <https://policyuncertainty.com/>.

Of course, not all the movement of the indices can be attributed to mutually hostile economic policies. For example, the PRC has been pursuing economic rebalancing from export- to consumption-driven and more inclusive growth since 2009 and has launched many reform programs and related policy changes. In the past 4 years, the US has experienced much internal political and policy uncertainty too. Nevertheless, the rising and volatile indices since 2016, to a large extent, reflect the non-cooperative US–PRC relationship or at least the visible escalation of economic conflicts between them. The US–PRC Summit in Alaska in March 2021 crystalized the nature of the tension. Wright (2021), Director of the Center on the United States and Europe and a Senior Fellow of the Brookings Institution, wrote:

*Historically, the most volatile periods of rivalry between major powers is in the early stages; think of the late 1940s and the 1950s in the Cold War. The red lines become apparent only through interactions in crises. The greatest risk is for either side to miscalculate the resolve or intentions of the other. By getting real in Anchorage, both sides have taken the important first step toward a more stable relationship by acknowledging the true nature of their relationship.*³

3.1 Rising Regionalization

Given the intensified geopolitical tension, businesses have to manage risks. Businesses will always consider where the market is and configure their value chains to save on production and transportation costs. They will also mitigate operational risks, financial and economic risks, and political risks. It is difficult to fathom the full impact of the G2 tension. However, the trend in 2019 provides hints for how events may transpire. (In 2018–9, the conflict between the US and the PRC intensified, but the pandemic had yet to arrive.)

The following is an excerpt from an anonymous quote from a Chinese company executive:

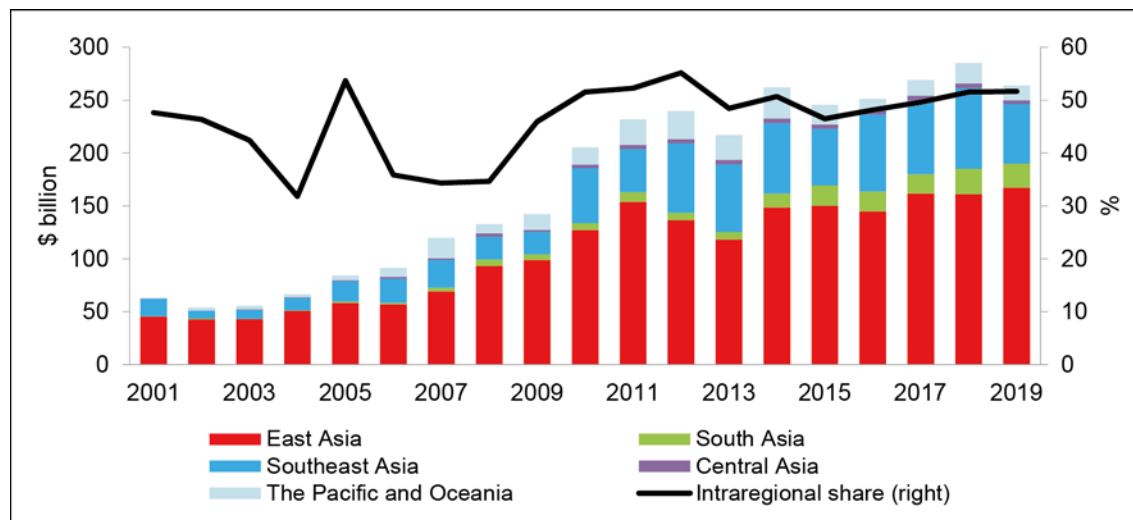
2019 was a challenging year for our North American market. Faced with uncertainties stemming from the Sino-US trade war, we quickly responded through all the staff's efforts. Our factory in Vietnam has achieved approximately 90% of our previous final shipment to North America in a year. We reduced the possible subsequent impact of the Sino-US friction on us. We expedited recruitment and ramped up production capacity in ASEAN, which ended up enhancing our competitiveness, our exports, and overseas market shares.

This is typically a rational firm-level response to political uncertainty. The micro-level example shows up in systematic macro-level data. The UNCTAD data show that, while the world's total inward FDI contracted by 13.4% year on year, inward FDI to Asia rose by 6.3% to \$559.7 billion in 2019. In particular, more than half of the FDI inflows to Asia were intraregional—according to the Balance of Payment data (Figure 10). In 2019, intraregional FDI flows in Asia reached 51.7% of the total inward FDI flows to Asia. Similarly, while the world trade shrank in 2018–9, Asia's intraregional trade increased by 1.5%. These observations may signal that businesses are turning their attention to the growing Asian production capability and consumer markets. The political risks and related economic policy uncertainty that the G2 tension produces are inducing them to

³ The nature of the relationship is as in the previous paragraph: an intense competition between two systems and mutual resistance to letting the other dominate. In other words, it is not likely that the two sides will explore re-cooperation and even the possibility of a détente soon.

reorient their value chains in Asia, increase their emphasis on the Asian consumer markets, and thus enhance Asia's economic integration.

Figure 10: Asia's Intraregional FDI Inflows, 2001–2019



Source: ADB. 2021. *Asian Economic Integration Report 2021*. Manila; data from the ASEAN Secretariat, Eurostat, OECD, UNCTAD, and national sources.

The Regional Comprehensive Economic Partnership Agreement (RCEP), which the region finalized in November 2020 after more than 8 years of negotiations, signifies crucial momentum to advance its economic integration efforts. It also reflects ASEAN economies' desire to expedite the economic integration process and realize the ASEAN Economic Community's agenda. They will also have access to the markets and resources in the broader Asia and the Pacific region. The ASEAN Secretariat (2020) stated:

The Regional Comprehensive Economic Partnership (RCEP) Agreement is an agreement to broaden and deepen ASEAN's engagement with Australia, the PRC, Japan, [the Republic of] Korea, and New Zealand. ... The objective of the RCEP Agreement is to establish a modern, comprehensive, high-quality, and mutually beneficial economic partnership that will facilitate the expansion of regional trade and investment ... Accordingly, it will bring about market and employment opportunities to businesses and people in the region.

The RCEP Agreement clarifies regulations on "rules of origin," "customs procedures and trade facilitation," "sanitary and phytosanitary measures," and "standards, technical regulations, and conformity assessment procedures." The ASEAN's summary statement ended by stating that "The RCEP Agreement will work alongside and support an open, inclusive, and rules-based multilateral trading system market and its factors of productions." If the RCEP gains full ratification, the agreement will enhance economic integration and co-growth in the Asia and the Pacific region.

4. THE PANDEMIC

The COVID-19 pandemic broke out in 2020. Due to the highly contagious nature of COVID-19, nearly all economies have introduced measures to curtail face-to-face contact and restrict mobility. Accordingly, the world has suffered from very significant

supply and demand shocks. The inter-linked global supply chains have amplified the supply shock. Financial interdependence across firms and markets has magnified the liquidity stress and deepened the bankruptcy concern. In response, many, if not all, governments have also deployed multiple fiscal policies to limit unemployment and bankruptcy. Central banks around the world have injected a large amount of liquidity to forestall widespread financial stress. Nevertheless, the COVID-19 pandemic will have a long-lasting impact on the world and the region.

4.1 Short-Term Implications

A machine search on the NBER and CEPR working papers series, focusing on only empirical papers on COVID-19 in 2020 and January 2021, yielded about 500 articles. While the vast volume of papers called for a meta-analysis, these research papers broadly showed that the more effective a government is in containing the spread of COVID-19, the less costly the problem is to the government and its economy. Simultaneously, the research showed that the more people are aware of the highly contagious nature of the disease and its severe impact on personal and community health, the more they adopt social distancing and cooperate in lockdowns (Agarwal, He, and Yeung 2020). As many Asian countries experienced SARs in 2003, they understand the nature of such a disease and are better prepared than countries in the West. Their residents also tend to be more cooperative with authorities than their counterparts in the West. So far, with a few exceptions, Asian countries have performed better than Western countries in limiting the spread of COVID-19 and managing its damage to the economy.

Some circumstantial evidence supports these points. Figure 11a shows that Asian countries, other than India, have far fewer cases of infection than the US. For example, Indonesia's population is about 83% of that of the US; however, its infection cases are only 5% of those of the US. As of 7 April 2021, World Health Organization data reveal that the US has more than 30 million infection cases and around 552,000 deaths, while Indonesia has 1.5 million cases and almost 42,000 deaths. These vast gaps cannot be due just to under-reporting. They indicate that Asia has contained the COVID-19 pandemic much better than the West.

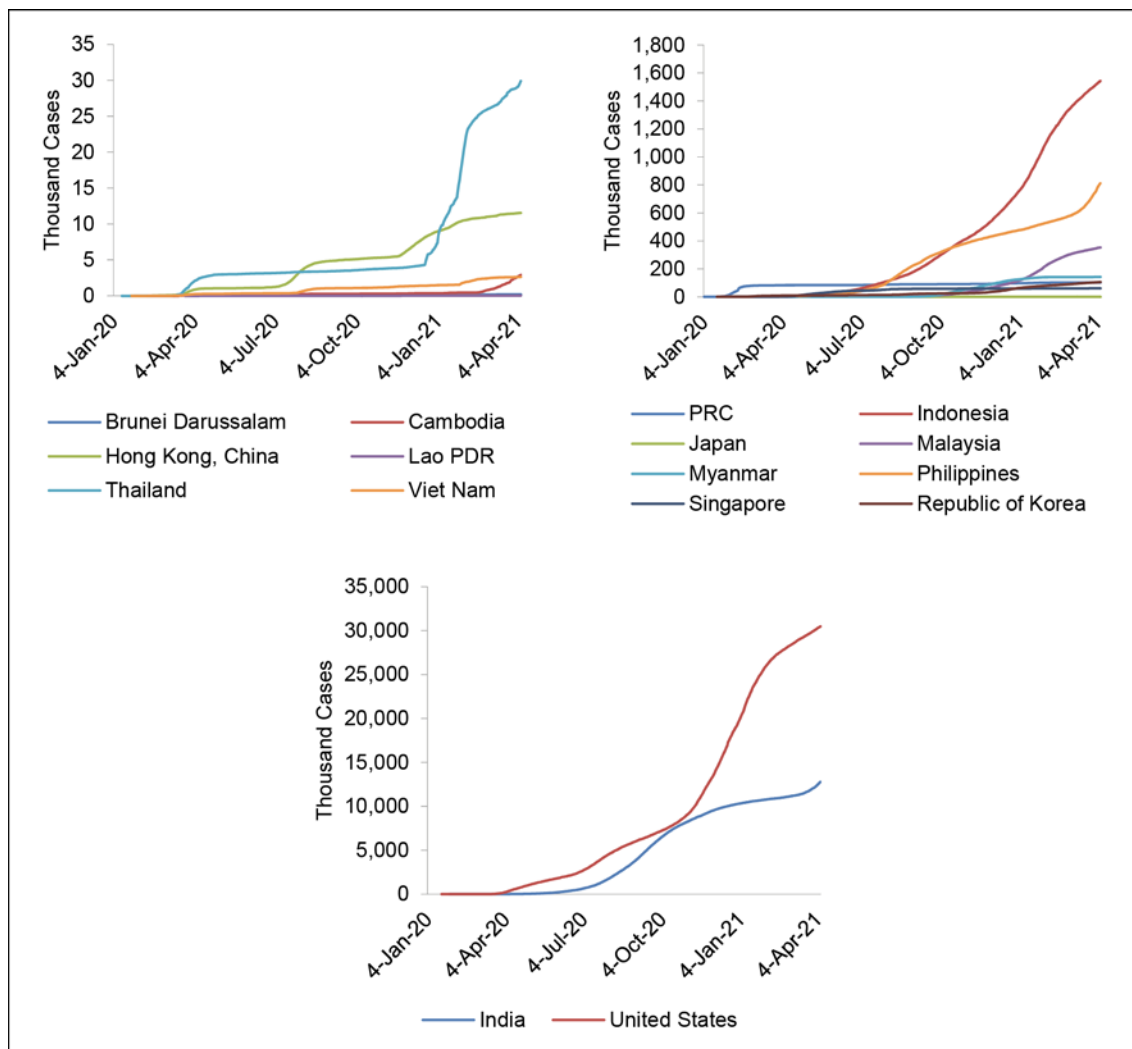
Asian economies have suffered less economic damage than the West as well. Figure 11b shows graphically that, in the 2020 pandemic year, the surge in unemployment in the US was substantially larger than in all the Asian countries except India and the Philippines. Estimations indicate that economic growth in developing Asia contracted by -0.4% in 2020 but East Asia has registered positive growth of 1.6% , reflecting a faster-than-expected recovery in the PRC (ADB 2020). Meanwhile, the US GDP contracted by 3.5% ; its fiscal deficit reached US\$3.314 trillion (the fiscal spending was US\$6.5 trillion, and the year's GDP was US\$20.93 trillion).

Thus, there is plenty of evidence, albeit circumstantial, that the more successfully a country contains the COVID disease, the less costly the shock is. Asia is likely to stage a faster and stronger recovery from the COVID shock. The consequence is that world resources will flow toward Asia, particularly the PRC, the first country to recover from the pandemic-driven economic shock. Indeed, Hansen (2021) wrote:

As the world struggled to contain the coronavirus crisis, foreign direct investment in the United States plummeted 49% in 2020 while investment in [the People's Republic of] China rose 4%, making China the largest recipient of foreign inflows for the first time (UNCTAD Global Investment Trend Monitor 38 report, January 24 2021). ... China pulled in \$163 billion in new investments from foreign businesses in 2020 while the U.S. fell into second place with \$134

billion. ... The U.S. and China had broadly different responses to the pandemic, with China's government instituting strict, large-scale lockdown measures in early 2020 while the United States' response was far less centralized and far less effective in curbing the spread of the virus. ... That prompted a major shift in the global economy—while the United States and other Western countries struggled to contain the pandemic, China went back to work, manufacturing picked up, and as a result China was the only major economy to report economic expansion in 2020.

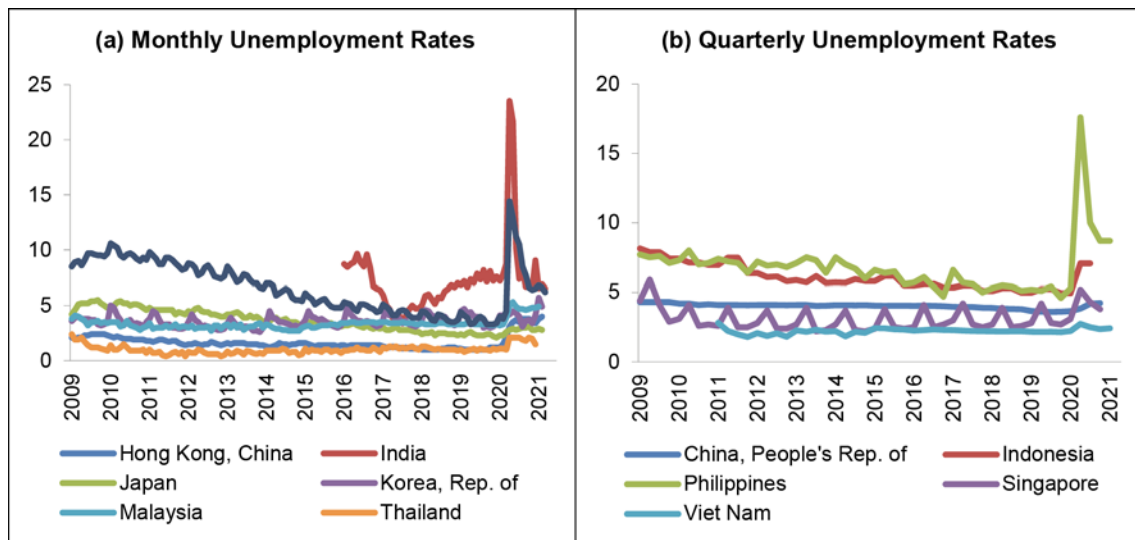
Figure 11a: Cumulative Confirmed Cases of COVID-19 in East and Southeast Asia, India, and the United States



COVID-19 = coronavirus disease, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

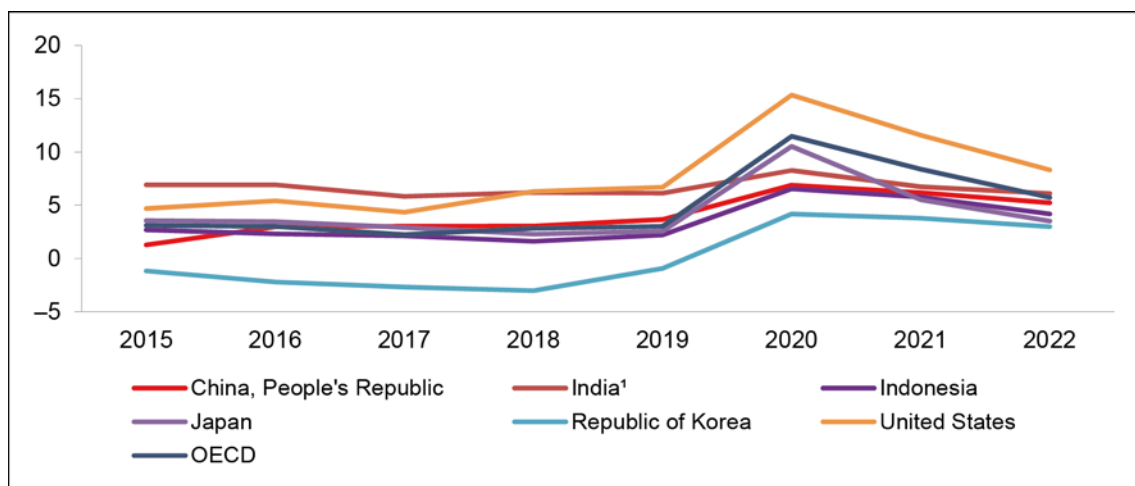
Note: Data as of 7 April 2021.

Source: World Health Organization and Centre for Health Protection; downloaded from CEIC Data.

Figure 11b: Unemployment Rates in Asian Economies and the United States (%)

Source: CEIC.

There are some risks. Globally, governments have incurred huge fiscal deficits to combat the pandemic. Figure 12 shows that the pandemic caused the governments in OECD economies to incur a double-digit government deficit, far beyond that of Asian countries, except for Japan. It will take some years for the heightened government debts to subside.

Figure 12: Government Deficit, 2015–2022
(% of Nominal GDP)

OECD = Organisation for Economic Co-operation and Development.

¹ Fiscal year.

Notes: The financial balances include one-off factors, such as those resulting from the sale of mobile telephone licenses. The data for OECD countries are on a national accounts basis, while the data for non-OECD countries follow country-specific definitions. For more details, see the Sources and Methods of the OECD Economic Outlook (<http://www.oecd.org/eco/sources-and-methods.htm>).

Source: OECD. Stat. "Economic Outlook No. 108—December 2020." Accessed 7 April 2021. https://stats.oecd.org/viewhtml.aspx?datasetcode=EO108_INTERNET&lang=en.

In Q4 2020, the US federal debt surged to 129% of the GDP. The US money velocity (GDP/M1) dropped to 1.22 due to the expansionary monetary policy to counter the COVID shock, according to data from the Federal Reserve Bank of St Louis. The money velocity is as low as in 1968, the beginning of the high US inflation regime that ended in 1983–84. Thus, the US currently faces a high government deficit, increased government debt, and historically low money velocity. With the rapid deployment of vaccines in the US, its recovery prospect in 2021 has brightened. However, if the forced savings during the pandemic turn to pent-up consumption, inflation might follow.⁴ Inflation expectations have already pushed long-term interest rates higher in the US economy, rattling global financial markets in February 2021. Overall, high-income economies with rapid vaccination campaigns face a qualitatively similar situation. These countries have to strike a very delicate balance: raise taxes to enhance government revenue, curtail government spending, slightly tighten the money supply, and yet protect a tentative recovery. The US particularly has to avoid the temptation to activate seigniorage tax (taking advantage of the universal use of the T-bill as a safe asset). Mismanagement of these conditions could have negative global spillovers, triggering global inflation, financial volatility, and recession.

Another concern is widening income and non-income inequality during the pandemic. The pandemic has cost many jobs, but the employment effect has been rather uneven, more negatively and directly hitting face-to-face jobs, many of which are in service industries—retail, food and restaurant service, entertainment, and labor-intensive manufacturing—all in low-skill and informal sectors.

Furthermore, the fiscal and monetary stimulus programs may have regressive distributional effects if they fail to reignite growth and generate employment successfully. Lowering the interest rates reduces the value of liabilities with a floating rate (e.g., mortgages) and raises the value of assets. Households with housing and mortgage loans benefit. Fiscal support that incentivizes companies to retain employees may induce them to keep essential and high-performing workers who may be able to work elsewhere or even virtually. Job losses will concentrate on low-skilled and informal workers with limited re-employment value. Consequently, there are many reasons to suspect that the pandemic has a regressive income and wealth redistribution effect.

4.2 Longer-Term Implications

An interesting impact of COVID is that it has accelerated the adoption of digital technology, leading to many changes with contradictory economic effects.

4.2.1 Digitization–IOT–AI Transformation

Computing technology allows enormous data storage and extremely speedy data processing. Naturally, digital transformation follows: we can digitize many observations into data, even those that we previously believed to be qualitative observations. Then, data analytics, machine learning, computer vision, and natural language processing enable “machines” to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision making, and even translation between languages. The artificial intelligence (AI) age has arrived.

⁴ Research has shown that consumers’ consumption experiences affect their inflation expectations—the more expensive goods they buy, the higher their inflation expectations (Agarwal, Chua, and Song 2020).

The digital–IOT–AI transformation fundamentally changes every aspect of human behavior. It expands our speed, scope, and accuracy in collecting, organizing, and processing information and in making predictions. Machines can often perform some human tasks (including non-routine ones) much better than humans themselves. For example, machines are more able than humans to identify regular and distinctive patterns. Hence, in medicine, AI helps to decipher scans and x-ray images to improve the reading of patients' physiological condition. Airports can use facial recognition to process passengers through boarding pass control, luggage tagging, and so on. Police forces use the same to identify criminals. In agriculture, farmers use drones equipped with AI to count flowers, enabling them to make sharp and reliable yield predictions.

In businesses, data analytics, AI, robots, and drones change the design, production, logistics and distribution, retailing, and so on. Universities now offer courses and programs in such subjects as accounting technology, marketing technology, and HR technology. Some financial institutions use intelligent robots to help serve customers, while others use machine learning to identify trustworthy borrowers or worthy investment prospects. The digitized payment system substantially raises transaction efficiency and speed, locally and internationally. Fin-tech may also raise financial inclusion and small and medium-sized firms' access to credit.

The application of blockchain technology changes contractual boundaries. The technology allows the development of "smart contracts," that is, self-executing contracts with the terms of the agreement between buyer and seller directly input into lines of code. These can strengthen the trust between contracting parties without relying on extrinsic monitoring.

In construction, AI aids in building maintenance, surveying, and railroad construction and maintenance. In city planning, AI helps to coordinate traffic lights to improve traffic flows and guide emergency vehicles to find efficient routes to their destinations. There are more examples than one can cite, and there are many more exciting future developments. These new capabilities have a substantial impact on every aspect of human life: communication, education, dating, transportation, production, business, governance, and so on.

The digitization–IOT–AI transformation is part of the "general-purpose" technological breakthrough, which the World Economic Forum coined as the Fourth Industrial Revolution (Schwab 2016). Rational balancing opinions offset the excitement. Summers (2020) raised the concern about a savings glut and a systematic decline in the demand for investment. The implication is sluggish growth. Gordon (2018) advanced the secular stagnation view, providing useful empirical observations. The US GDP growth slowed by more than half from 3.2% in 1970–2006 to 1.4% in 2006–16. Part of the slowdown is due to demographic changes, declining immigration, and decreasing labor participation. However, half of it is due to slower productivity growth stemming from education attainment and return to innovations. Gordon (2018) argued that IT, robots, and artificial intelligence lead to evolution rather than revolution.

These respectable arguments can be compatible with the idea that macroeconomic data may not properly measure the productivity growth due to digitization, IOT, robotization, and artificial intelligence or that productivity growth takes time to materialize. First, the digital–IOT–AI transformation could indeed save investments in bricks and mortar and heavy machinery. Second, the GDP may not measure improvements in efficiency and effectiveness that, for example, stem from the more informed and reliable consumption choices that the digital–IOT–AI transformation allows. Third, these arguments are compatible with the assertion that general-purpose technological breakthroughs have long-delayed impacts.

Many fundamental innovations have significant delayed impacts because translating them into material practices takes time. Electricity dramatically affects our life. However, we did not feel the effect widely until we had power plants and electric wires and had developed electricity-driven machine tools and electrical household appliances. Furthermore, there is network externality. Telephony would not be very useful without the majority of the population having a phone. Finally, the spreading of innovations always faces resistance. There was a time when the Luddites destroyed textile machinery in Nottinghamshire, England, in the 18th century. In the US, Connecticut and New York used to have a “12 mph” speed limit, and an automobile had to reduce its speed when meeting or passing horse-drawn vehicles; they had to co-exist safely. The same prolonged delay applies to the digital–IOT–AI transformation.

4.2.2 Accelerated Changes Due to COVID-19

However, the pandemic mutes resistance and indeed accelerates changes. A relevant aspect of the digitization–IOT–AI transformation is that it allows telepresence; humans can act without physiological presence (Baldwin 2019). This is highly valuable in a pandemic. All sectors of human activities are expanding their adoption of virtual technology to conduct as much business as possible without face-to-face contact. Thus, classes, meetings, shopping, entertaining, client–physician interfacing, and many other activities have become virtual. The mass media have widely reported the accelerated changes; for example, as *The Economist* reported on 16 November 2020, “The World in 2021—Covid-19 Forced Businesses To Experiment.” The same applies to consulting companies. McKinsey & Company, in October 2020, published a survey that showed “How COVID-19 Has Pushed Companies over the Technology Tipping Point—and Transformed Business Forever.” PWC, Deloitte, KPMG, and so on have all produced similar reports.

Recall that ASEAN faces hurdles to its sustainable convergent growth—the infrastructure gap, the educational gap, and the government efficiency and effectiveness gap. Digital–IOT–AI technology can make contributions to bridging these gaps. For example, technology allows better estimation, better monitoring, and more robust cost control in infrastructure construction. It can also tokenize investment—tokenization allows many more people, including the non-high-net-worth type, who benefit directly from an infrastructure project to invest their savings in the project. In addition, the technology can create smart contracts to raise the private sector’s confidence in gaining a return. The application of the technology thus may increase the possibility of public–private partnerships sharing the investment burden.

The potential of digital technology in education is well known. Because of the pandemic, governments have either banned or restricted face-to-face meetings and classroom activities. From kindergarten pupils to university students and teachers, as well as researchers, people have adopted the technology. They have all discovered expanded boundaries for teaching and research. The whole sector is continuing to develop new insights into and approaches to using the technology to disseminate information, enrich discussions, and deliver impactful feedback. Then, it is also apparent that the technology can expand the student–teacher ratio without reducing the teaching effectiveness. The same happens in the training sector. Many SMEs have emerged to conduct tele-training in, for example, languages, financial literacy, job skills, and so on. The trend can contribute to bridging the education gap in ASEAN.

By the same token, the application of the technology can raise public governance and government efficiency and effectiveness. For example, by adopting the technology, a government can simplify and reduce the burdens of registering a business, obtaining licenses and permits, and paying taxes. It can also keep better records and can better monitor and thus enforce regulations. These measures both elevate government efficiency and reduce the chance of extracting bribery. Regulatory authorities should also prevent fraudulent activities and mitigate the risks of data privacy breach, intellectual property infringement, and consumer rights violations.

4.2.3 Remaining Challenges

The rise of e-commerce, digital payments, online work, cloud storage, and other digitally enabled services underlines the extent to which digital transformation has penetrated deeply into many socioeconomic systems. A new ADB (2021) report, *Asian Economic Integration Report, 2021: Making Digital Platforms Work for Asia and the Pacific*, discusses the opportunities and challenges of digital economies.

A few points in the report are worth emphasizing. First, while the private sector may be ready, states need public investment in digital infrastructure and connectivity to deliver affordable mobile and broadband services. Many pockets in ASEAN with non-trivial populations have this need. Second, upgrading education and labor market policies remains crucial for making digital transformation inclusive and reaping the benefits of digital economies. Third, as the digitization–IOT–AI transformation spreads in ASEAN, governments need to adopt rigorous redistribution programs.

The digital platform penetration index using digital platform data shows that digital platform use and activity vary significantly across economies (Table 2), but the index is generally higher in high-income economies in the region together with the PRC, Malaysia, and Viet Nam. The largest economies in Southeast and South Asia, namely Indonesia and India, appear immediately after this group, followed by Brunei Darussalam, the Philippines, and Thailand among the ASEAN economies.

The issue of the digital divide, with its deep entrenchment in underlying economic, social, political, and cultural inequalities, can also restrain the success of the digital economy. With such disparities, the distribution of the benefits of the platform economy will not be equitable within and across countries. The digital divide also emerges due to the existing gaps in income, education, gender, and social status. While digital connectivity and infrastructure remain crucial for safe and affordable access to digital technology, digital skill is an essential element to bridge the gap. Studies have also shown that the better skilled have better access to technology.

Physical infrastructure, education, and skills remain integral components of facilitating digital transformation and enabling it to drive more inclusive growth. However, governments need to be cognizant that income inequality may worsen with the rise of the digital economy. Greater use of technology for economic opportunities may leave some groups of people behind. There should be plans to redistribute the incomes and benefits from the digital economy more broadly to avoid sharp deterioration in income distribution. The digital economy is well known to have vast dynamic and static economies of scale and scope. Furthermore, Gordon (2018) was right that digitization–IOT–AI transformation generates a lot of evolution, which means a lot of job displacement.

Table 2: Digital Platform Penetration Index, 2019

Economy	DPP Index	Digital Platform Penetration Sub-components			
		Revenue-to-GDP Ratio	Per User Spending, Proportion of per Capita Income	User Accounts-to-Population Ratio	Revenue-to-Population Ratio (PPP Adjusted)
PRC	2.58				
Korea, Rep. of	2.53				
Australia	2.10				
Hong Kong, China	2.03				
New Zealand	1.88				
Japan	1.78				
Singapore	1.76				
Malaysia	1.10				
India	1.02				
Viet Nam	0.94				
Indonesia	0.92				
Brunei Darussalam	0.83				
Philippines	0.82				
Armenia	0.81				
Pakistan	0.80				
Kazakhstan	0.79				
Thailand	0.79				
Azerbaijan	0.78				
Sri Lanka	0.65				
Georgia	0.58				
Kyrgyz Republic	0.50				
Uzbekistan	0.48				
Nepal	0.46				
Fiji	0.46				
Cambodia	0.44				
Tajikistan	0.42				
Bangladesh	0.39				
Myanmar	0.39				
Bhutan	0.31				
Mongolia	0.28				
Lao PDR	0.25				
Timor-Leste	0.25				
Papua New Guinea	0.21				
Turkmenistan	0.16				

DPP = digital platform penetration, Lao PDR = Lao People's Democratic Republic, PCA = principal components analysis, PPP = purchasing power parity, PRC = People's Republic of China.

Note: The sub-components are normalized. Low- to high-value spectrum:



We estimated the PCA using data from 2017 to 2019. The divisions represent the groups above and below the 33rd and 66th percentiles. Users in the second column refer to AdTech-exposed internet users.

Source: ADB. 2021. *Asian Economic Integration Report 2021*. Manila; data from Statista. "Digital Market Outlook." <https://www.statista.com/outlook/digital-markets>; and Statista. "Mobility Market Outlook." <https://www.statista.com/outlook/digital-markets>.

We therefore have to be empathetic for displaced workers beyond middle age. We also need to be concerned that job creation in the new age will tilt against the low human capital type. Children in poorer households could easily lag behind plainly because they lack equipment and training. Indeed, all graduates need to be proficient in data analytics and technology. Inclusive growth entails helping the disadvantaged and preparing the future generation with the right skills. Finally, in the digital world, companies can inadvertently conduct statistical discrimination in pursuing efficiency and profits. For example, some older and less healthy individuals may end up paying a higher insurance premium or having to raise consumer credit at a higher cost.

Finally, we have to be concerned about the long-term negative impact of COVID-19 on the lower-income group via the 2020 education stoppage. Due to the pandemic, many schools closed. Intuitively, poor children have less access to Wi-Fi, laptops, and smartphones (while rich children have all these and tele-tutors). Children in low-income households also have a less stimulating home environment than their peers in more affluent households. The long-term implication of this gap awaits studies. We speculate that the pandemic-related education stoppage is a lot more costly for poorer children in the longer term.

5. CONCLUSION—REFLECTION ON GOVERNMENTS' ROLE

Asia is facing a precarious time due to the pandemic, which has posed multiple challenges in addition to the increased geopolitical tensions between the world's largest economies. A tension-mounted time is an excellent time to reflect. Reviewing Asia's (and ASEAN's) economic journey in the past two decades and the challenges due to the G2 tension and the pandemic, we identify some important economic lessons.

First, ASEAN has a strong desire to develop; its hard work is yielding impressive results. Many parts of Asia, especially ASEAN, are still emerging economies. Their governments have crucial roles in the nations' attainment of sustainable development. A time-honored point is prominent: businesses deliver factor earnings and goods and services to consumers; they drive growth. However, businesses rely on both hard and soft infrastructure. Both are public goods that governments have the responsibility to develop.

The former, of course, includes efficient infrastructure that facilitates production and transportation. In the era of global warming, it should also include infrastructure that protects properties, lives, and the environment. Long-term survival is a universal human goal; infrastructure for sustainability is a pre-condition for long-term prosperity.

The latter is exceptionally fundamental. The soft infrastructure pertains to efficient and effective market institutions (e.g., transparent, simple, and enforced rules and regulations) that channel people's energy to seek and actualize business opportunities. It includes protecting rights to facilitate the establishment of trust between savers and borrowers.

Maintaining financial and economic stability is also part of the governments' responsibilities. The necessary policies additionally include building safer and healthier societies and designing sensible redistribution across income classes and generations to progress in harmony. Such an environment induces people to invest time and effort in developing physical, organizational, and human capital patiently. They will be more willing to pool their savings to support the building of a better future, including

infrastructure developments and education. The governments in ASEAN can gain great mileage from sustainable development in building sound market institutions, catering to financial and economic stability, and establishing sound health care and redistribution programs.

Our second point of reflection is that, while crises or big shocks will happen, there are always silver linings. The Asian financial crisis prepared Asia for the great financial recession. The SARS virus prepared Asia for the COVID-19 pandemic. The G2 tension may have induced more integration and cooperation in Asia. The devastating COVID-19 pandemic is accelerating the adoption of the digital–IOT–AI transformation and may spur productivity growth. Humans are resilient—we survive because we find solutions to overcome adversity. In this spirit, the government and the private sectors can work together. Governments in the region should seize the moment to promote deeper regional economic integration, invest in digital infrastructure and wireless access, and invest in the training of workers and companies to tune into the virtual technology. They should partner with the private sector to multiply the gains from the opportunities that crises present.

Our third point of reflection is the need for policy makers to anticipate challenges. The pandemic has produced obvious challenges. Developed economies may inadvertently take missteps due to the challenge of protecting a recovery, a large deficit, and debt and inflation worry. Governments should consider what they should do now to mitigate the potential damage and how they can prepare their economies for future shocks. Furthermore, governments should consider strategies for effective income redistribution and manage income and non-income inequality if embracing the digital–IOT–AI technology creates winners that take all and concentrate the market power. With accelerating digital transformation, governments should ensure safe and affordable access to digital technology while protecting data and privacy security.

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