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Escaping the middle-income trap: Innovate or perish

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ADB Working Paper Series

**ESCAPING THE MIDDLE-INCOME
TRAP: INNOVATE OR PERISH**

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Abstract

This paper analyzes the reasons for the middle income trap in Latin America, where countries have been at the middle income level for decades, and draws out lessons for Asia. The ‘middle income trap captures a situation where a middle income country can no longer compete internationally in standardized, labor-intensive goods because wages are relatively too high, but it can also not compete in higher value added activities on a broad enough scale because productivity is relatively too low. The result is slow growth, stagnant or falling wages, and a growing informal economy.

Insufficient development of domestic innovation capabilities is at the heart of the middle income trap. In Latin America, it is the result of a market-led strategy which generated dismal productivity growth, rapid de-industrialization, a decline in export sophistication in many countries, poor innovation performance, and underinvestment in the requisite social capabilities. The current globalization context provides a challenging context for middle income countries to narrow the capabilities gap, because they have less time to do so, with more players competing in the innovation space and technological innovation changing faster. A comprehensive innovation-focused strategy with strategic active policies is the only way to escape the middle income trap. The nature of the production structure, already existing elements of an innovation eco system, and the possibilities for creating political coalitions in support of a systemic advancement of innovation capabilities are critical factors conditioning the escape from the middle income trap.

JEL Classification: O11, O14, O25, O3

Contents

1.	INTRODUCTION	1
2.	THE MIDDLE INCOME TRAP AND GLOBALIZATION.....	3
2.1	Different Conceptualizations of the Middle Income Trap.....	3
2.2	The Global Innovation Field: Many Players and Shifting Goals Posts	4
2.3	Policy Implications.....	7
3.	FROM STATE-LED INDUSTRIALIZATION TO MARKET-LED DE-INDUSTRIALIZATION: LATIN AMERICA'S MIDDLE INCOME TRAP	7
3.1	Labor Productivity Growth and Structural change	9
3.2	Changes in the Structure and Complexity of Exports.....	12
3.3	Domestic Innovation Capabilities	15
3.4	Disillusion with the Market-led Model	17
3.5	Inequality and the Middle Income Trap	17
4.	LESSONS FROM THE LATIN AMERICAN EXPERIENCE	18
4.1	Horizontal Policies.....	20
4.2	Vertical Policies	21
4.3	South-South Connections	22
4.4	Policy Space for Active Government Policies.....	22
4.5	Political Coalitions for an Innovation-based Strategy	23
5.	CONCLUSIONS	23
	REFERENCES	25
	APPENDIX.....	29

1. INTRODUCTION

This paper analyzes the reasons behind the middle income trap in Latin America and draw out lessons for Asian countries. An analysis of Latin America's experience is particularly instructive since countries in the region have, on average, been much longer at the middle income level than Asian countries. And over the past thirty years, they have generally pursued a market-led model the results of which have been premature de-industrialization, a large informal sector and a poorly developed national innovation system.

Since Gill and Kharas (2007) first introduced the notion of the middle-income trap, researchers, policy makers, and journalists alike have embraced the concept to capture the fact that – over the past half century – very few middle-income countries have become high-income, industrialized countries. The World Bank's *China 2030* report (2013) highlights that of the 101 economies classified as 'middle-income' in 1960 only 13 had become 'high-income' by 2008. Other authors offer similar evidence (Felipe 2012, Im and Rosenblatt 2013).

The term 'middle income trap' captures a situation where a middle income country can no longer compete internationally in standardized, labor-intensive commodities because wages are relatively too high, but it can also not compete in higher value added activities on a broad enough scale because productivity is relatively too low. The result is slow growth and less potential for rising living standards for more people.

Why are middle-income countries in this predicament and how can they get out of it? The state of domestic productive capabilities is the key in answering both questions. Insufficient development of domestic productive capabilities for upgrading to higher value added activities within and across sectors is at the heart of the predicament of middle income countries. And comprehensive advancement of domestic innovation capabilities is the basis for moving forward.

The current globalization has made it more challenging for middle income to narrow the capabilities gap. Engendering innovation on a broad scale is a complex process and requires time for learning, in the production process (Amsden 2001, Cimoli et al. 2009) and in building of the necessary institutional structures that enable and support innovation (Doner and Schneider 2016). But the time available for achieving competitiveness in higher value added activities has become shorter, with more players competing in international markets and technology changing faster. In addition, the People's Republic of China (PRC)'s rise has further increased the pressure on other middle income countries, as this middle income country is punching way above its weight in innovation. With more intense competition and rapidly changing goal posts, the escape from the trap is both more difficult and more urgent at this point in time.

All middle income countries are facing this global reality. Yet, their ability differs to address it and avoid the middle income trap. This ability is conditioned by the nature of a country's integration into the global economy and varies with path dependent economic structures, already existing elements of an innovation system and political constellations. In this paper, I investigate the nature and interrelations of these factors in middle income countries in Latin America, and draw lessons for middle income countries in Asia and elsewhere.

Most countries in Latin America and the Caribbean (LAC) are middle income countries. Haiti is the only low-income country in the Western Hemisphere. And even though Chile and Uruguay are classified as high-income countries, based on their income

level, the development challenges they face are similar to the Latin American countries at the middle income level.¹

An analysis of the middle income trap in Latin America is of particular interest since countries in the region have been at the middle income level for a long time. In 2010, Paraguay and the Dominican Republic had been at the lower middle income level for 38 years, while Colombia and Peru had been middle income countries for 61 years (based on the classification by Felipe et al., 2012). In Asia, in contrast, the time span ranged from 6 years in Cambodia and Pakistan to 34 years in the Philippines. Nonetheless, shared middle income status masks considerable differences among Latin American countries, in terms of income level and size (see Table 1) as well as capabilities for moving forward. In this paper, I generally focus on broad shared trends across countries rather than on country-specific conditions.

Table 1: Income and Population in Major Latin American Countries, 2015

	GNI p.c.	GNI	Population
South America	(Atlas method)	(Atlas method)	
Argentina (UMIC)	12,460	541,107,693,169	43,416,755
Bolivia (LMIC)	3,080	33,036,925,034	10,724,705
Brazil (UMIC)	9,850	2,047,109,614,135	207,847,528
Chile (HIC)	14,060	252,439,621,752	17,948,141
Colombia (UMIC)	7,130	344,093,169,614	48,228,704
Ecuador (UMIC)	6,010	97,059,209,212	16,144,363
Paraguay (UMIC)	4,220	28,043,962,571	6,639,123
Peru (UMIC)	6,200	194,629,668,918	31,376,670
Uruguay (HIC)	15,720	53,928,953,514	3,431,555
Venezuela (UMIC)	n.a.	n.a.	31,108,083
Central America, DR			
Costa Rica (UMIC)	10,210	49,078,288,318	4,807,850
Dominican Republic (UMIC)	6,130	64,538,605,642	10,528,391
El Salvador (LMIC)	3,940	24,130,424,978	6,126,583
Guatemala (LMIC)	3,590	58,636,219,449	16,342,897
Honduras (LMIC)	2,270	18,361,664,576	8,075,060
Nicaragua (LMC)	1,870	11,244,356,510	6,013,913
Panama (UMIC)	12,050	47,341,547,302	3,929,141
Mexico (UMIC)	9,710	1,233,657,846,512	127,017,224
Latin America	8,939	5,657,765,221,594	632,959,079
Lower Middle Income Countries	2,035	5,955,948,420,932	2,927,414,098
Upper Middle Income Countries	8,429	21,693,419,635,830	2,573,612,474
Middle Income Countries	4,925	27,193,921,095,750	5,521,156,908

LMIC = lower middle income country (GNI p.c. in 2015 between \$ 1,026 and \$ 4,035); HIC: high income country (GNI p.c. in 2015 above \$ 12,475); and UMIC = upper middle income country (GNI p.c. in 2015 between \$ 4,036 and \$ 12,475).

n.a. = not available.

Source: World Bank. World Development Indicators.

¹ Some of the small Caribbean islands are high-income countries as well.

The paper is structured as follows. In the next section, I briefly discuss the two different conceptualizations of the middle income trap, one based primarily on neoclassical economics and the other on structural and evolutionary economics. I adopt the latter analytical framework with particular emphasis on the implications of the current globalization process for middle income countries. In section three, I examine the manifestation and reasons of the middle income trap in Latin America. In the last section I draw lessons for Asian countries.

2. THE MIDDLE INCOME TRAP AND GLOBALIZATION

Moving from factor-driven to innovation-driven growth has always been the key challenge for middle income countries. Yet it is only in the last few years that analysts have raised the specter of middle income countries actually becoming trapped. Analysts agree, irrespective of theoretical framework, that moving from a middle-income to a high-income economy involves the internalization of innovation-based activities on a broad scale. But they differ in their definition of the middle income trap, the reasons behind it, and the policy recommendations for escaping it.

2.1 Different Conceptualizations of the Middle Income Trap

Based on Paus (2014), I distinguish two different approaches to the trap. One approach is based mainly on neoclassical economics where the composition of production and export does not matter, and the context for learning and the specificities of the international situation are not relevant (e.g., Aiyar et al., 2012; Eichengreen et al. 2013, 2011; Robertson and Ye, 2012). The other approach rests on structural and evolutionary economics, where the nature of the production structure and the context for learning and international competitiveness matter (Paus 2014, Felipe et al. 2012; Foxley 2012; Gill and Kharas, 2008; Ohno 2009; Yusuf and Nabeshima 2009). In both approaches, middle income countries are facing slow growth, but the analytical framework for understanding the growth-slowdown is different and so are the policy prescriptions.

In the neo-classical framework, the search for universal determinants of economic growth slowdowns across time and income levels assumes that period and region-specific factors as well as different policy strategies do not matter in explanations of different episodes of declines in growth. That is a questionable supposition. It is hardly coincidental that two thirds of the growth slowdowns in middle income countries identified by Aiyar et al (2012) occurred after 1980, when many developing countries had to deal with the foreign debt crisis and followed market-led policies (the so-called Washington Consensus). More importantly, it is not clear what is added to our understanding when all countries that experienced a growth slowdown are characterized as having been in a middle income trap; e.g. Australia, Austria, Belgium, Denmark, Finland, France, Israel, Ireland, Japan, Republic of Korea, Netherlands, New Zealand, Norway, Singapore, Sweden, UK and the US (Eichengreen et al. 2013).

In the structural change approach, which I adopt in this paper, analysts focus on the nature of the productive structure of the economy in the context of international competitiveness as the proximate cause for the middle income trap. Economic activities differ with respect to returns, demand, and spillover potential. Thus economic development is seen as a process where production is shifted increasingly towards activities with greater technological spillovers, increasing returns and higher demand elasticities, in other words, towards higher productivity activities. Structural change is a

driver of development, not just a byproduct (Ocampo, Rada, Taylor 2009; Hausman, Hwang and Rodrik 2007; Shapiro and Taylor 1990).

Evolutionary economics emphasizes the process of technological learning, path dependency, and the cumulative interaction among the factors that shape the path of productive transformation (Nelson and Winter 1982; Dosi 1984). The advancement of productive capabilities takes time.

With an explicit focus on structural transformation and the needed accumulation of capabilities to achieve and sustain it, the middle income trap is understood as a situation where a middle income country can no longer compete internationally in standardized, labor-intensive commodities because wages are relatively too high, but it can also not compete in higher value added activities on a broad enough scale because productivity is relatively too low. The 'structural change cum learning' approach highlights that income convergence will be temporary unless it is based on capabilities convergence. The commodity price super cycle of the 2000s and its impact on growth in Latin American is a case in point. Between 2003 and 2007, Latin American economies experienced strong income convergence, but not capability convergence. When the commodity boom came to an end in the early 2010s, the capability deficiencies in Latin American countries came to the forefront in full force.

By its very nature a middle income country has limited innovation capabilities. But these limited capabilities make it more challenging for a country to catch up in the current global context because competitive pressures and the speed of technological change have been increasing and the rise of the PRC has changed the global architecture of production (Paus 2014, 2012).

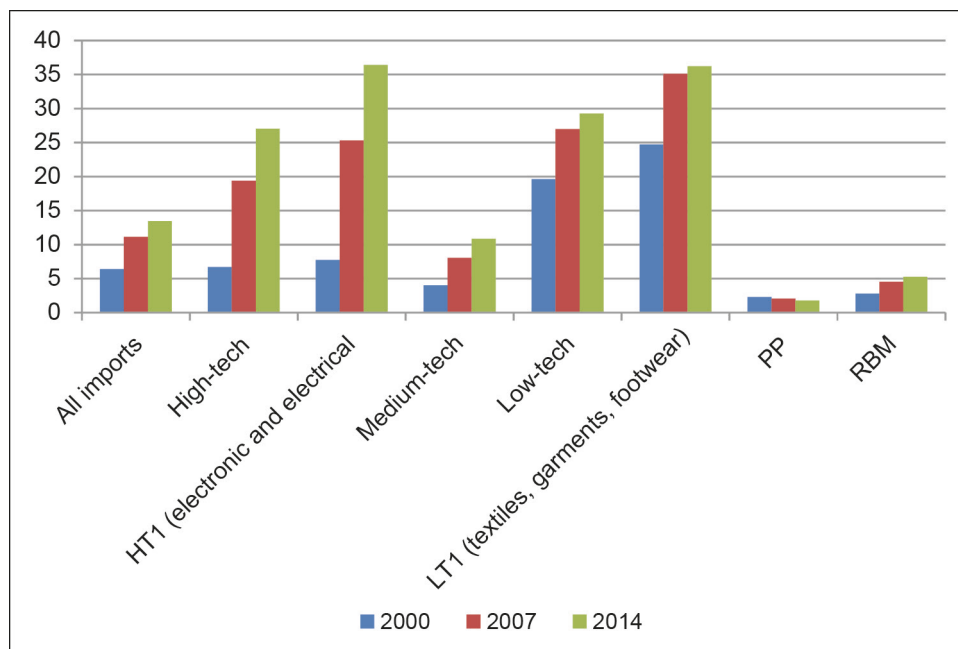
2.2 The Global Innovation Field: Many Players and Shifting Goals Posts

Over the last 30 years, widespread trade liberalization, the reduction in maritime transportation costs, and the rise in digital connectivity have increased the globalization of production and the number of producers competing in domestic and international markets. The transition in Central and Eastern European countries in the 1990s and the PRC's increased opening with its accession to the WTO in 2001 has led to the 'Great Doubling,' in the words of Richard Freeman (2007). The doubling of the global labor force intensified competitive pressures, especially in the production of labor-intensive products. As a result, prices of these goods have declined, in relative terms and sometimes also in absolute terms. For developing country exporters of manufactured goods, the terms of trade declined at an annual rate of 1.1 percent between 1980 and 2014 (UNCTAD 2016, x).

Since the PRC is the most populous country in the world, its opening to international trade has offered tremendous new export opportunities for the rest of the world. Yet, at the same time, the PRC's own export growth has intensified the competitive pressures on other middle income countries, in their home markets and in third markets. The impact has been particularly consequential, as the PRC has been competing not only in standardized, low-tech products like non-design clothing, but also in high-tech products, particularly electronics and computer products. Between 2000 and 2014, the PRC's share in world imports of low-tech goods rose from 19.6 percent to 29.3 percent, while its share in high-tech imports increased from 6.7 percent to

27 percent (see Figure 1).² In other words, the largest middle income country looks in many ways like a high-income country, thus raising the innovation bar for the other middle-income countries.

Figure 1: World Imports from the People’s Republic of China as a Share of Total World Imports by Technology-Intensity of Products



Source: Author’s calculations based on UN-Comtrade data. The technology classification is based on Lall (2000) who distinguishes between low-tech products, medium-tech products, high-tech products, resource-based products (RBP) and primary products (PP).

In response to growing competitive pressures in international markets, more countries have emphasized competitiveness based on new ideas, new products, and new markets. Expenditures on research and development (R&D) are one indicator of such efforts. Historically, R&D expenditures as a share of GDP (R&D intensity) have risen with per capita income. The positive link is not surprising, since industrialized countries reached their high income status and have remained competitive in high value added goods and services based on a broad expansion of innovative activities. Yet, in the 2000s, the connection between R&D spending and income has become less tight, indicating greater engagement in R&D at all levels of income (see Figure 2).³

After the financial crisis of 2008, worldwide R&D expenditures expanded considerably. Between 2010 and 2014, gross expenditure on R&D increased by nearly 50 percent, from \$ 1,216 billion to \$ 1,803 billion. The PRC accounted for a third of this increase, making the country the second largest spender on R&D in the world, with \$ 344 billion in 2014. The U.S. is still the largest spender, with \$ 485 billion.⁴

² It is immaterial for the argument here that foreign transnational corporations are responsible for a significant share of exports from the PRC.

³ Figure 2 includes data for all countries for which the World Development Indicators had data on R&D intensity for 2000 and 2011.

⁴ R&D expenditures are measured in PPP and from the Industrial Research Institute’s *R&D Global Funding Forecast*, various years.

Figure 2a: Research Intensity and GNI p.c., 2000

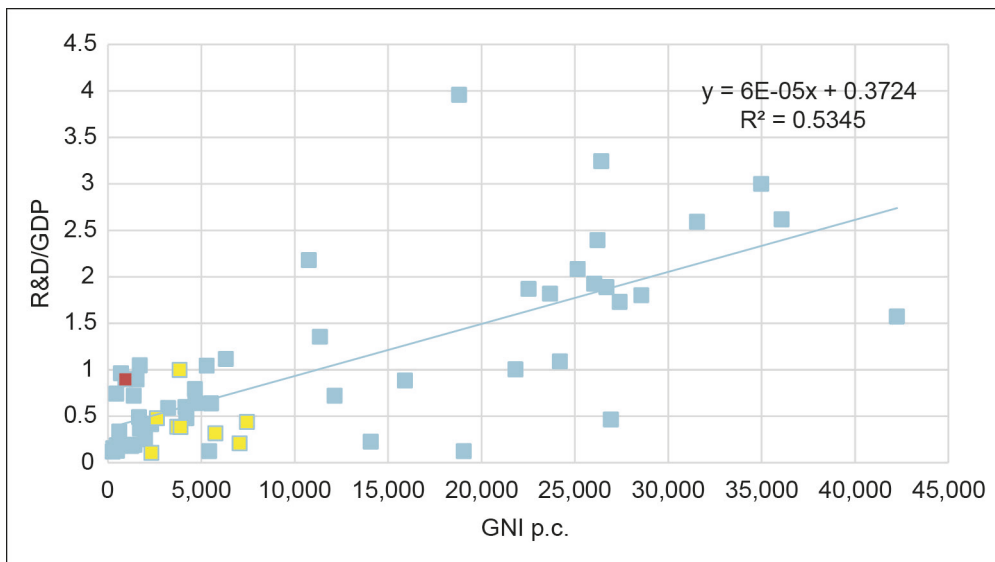
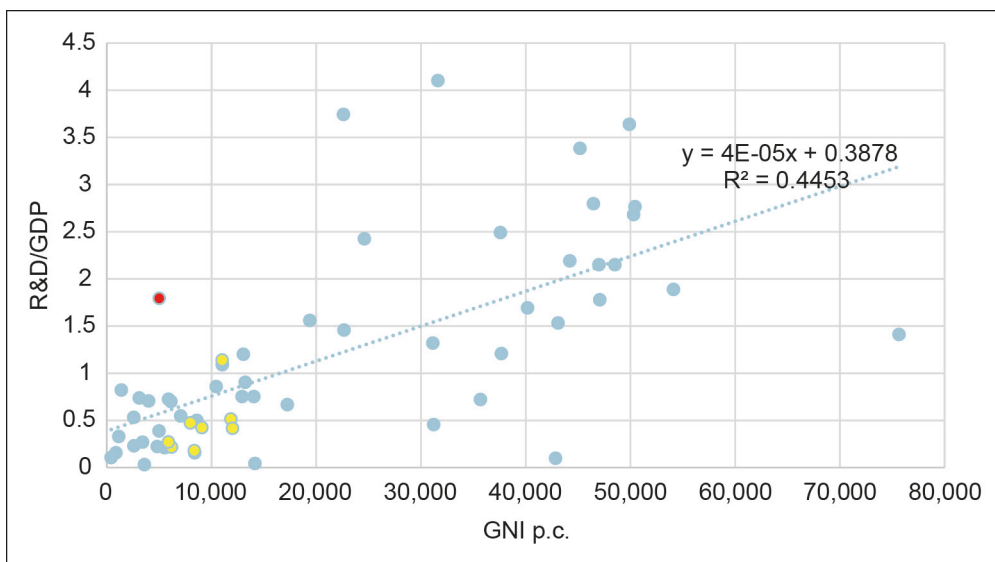


Figure 2b: Research Intensity and GNI p.c., 2011



Source: World Bank. World Development Indicators.

The more rapid technological change of the last two decades coupled with the ‘Rise of China’ has engendered a ‘Red Queen Effect,’ where middle income countries have to accumulate innovation capabilities faster just to stay in the same place. The predictions about the new technological revolution (Brynjolvsen and McAfee 2014, Ford 2015) – with the rise of robotics, digitization, artificial intelligence, and the Internet of Things – will further upped the ante for capability catch-up. Countries that are at the forefront of widespread adoption of these technologies are expected to see considerable increases in productivity, which – in turn – will intensify the competitive pressures on middle income countries. The PRC aims to become one of frontrunners in the new

technological revolution, again punching considerably above its weight (as measured by its GDP p.c.).⁵

The upshot is that in the current globalization context there is less time for acquiring the innovation capabilities needed for catching up with high income countries. That makes escaping from the middle income trap both more challenging and more urgent (Whittaker et al. 2012, Paus 2014).

2.3 Policy Implications

The two approaches to the middle income trap differ in the role they attribute to the state in a move to greater innovation-based growth. Scholars in the neoclassical tradition stress the importance of a good business climate and investment in education and infrastructure. In the analytical frameworks based on structural and evolutionary economics, scholars also emphasize the importance of education and infrastructure. But they underscore the need for active government policies to lead and support firm learning and the advancement of the requisite social capabilities as well as institution building and coordination (Abramovitz 1986; Cimoli et al. 2009). Government policies are needed to provide assistance to firms through financial and other support when there are capability failures. And government institutions may need to take the lead in prioritized innovation areas because private producers deem the initial risk too high. Governments need to leverage macro policies, tax incentives, and protection of intellectual property as well as selective targeted support to shape an incentive structure that is conducive to firm-level innovation (Stiglitz and Lin 2013).

3. FROM STATE-LED INDUSTRIALIZATION TO MARKET-LED DE-INDUSTRIALIZATION: LATIN AMERICA'S MIDDLE INCOME TRAP

The framework of structuralism and evolutionary economics summarized above informs the analysis in this section. I discuss the middle income trap dilemma of Latin America with a focus on the history and nature of structural transformation in the region and the role of government policies in shaping the accumulation of productive capabilities and innovation.

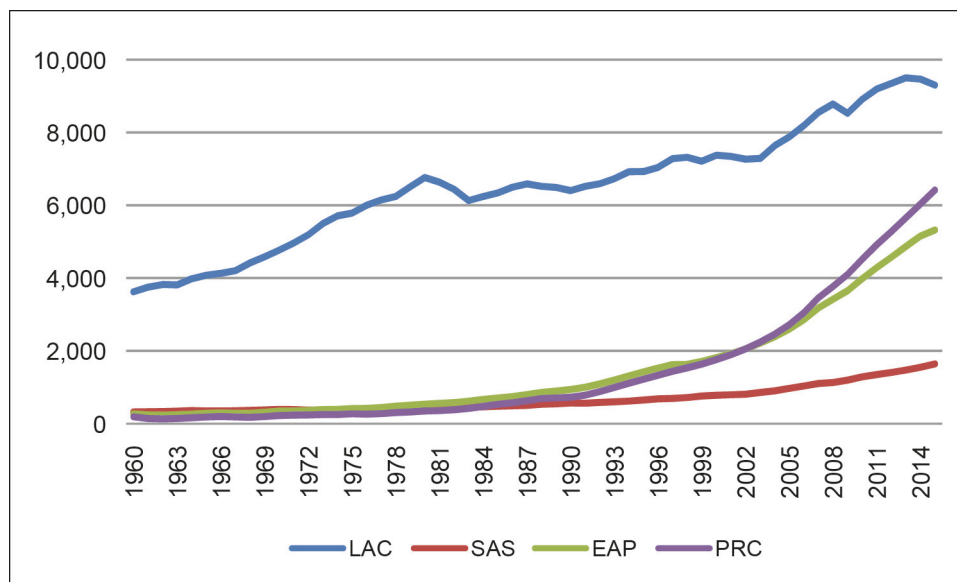
Over the past 55 years, GDP p.c. in Latin America has increased nearly threefold (measured in constant 2010 US \$), from \$ 3,621 in 1960 to \$ 9,304 in 2015. But the growth performance differed considerably under the two different development strategies in the region: a state-led strategy between the end of WW II until the early 1980s and a market-led strategy thereafter (see Figure 3).⁶ Under the state-led strategy, governments adopted policies to promote industrialization and a more diversified economy in order to reduce the economies' dependence on primary products (agriculture, mining, and oil). They supported firm learning for structural change with import tariffs and quotas, subsidized credits and investments in education, infrastructure, and elements of an incipient innovation system. But with the external debt crisis of the early Eighties, governments changed to a market-led model. In the

⁵ In June 2015, the PRC announced "Manufacturing China 2025", a sweeping strategy aimed to make the PRC the leading industrial power by mid-century, by combining smart manufacturing and 'Industry 4.0.'

⁶ I am following Bertola and Ocampo (2012) in using the term 'state-led development' rather than ISI (import-substituting industrialization). It focuses on the key role government policies in support of industrialization and provides an apt juxtaposition to the market-led strategy that followed.

context of debt renegotiations, the World Bank, IMF and US Treasury demanded widespread liberalization of markets, in line with the rise of the neoliberal paradigm in the West, especially in the US and the UK.

Figure 3: GDP p.c. in Developing Country Regions, 1960–2015
(in constant US \$ 2010)



EAP = East Asia and Pacific, LAC = Latin America and the Caribbean, PRC = People's Republic of China, SAS = Sub-Saharan Africa.

Source: World Bank. World Development Indicators on-line (accessed 4 December 2016).

The adoption of a market-led model (the so-called Washington Consensus) included the lowering of tariff barriers, the reduction or elimination of public subsidies, the privatization of public enterprises, reduced public investment, and an open arms approach to foreign direct investment. Though Latin American countries differed in the degree and speed with which they adopted the Washington Consensus, the development model generally shifted to a reliance on unrestricted market. Trade and foreign capital were to become the drivers of growth and development, and the government's role in the economy declined drastically: as regulator, producer, and promoter of growth-enhancing structural change. Where the goal of the state-led model had been productive transformation over the medium to long-run, the goal of the market-led model was the creation of comparative advantages based on international market prices.

Governments pursued trade and investment agreements, especially with the U.S., to gain market access. And though support for the development of dynamic comparative advantages was basically off the table for domestic producers, many governments offered special incentives to foreign investors, in the hope that they would bring new technology, fresh capital, and more employment. As a result, the playing field for domestic and foreign producers was often not even, but tilted towards foreign producers.

Brazil, the largest economy in Latin America, has been the most reticent in adopting the Washington Consensus. Successive administrations maintained a strategic role for the government in advancing structural transformation. Development plans prioritized specific sectors, and the national development bank BNDES continued to play a large role in funding the development of new comparative advantages. Other exceptions to the broad market-liberalization and hands-off-government approach are sector-specific; e.g., the automobile sector under Mercosur (the Common Market between Argentina, Brazil, Paraguay, Uruguay and Venezuela), the wine and salmon industries in Chile which was promoted by the country's development organization CORFO, and the wine industry in Argentina whose development was supported by the state of Mendoza.

The market-led model generated macroeconomic stability and an increase in static efficiency. But these achievements came at a steep cost, as the potential for advancing dynamic efficiency declined dramatically. Washington Consensus policies engendered dismal productivity growth, rapid de-industrialization with a concomitant rise of the informal sector, a decline in export sophistication in nearly all countries, poor innovation performance, and underinvestment in the social capabilities needed for broad-based upgrading within and across sectors.

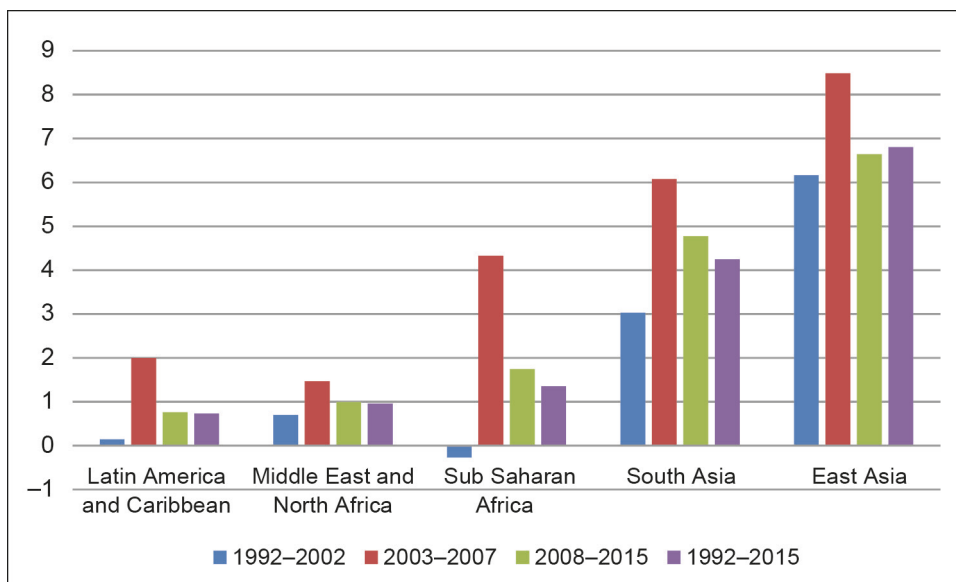
3.1 Labor Productivity Growth and Structural change

Poor labor productivity growth over the last 20-30 years is the key indicator that Latin American countries are facing a middle income trap. Between 1992 and 2015, labor productivity grew, on average, at a mere 0.74 percent per year. That places the region's performance only slightly above the poorest regional performer, the Middle East and North Africa (see Figure 4). Labor productivity growth was considerably higher in South Asia, East Asia, and the average for middle income countries. The PRC was the star performer, with an annual productivity growth rate of 8.2 percent over this period.⁷

Since different economic sectors have different productivity levels, we can look at aggregate labor productivity growth as the outcome of productivity growth within sectors and productivity growth which results from the reallocation of labor across sectors. Between 1990 and 2005, the inter-sectoral component of productivity growth was positive in developing Asia, but negative in Latin America and Africa (McMillan and Rodrik 2011). In other words, in Asia, production and employment shifted from lower to higher-productivity sectors. But in Latin America, labor shifted to lower productivity activities (see Table 2). When we look at the 1990s and 2000s separately, a more complex picture emerges. While the inter-sectoral component was negative in the 1990s, it became positive in the 2000s in most Latin American countries. The employment-expanding sectors with above average productivity were public utilities, finance, insurance and real estate, and construction, but not manufacturing (Paus 2014).

⁷ The data for total factor productivity are equally disheartening. TFP increased from 1960 to the mid-1970s, after which it declined. In 2005, the level of total factor productivity was lower than it had been in 1960 (Daude 2010).

Figure 4: GDP per Worker Employed in Developing Country Areas
(average annual growth rate based on constant 2011 PPP)



Source: Author’s calculations based on World Development Indicators (accessed 5 April 2015).

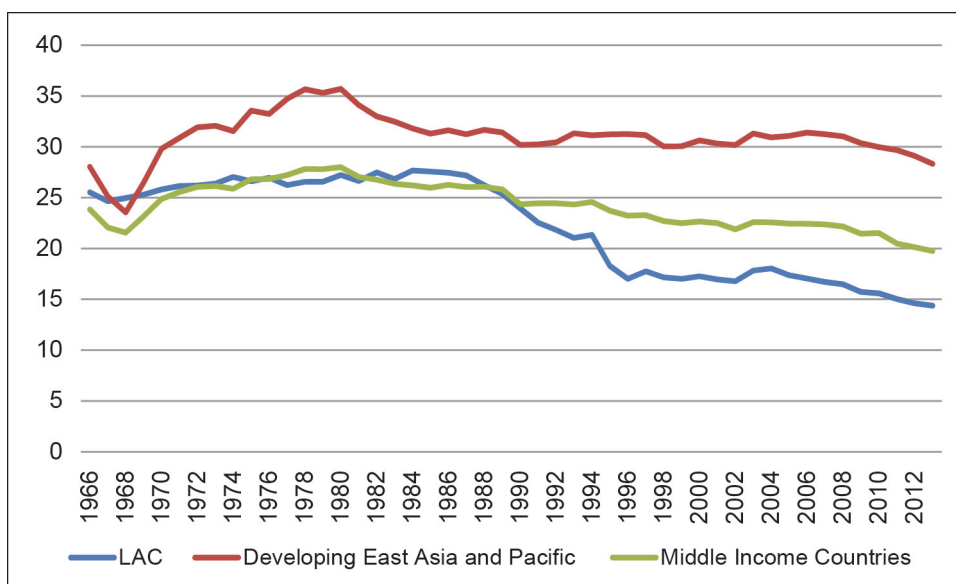
Table 2: Decomposition of Labor Productivity Growth, 1990–2005
(%)

	Labor Productivity Growth (LPG)	Decomposition of LPG	
		Due to within Sector LPG	Due to across Sector Reallocation (Structural Change)
Latin America and Caribbean	1.35	2.24	-0.88
Africa	0.86	2.13	-1.27
Asia	3.87	3.31	0.57
High-income countries	1.46	1.54	-0.09

Source: McMillan and Rodrik (2011).

To be sure, trade liberalization made the manufacturing sector in Latin America more productive. But the weight of manufacturing in the economy declined (Paus et al. 2003), and Latin America became the most extremely example of the widely commented phenomenon of premature de-industrialization (Rodrik 2015). In contrast to countries in Asia, the share of manufacturing value added in GDP declined precipitously in Latin America during the 1990s (see Figure 5). In 2015, the manufacturing share accounted for just 14 percent of GDP in Latin America, even below the 14.9 percent for OECD countries. An important question is whether other sectors (e.g. mining and high-tech services) can generate the same dynamic in the future that a dynamic manufacturing generated for today’s industrialized countries and successful development latecomers in the past.

Figure 5: Manufacturing Value Added as a Share of GDP



LAC = Latin America and the Caribbean.

Source: World Bank. World Development Indicators.

Under the state-led model government policies were based on three central premises: (1) what a country produces matters for productivity and economic growth; (2) technological learning takes time and is cumulative; and (3) the accumulation of broad-based technological capabilities requires proactive government policies and the development of human resources, particularly through education and requisite infrastructure. The outcomes were growth-enhancing structural transformation and productivity growth.

Nonetheless, one of the biggest flaws in the implementation of the state-led model in Latin America was the absence of performance requirements or sunset clauses in exchange for tariff protection and other support measures.⁸ In the Asian Tigers, in contrast, government support for the achievement of firm competitiveness in new activities was contingent on export performance and phased out over time. But in Latin America the absence of such requirements generated persistent and widespread inefficiencies and led to widely divergent productivity levels within and across sectors. Thus when governments liberalized imports and moved to a market-led model, many domestic producers found themselves unable to compete. And many producers – domestic and foreign – switched their sources from domestic to international suppliers, thus destroying national value chains and ushering in de-industrialization and growing informalization.

⁸ The average unweighted nominal rate of protection in manufacturing in the 1960s was 264 percent in Uruguay (1968), 141 % in Argentina (1958), 99 percent in Brazil (1966), and 83 percent in Chile (1961). The effective rates of protection were 384, 162, 118, and 254 percent, respectively (Agosin 2013, 36).

The differences in productivity levels among domestic companies have been persistently large. Micro and small enterprises constitute the majority of enterprises in Latin America. The gap between their productivity level and that of large companies is significantly larger than in developed countries (see Table 3). The de-industrialization process and reduction of government support for innovation also implied a loss of the technological productive knowledge that had been accumulated as well as a shrinking of the national innovation system that had started to develop incipiently under the state-lead model (Katz 2001).

Table 3: Relative Productivity of Enterprise Groups Compared with Large Companies

	Microenterprises	Small Companies	Medium-sized Companies	Large Companies
Argentina	24	36	47	100
Brazil	10	27	40	100
Chile	3	26	46	100
Mexico	16	35	60	100
Peru	6	16	60	100
Germany	67	70	83	100
Spain	46	63	77	100
France	71	75	80	100
Italy	42	64	82	100

Source: ECLAC (2010), Table II.7, p.96.

3.2 Changes in the Structure and Complexity of Exports

The poor productivity performance and premature de-industrialization in Latin America is also reflected in the structure of the regions' exports and their declining economic complexity relative to other countries. Under the market-led model, South American countries experienced a "re-primarization" of their exports, while Central American countries and Mexico became more integrated into global value chains, which are mostly dominated by U.S. companies.

Most countries in South America reverted to comparative advantages in natural resources, with new ones like natural gas and soybeans added to the old ones like copper and iron ore. The PRC's high growth with its rising demand for natural resources was a key factor behind the commodity price boom of the 2000s. South American exporters of primary products benefitted greatly from the increased export prices. But all Latin American countries saw a steep rise in imports from the PRC as well which resulted in growing trade deficits for Latin America, with the exception of the top commodity exporters.

On the other hand, Central American countries, and to some extent Mexico, developed specializations in low-skilled, labor-intensive, assembly-based production as producers became integrated into global value chains (GVCs). The process was driven by privileged access to the U.S. market through special provisions of the U.S. tariff schedule and broad tariff-free access through the Caribbean Basin Initiative in 1984, and, in the case of Mexico, the North American Free Trade Agreement (NAFTA) with the U.S. and Canada in 1994. During the 2000s, the free trade agreement between the US and Central America and the Dominican Republic (CAFTA-DR, passed in 2004)

further cemented the region's integration into GVCs. Investors from Asia, including the PRC, increased productive investment in Central America – and Mexico – to take advantage of the tariff-free access to the U.S. market. But these investments generally created few linkages with producers in the host countries.

The global value chain participation index of the WTO shows the differences in the degree and nature of GVC participation in Latin American and Asian middle income countries. The index is the sum of the two sub-indices: the 'backward participation index' which measures the share of foreign value added in exports, and the 'forward participation index' which captures the domestic value added share in exports sent to third countries. Between 1995 and 2011, backward and forward participation indices increased in both regions (see Table 4).⁹ Not surprisingly, the backward participation index is much higher for countries that process and re-export manufactured goods; these include Costa Rica and many countries in Asia. The forward participation index, on the other hand, is much higher in countries where exports are dominated by primary products: Chile and Colombia in Latin America, and Indonesia and the Philippines in Asia.

Table 4: Participation in Global Value Chains, Selected Countries in Latin America and Asia, 1995 and 2011

	Backward Participation		Forward Participation		Global Value Chain Participation Index	
	1995	2011	1995	2011	1995	2011
Argentina	5.7	14.1	12.2	16.4	17.9	30.5
Brazil	7.8	10.7	15.1	24.5	22.9	35.2
Chile	14.1	20.2	19.9	31.7	34.0	51.9
Colombia	8.5	7.6	15.4	30.2	23.9	37.8
Costa Rica	22.1	27.8	11.1	16.8	33.2	44.6
Mexico	27.3	31.7	11.1	15.1	38.4	46.8
Unweighted average	14.1	18.7	14.1	22.5	28.2	41.1
Cambodia	12.7	36.8	18.0	11.9	30.7	48.7
PRC	33.3	32.1	9.5	15.6	42.8	47.7
India	9.3	24.0	13.6	19.1	22.9	43.1
Indonesia	12.5	12.0	16.3	31.5	28.8	43.5
Malaysia	30.4	40.6	15.6	19.8	46.0	60.4
Philippines	29.8	23.5	12.8	27.4	42.6	50.9
Thailand	24.2	39.0	12.1	15.4	36.3	54.4
Viet Nam	21.1	36.3	13.1	16.0	34.2	52.3
Unweighted average	21.7	30.5	13.9	19.6	35.6	50.1

PRC = People's Republic of China.

Source: WTO. Global Value Chain Statistics.

⁹ Table 4 includes all middle income countries in Latin America and Asia for which the WTO has data on global value chain participation.

Differences in the economic complexity of countries' exports mirror differences in GVC participation. The Economic Complexity Index (ECI), developed by Hausmann and Klinger (2007) and available at the Atlas of Economic Complexity, captures both the ubiquity and the diversification of a country's exports. The authors suggest that the ECI reflects the complexity of the capabilities of the exporting country and its ability to produce more sophisticated goods in the product space. Research has shown that the ECI is strongly related with per capita income and a good predictor of future growth.

The graphs in the Appendix show the development of ECI rankings in Latin American and Asian countries over the past 50 years, i.e. the evolution of their export complexity relative to other countries. Under the state-led model the rankings had stayed more or less the same, and in the cases of Peru and especially Brazil, it had actually improved. But under the market-led model, the ECI ranking deteriorated for all South American countries. In Central America, in contrast, the ECI ranking improved for most countries around the turn of the century; and in Mexico, we see a high ECI ranking throughout the 1990s and 2000s. Yet, this improvement is not necessarily an indication of greater complexity of a country's collective capabilities. In a number of countries, it reflects increased production of manufactured goods in export processing zones that have few linkages to the domestic economy.

In Costa Rica, the improved ranking is likely due to the growth of exports of medical devices and microchips, after Intel established its first test and assembly facility in Latin America in San Jose in 1997 which then triggered increased FDI in the assembly of medium and high-tech components. In Guatemala and Honduras, the sudden improvement reflects a change in how the countries reported their export data.¹⁰ The case of Mexico demonstrates that a high ECI ranking need not go hand in hand with high economic growth. Between 1990 and 2015, Mexico's GDP grew at an average annual rate of only 2.75 percent. The disjuncture between ECI ranking and growth is due to the drastic increase in the import elasticity of demand for imports under the market-led model and the limited linkages between maquila production and the domestic economy (Paus and Gallagher 2008, Moreno-Brid and Ros 2009).

Under the market-led model, governments in Latin America (and elsewhere) welcomed foreign direct investment with open arms expecting that technology transfer, capital infusions, employment growth would generate stronger economic growth. But the experience of the last three decades has demonstrated that technology spillovers will only occur, if domestic absorptive capacity exists; linkages will only develop if domestic producers are already competitive; and foreign companies will only invest in R&D in the host country, if the country already has enough of an eco-system conducive to innovation. In many Latin American countries, the technology benefits of FDI were limited or did not materialize.

In Asia, only three countries have experienced a fairly persistent improvement in the ECI rankings over the past two to three decades: the PRC, Malaysia, and Thailand. What this improvement tells us about the set of domestic productive capabilities depends here, too, on the extent to which export production is linked to the rest of the economy and dominated by domestic or foreign producers. In contrast to Malaysia and Thailand, the PRC has complemented a strategy of controlled opening to trade and FDI with an aggressive promotion of domestic innovation capabilities.

¹⁰ Guatemala and Honduras started to include the exports from export-processing zones into the aggregate export statistics in the early 2000s. The magnitude of these exports which consist primarily of clothing (produced with imported cloth and destined for the U.S. market) likely explains the drastic improvement in rankings. In Guatemala, for example, clothing exports from export processing zones were not included in the official data prior to 2002. The data show an increase in clothing exports from \$ 42,403,436 in 2001 to \$ 1,261,052,000 in 2002 (WTO, International Trade Data).

3.3 Domestic Innovation Capabilities

The discussion above highlights that the composition and sophistication of exports do not necessarily reflect the state of domestic productive capabilities. That disjuncture is underscored by the state of social capabilities that need to complement the advancement of productive transformation to higher value added activities. I focus here on four indicators: R&D spending, patent applications, educational outcomes, and the state of infrastructure.

The R&D intensity in Latin American countries is lower than expected given their income level. All Latin American countries have an R&D intensity below one percent and lie below the trend line (the yellow dots in Figure 2). The only exception is Brazil, where the R&D intensity is above one percent. But while the R&D intensity in Brazil increased from 0.99 percent in 2000 to 1.14 percent in 2011, it doubled in the PRC (the red dot in Figure 2) from 0.9 percent to 1.79 percent.

Patent applications by residents in Latin America grew considerably between 1990 and 2014. But their share in total patent applications declined. The patent application picture for developing countries in East Asia and the Pacific seems to look better. However, once we exclude the PRC's patent applications, developing Asia looks even worse than Latin America (see Table 5).

Table 5: Patent Applications by Residents and Non-Residents in Latin America and Asia, 1990 and 2014

	1990	2014
Latin America		
patent applications, residents (PAR)	4,588	7,345
patent applications, non-resident (PANR)	13,827	53,545
PAR/(PAR + PANR) (%)	24.9	12.1
PRA/world PAR	0.8	0.4
Developing East Asia and Pacific		
patent applications, residents (PAR)	6,702	805,159
patent applications, non-resident (PANR)	10,262	155,059
PAR/(PAR + PANR) (%)	37.7	83.9
PRA/world PAR	1.1	47.0
Developing East Asia and Pacific without the PRC		
patent applications, residents (PAR)	370	4,024
patent applications, non-resident (PANR)	5,957	28,017
PAR/(PAR + PANR) (%)	6.2	14.4
PRA/world PAR	0.1	0.2
The PRC		
patent applications, residents (PAR)	5,632	801,135
patent applications, non-resident (PANR)	4,305	127,042
PAR/(PAR + PANR) (%)	57.5	86.3
PRA/world PAR	1.1	46.8

PRC = People's Republic of China.

Source: World Bank. World Development Indicators.

Secondary school enrolment rates have increased in Latin America, as has the average number of schooling. But the quality of outcomes is still fairly low. Compared to Asia, the PISA results for Latin American countries are generally lower in math and science, though not in reading. In math, the scores in Latin America range from a low of 328 in the Dominican Republic to a high of 456 in Buenos Aires. Among middle income countries in Asia, the scores range from 386 in Indonesia to 531 in Beijing, Shanghai, Jiangsu, and Guangdong. Furthermore, in most Latin American countries, the majority of test takers performed poorly and only a very small percentage achieved at the high end (see Table 6).

Table 6: PISA Results, 2015

	Math			Reading			Science		
	Average Score	Share of Low Performers (Below Level 2)	Share of High Performers (Level 5 or 6)	Average Score	Share of Low Performers (Below Level 2)	Share of High Performers (Level 5 or 6)	Average Score	Share of Low Performers (Below Level 2)	Share of High Performers (Level 5 or 6)
OECD average	490	23.3	10.7	493	6.3	8.3	493	5.5	7.8
B-S-J-G	531	15.8	25.6	494	8.3	10.9	518	4.4	1
Singapore	564	7.5	34.8	535	2.8	18.3	556	2	24.2
Hong Kong, China	548	8.9	26.5	527	2.3	11.5	523	1.6	6.9
Taipei, China	542	12.7	28.1	497	5.4	6.9	532	2.7	15.4
Republic of Korea	524	15.4	20.9	517	4.1	12.7	516	2.9	10.6
Viet Nam	495	19.1	9.3	487	1.7		525		8.3
Thailand	415	53.8	1.2	409	17.9	0.3	421	13	
Indonesia	386	68.6	0.6	397	20.6		403	15.6	
Chile	423	49.3	1.3	459	8.7	2.3	447	9.9	1.2
Mexico	408	56.6		423	13.4	0.3	416	12.8	
Uruguay	418	52.4	1.7	437	15.5	2.5	435	12.3	1.2
Costa Rica	400	62.5		427	12	0.6	420	10.8	
Brazil	377	70.2	0.8	407	24.5	1.3	401	24.3	1
Argentina (Buenos Aires)	456	34	3.5	475	7.3	3.5	475	4.8	2.6
Colombia	390	66.3		425	16.8	0.9	416	16.2	
Peru	387	66.1		398	25.6	0.3	397	21.8	
Dominican Republic	328	92.5		358	41.3		332	55.4	

*Beijing, Shanghai, Jiangsu, Guangdong.

Empty cells: data not reported because coefficient of variation was high.

Source: OECD (2016).

In the area of infrastructure, Latin America lags significantly behind middle income countries in East Asia and elsewhere, in terms of quantity as well as quality. One of the main reasons is the decline in public investment. As governments sought to curtail fiscal deficits in the 1980s, a lot of the adjustment burden fell on capital spending. The weighted average of public investment in infrastructure for six major Latin American countries declined from three percent of GDP in the first half of the 1980s to less than one percent in the first half of the 2000s (Calderón and Servén 2012). Private investment made up for some of the decline in public investment, but it fell considerably short of compensating for it, with the exception of Chile. As a result, total investment in infrastructure fell from 3.6 to 1.9 percent of GDP between the early 1980s and the 2000s. The infrastructure deficits are most pervasive in roads and ports; in broadband coverage, countries in the regions are generally doing well.

3.4 Disillusion with the Market-led Model

Over the course of the last decade, growing disillusion with the results of the market-led model has led to a resurgence of more activist policies for upgrading and structural transformation. But efforts in most countries are still limited, often piecemeal and disjointed and not part of a more comprehensive long-term strategy (Wilson 2011). With the rise of left-leaning governments in several Latin American countries during the 2000s, we saw an interesting dichotomy in development policies. There was an increased spending on social programs, with conditional cash transfers programs and greater emphasis on education. But the same governments generally did not promote comprehensive productive transformation so as to generate more jobs at decent pay so that the children who receive more education on the basis of cash transfers will also have jobs in the future.

3.5 Inequality and the Middle Income Trap

Since Latin American countries have long been among the most unequal in the world, and since income inequality has risen in some Asian countries, most notably the PRC, the question arises whether there is a connection between inequality and the middle income trap. The answer is complex, judging by the region's experience of the last decade and the arguments in the broader literature.

During the commodity boom of the 2000s, inequality declined in nearly all Latin American countries.¹¹ Lustig (2016) shows that inequality declined in countries with high growth and in those with slow growth; in countries with left governments and in those with non-left governments; in commodity exporters and commodity importers; and in countries with stagnant minimum wages and in those with rising minimum wages. She argues that the decrease in inequality was mostly due to a decrease in inequality of labor income, which, in turn, was primarily the result of increased access to education. Other factors contributing to the decline were more progressive and larger government transfers and an increase in remittances.

In the extensive literature on the relationship between inequality and growth, we find theoretical arguments and empirical evidence in support of both a negative link and a positive link.¹² In the context of the analytical framework for this paper, however, the issue is not primarily about the link between inequality and growth. Rather the question is whether and how inequality affects the eco-system for innovation.

Theoretically, there are four main channels through which inequality may impact innovation. First, high inequality may mean highly unequal access to education which, in turn, limits the accumulation of the human capital needed for innovation. Second, inequality may prevent the adoption of policies to advance innovation, if these policies threaten the power of the elite with de facto decision-making power (Flehtner and Panther 2015). Third, high inequality may make it difficult to raise the tax revenue needed for government investment in the advancement of needed social capabilities in education and infrastructure, if it requires higher taxes on the elite. And finally, high inequality may lead to political instability which in turn makes it difficult to implement any long term development strategy. Foxley (2012) argues that a reduction in the highly unequal distribution of income and opportunities in many Latin American countries is critical for maintaining/achieving social and political peace. That, in turn,

¹¹ Between 2000 and 2014, Bolivia registered the largest decline with 0.85 percentage points and Costa Rica the smallest with 0.26 percentage points (Lustig 2016).

¹² For an overview see, for example, World Bank (2016, ch. 4).

provides the needed foundation for a development strategy aimed at increasing productivity and diversifying exports.

More detailed empirical research is needed, both in Latin America and in Asia, to determine the extent to which any of the factors discussed above constitute an important impediment for a specific middle income country for escaping the middle income trap.

4. LESSONS FROM THE LATIN AMERICAN EXPERIENCE

At the heart of the middle income trap is the insufficient development of domestic innovation capabilities, which translates into low productivity growth. The outcomes of the development models that Latin American countries pursued over the past 60 years offer important lessons for escaping from the middle income trap, in Latin America as well as in middle income countries in Asia and elsewhere. Under the state-led model, governments recognized that the advancement of domestic productive capabilities in hitherto new areas requires incentives and space for firm learning (through protection, access to finance, investment in requisite education and infrastructure). But, in contrast to the first generation of Asian Tigers, Latin American governments did not couple the incentives for learning with the imposition of discipline through sun-set clauses and performance requirements to manage rents and simulate market pressures.

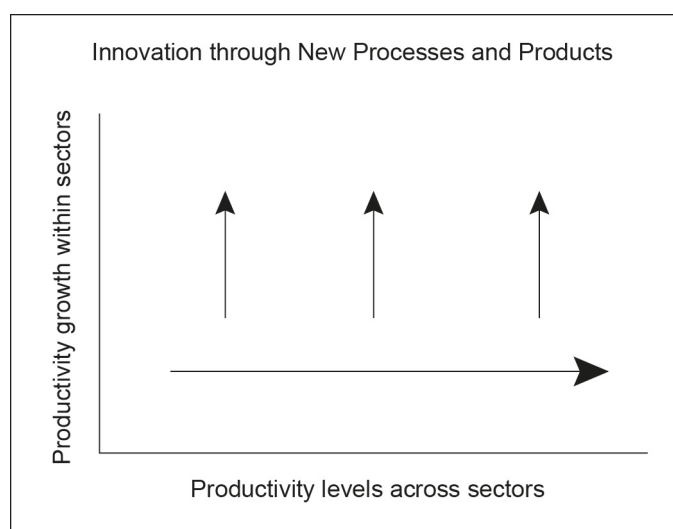
Rather than rectifying this critical flaw, most Latin American governments in the 1980s abandoned the model and opted to throw the baby out with the bathwater. Where the state-led model had offered 'carrots' for learning, but no 'sticks,' the market-led model now offered 'sticks,' but no 'carrots' for domestic producers to upgrade and learn and achieve competitiveness within and across sectors.

The Latin American experience demonstrates clearly that government leadership without mechanisms that simulate competition in protected domestic markets does not generate sustained productive transformation. But primary reliance on market forces without strategic government support for growth-enhancing structural change does not generate dynamic comparative advantages. The last 30 years in Latin America have shown that:

- (a) relying primarily on market forces cements static comparative advantages, but does not lead to broad development of higher value added activities,
- (b) securing access to developed country markets through trade agreements may lead to greater integration into GVCs, but – by itself – does not call forth upgrading in production,
- (c) encouraging foreign direct investment (FDI) with special incentives and bilateral investment treaties may indeed attract more FDI, but FDI *per se* does not generate significant linkages with the rest of the economy or engender technology transfer.
- (d) domestic innovation capabilities do not develop without pro-active government policies at the meso, micro, and macro level.

To avoid being trapped at the middle income level, the development strategy for middle income countries has to focus squarely on the promotion of domestic innovation capabilities in a systemic way. The implementation of such a strategy requires a renewed focus on active policies for productive transformation, for greater innovation in existing sectors and in support of a reallocation towards higher productivity sectors (see Figure 6).

Figure 6: Innovation, Productivity Growth, and Structural Change



The large heterogeneity in capabilities and productivity among domestic firms means that the incorporation of knowledge developed elsewhere will continue to be important to increase productivity for many firms and to reduce the large productivity gaps among firms. Yet, it is more domestic creation of innovation that will be particularly important for moving forward. Innovation has to be a collective process where public and private actors interact and collaborate, initiatives have to complement each other, and the macro and micro incentives have to support innovation rather than discourage it. Local firms develop capabilities by learning in the production process and through internal R&D efforts as well as through interactions with other key actors in the economy: other domestic firms, foreign firms, research institutions, and universities. The meso and macro contexts have to make learning-by-doing at the micro level possible. That means that social capabilities have to evolve so that firms have the requisite information about technology and markets, have access to funding and the needed qualified personnel, and possibilities to collaborate with other firms or research entities in the innovation process. And the relative price and support structure has to be such that it makes the risk-taking of innovation not only possible, but also necessary.

The pervasiveness of coordination failures, capability failures, and market inadequacies as well as the need for non-marginal changes demand a pro-active state for the achievement of broad-based upgrading. Horizontal and vertical policies are needed to advance social capabilities, support the development of local firm capabilities and establish a critical level of absorptive capacity, enable TNC affiliates to upgrade production in the host country towards more sophisticated activities, and provide a set of economic incentives conducive to broad-based capability accumulation.

4.1 Horizontal Policies

There is widespread agreement on the value of horizontal government policies generally and horizontal policies for middle income countries in particular: advancements in education, especially secondary and technical education, as well as infrastructure, particularly in information and communication technology (ICT); support for collaborations between and among private firms and research institutions, and support for engaging in R&D.

One horizontal policy of critical importance is exchange rate policy. The exchange rate is the key relative price that determines the incentives and possibilities for producing tradable or non-tradable goods and services. McMillan and Rodrik (2011) point out that countries where labor moved from lower to higher productivity sectors (i.e., growth-enhancing structural change) tended to have undervalued exchange rates. By definition, not every country can have an undervalued exchange rate. However, it is clear that an overvalued exchange rate provides a major disincentive to upgrading and innovation in tradeable sectors.

In countries where primary products make up a significant part of exports, the exchange rate is more volatile and prone to Dutch Disease impacts. Similarly, under open capital accounts and flexible exchange rates, large capital inflows can lead to overvalued exchange rates as well. Extended periods of overvalued exchange rates accelerated the de-industrialization process in a number of Latin American countries in the past.

The need for other horizontal policies will depend on country-specific conditions and constraints. Sometimes they extend to a whole region. For example, access to funding is a major problem for producers in Latin American countries. In the World Bank's Enterprise Surveys, a much larger percentage of firms reported access to finance as a major constraint in Latin America than in Asia (see Table 7).

Table 7: Proportion of Firms Identifying Access to Finance as a Major Constraint, 2008–2015

Developed Countries (13)		East Asia (3)	
All firms	11.6	All firms	15.4
Large firms	9.1	Large firms	4.6
Medium-sized firms	12.3	Medium-sized firms	18.6
Small firms	12.1	Small firms	14
Latin America and Caribbean (31)		South East Asia (9)	
All firms	30.4	All firms	16.1
Large firms	20.6	Large firms	12.1
Medium-sized firms	29	Medium-sized firms	20.1
Small firms	31.7	Small firms	16.2
		South Asia (6)	
		All firms	23
		Large firms	20.8
		Medium-sized firms	18.1
		Small firms	26

Number of countries in brackets.

Size categories: small: < 20 employees; medium: 20-99 employees; large: > 99 employees.

Source: UNCTAD (2016, 145) based on Enterprise Surveys of the World Bank.

4.2 Vertical Policies

Vertical policies, also often called active policies, target specific activities. The Latin American experience, especially in comparison with the first-generation Asian Tigers, demonstrates that targeted policies (as well as general protection policies) have to include performance requirements. Governments need to articulate and enforce what Amsden (2001) called 'reciprocal control mechanisms.'

In the current context, governments' financial constraints together with increased global pressures to increase innovation are making active policies particularly important. The key question, of course, is how to identify the activities where the pay-offs in terms of greater value added production are largest and most likely to occur. The sectors in which to develop new indigenous production capabilities will depend on path dependency in country-specific contexts. There is no 'one size fits all.' Nonetheless, a reality and opportunity for all middle income countries is the rapid growth of knowledge-intensive services and the blurring boundaries between such services and manufacturing (and agriculture). Lee (2013) argues that middle income countries should leapfrog and focus on short-cycle technologies. Detailed studies are needed at the country and sector level to assess the potential for leveraging computerization, automation, and biotechnology for productivity increases. In the case of Argentina, for example, Anlló et al. (2015) suggest interesting possibilities for significant productivity growth through precision agriculture.

The government needs to play a catalytic function where private sector risk is high and coordination of networked agencies and activities important. Indeed, Block (2011) and Mazzucato (2013) demonstrate the catalytic role that the U.S. government has played in advancing innovation in new critical areas, by investing in the early-stage development in many industries. Contrary to the perception of the U.S. as a particularly liberal market economy, Block (2011, 6) argues that government business partnerships have been a constant in U.S. history, but the "intensity and importance of the government role in driving innovation has intensified dramatically over the past seven decades."

Nonetheless, private-public partnerships may often help identify which activities should be targeted and with what measures. Private-public partnerships allow for real information exchange between business and government, can spell out allocative authority, and reduce barriers to rent-seeking (Schneider 2016).

Where a substantial part of production occurs in global value chains (e.g. in Central American and Asian middle income countries), the key question is how to increase the share of domestic value added. Milberg et al. (2014) argue that the failure of middle-income countries to move into more sophisticated parts of the value chain and establish brand recognition (in existing or new products) is one of the reasons of the middle income trap in such countries. Yusuf et al. (2009) link this failure explicitly to the failure to have built indigenous capabilities in design and innovation. But UNCTAD (2016) warns that intensified global competition and TNC reliance on large first-tier global producers has increased the challenges for domestic firms in developing countries to capture more value added in the GVC.

With respect to FDI, governments need to pursue a strategic approach. That may mean targeting FDI in areas with the greatest potential for technological spillovers given the country's location-specific assets. It also means working with TNC affiliates that produce in the country to support upgrading with complementary advances in social capabilities. In the context of GVC participation, Milberg et al. (2014, 173)

advocate managing the relationships between “foreign lead firms and domestic low value adding firms for the purpose of capturing more value added in the value chain.”

4.3 South-South Connections

Regional integration can be a powerful tool for advancing the production of higher value added activities. For example, in South America, where primary products dominate most countries’ exports to the North, manufactured exports dominate the goods trade within the region.

Regional collaboration in research and development may be an area of real potential in the future, especially for smaller countries. The European Union has numerous programs to support joint cross-country research and innovation: the Research Framework Program, the Competitiveness and Innovation Framework Program, the Structural Funds, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Fisheries Fund (European Union 2011). It would be worthwhile to analyze these programs in greater detail to see what might be copied or adapted by middle income countries that are members of regional agreements.

4.4 Policy Space for Active Government Policies

To implement active government policies for productive transformation towards a more knowledge-intensive economy, governments have to use all the policy space available to them and be creative in using it. The rules of the WTO – which came into effect in 1995 – have restricted the policy space of governments for targeted policy support considerably. They disallow many key policies that development latecomers in the past have used to become high-income economies (Abugattas and Paus 2010). For example, trade-related investment measures (TRIMs) disallow preferential national treatment, performance requirements and quantitative restrictions. That includes domestic content requirements and trade balance requirements. And the Agreement on Subsidies and Countervailing Measures (SCMs) prohibits the use of export subsidies.

Nonetheless, even though the policy space is reduced (and often narrowed further through bilateral trade and investment agreements), governments have not taken advantages of the policy space that still exists. Agosin (2013, 16), for example, argues that “most LAC countries have bound their tariff levels in the WTO at levels higher than those they use in practice, giving them some policy space to increase effective tariffs, if they chose to do so.”

Furthermore, governments can provide subsidies for training and regional development. They cannot give preferential treatment to domestic producers, but they can treat domestic and foreign producers equally. They can support human capital formation, research and development, and capacity building. And they may demand that a foreign firm transfer technology, conduct a certain amount of R&D locally, or employ domestic workers to enhance their skills (Shadlen 2005).

Some countries have been creative in devising new rules or circumventing existing rules. Brazil, for example, had ‘voluntary’ reciprocal agreements with MNCs, where the latter got access to the domestic market and, in return, had to meet requirements for local content and R&D (Schneider 2016). And the PRC has repeatedly used non-WTO conforming policies to advance domestic production capabilities in strategic industries. Oh (2015), for example, offers a detailed case study of the creation of the domestic wind turbine manufacturing industry in the PRC through the use of industrial policies that strategically disregarded WTO rules. When the U.S. brought a complaint

to the WTO and the dispute settlement body ruled against the PRC, the country complied. But by then domestic capability development had passed the critical initial learning stage.

4.5 Political Coalitions for an Innovation-based Strategy

In the end, a necessary condition for escaping from the middle income trap is the existence of a coalition of stakeholders that push for an innovation-focused strategy. There has to be a critical mass of national producers that have an interest in upgrading and innovation and would demand or support such a strategy, or at least parts of it.

In the case of Latin America, under the market-led strategy, many producers in the formal manufacturing sector were forced out of business or sold their businesses, often to foreign companies, to dedicate themselves to importing. The process of de-industrialization and informalization was often accompanied by de-nationalization, and foreign producers do not have the same interest in moving up the value chain in the host country. Increases in wages can serve as an incentive for upgrading. In Singapore, in the early 1970s, national wages were increased for exactly that purpose (Prime 2012). Theoretically, demands from labor unions for higher wages and better working conditions could provide incentives for producers to upgrade and increase productivity. But that has not happened in reality, as the de-industrialization process has gone hand in hand with a weakening of labor unions in most Latin American countries.

In some countries, it may be possible to identify common interests around a subset of issues, e.g., availability of financing, the formation of new clusters in areas of potential competitive advantage, or producers that are participating in GVCs. It may also be possible to expand from existing “pockets of excellence” by expanding linkages with the rest of the economy (see Sánchez-Ancochea, 2012, on the Dominican Republic, Perez-Caldentey, 2012, on Chile, and Abugattas, 2012, on Jordan). Also if primary resources are owned by national producers, there will be a greater chance that they will be interested in developing new comparative advantages by incorporating IT-based services or bio-technology.

Forging coalitions and building the institutional architecture in support of innovation is a challenging process. But no action or insufficient action on a broad innovation agenda will have undesirable consequences for all interest groups, as it will mean ongoing slow growth and stagnant or declining wages.

5. CONCLUSIONS

In this paper, I analyzed the reasons behind the middle income trap in Latin America to extract lessons for escaping from the trap. The Merriam-Webster dictionary defines a ‘trap’ as “something by which one is caught or stopped unawares; *also*: a position or situation from which it is difficult or impossible to escape.”¹³ Intense global competitive pressures and the rise of the PRC make it more challenging to escape, as they reduce the time for endogenizing and expanding innovation capabilities. But while it may be more difficult to escape, it is not impossible. The middle income trap is not inevitable. Just as policy choice was an important factor behind economies facing the trap, a change in policies is the way to escape from the trap.

¹³ <http://www.merriam-webster.com/dictionary/trap?show=0&t=1383226418> (accessed 24 February 2017).

Middle income countries need to embrace a capability-focused strategy to advance innovation, move up the value chain and create decent jobs. The nature of the current production structure and location-specific assets that may be developed will shape the possible path of productive transformation; these are country-specific. Nonetheless, the compression of time for learning affects all countries. Countries where more elements of the requisite innovation eco-system are developing already will have a better chance of escaping from the trap. The starting point, however, has to be the existence of political will to embark on an innovation-focused strategy with the requisite active policies to implement it.

REFERENCES

- Abramovitz, Moses. 1986. "Catching up, Forging Ahead, and Falling Behind," *The Journal of Economic History*, 46, 2, 385–406.
- Abugattas, Luis and Eva Paus. 2008. "Policy Space for a Capability-Centered Development Strategy for Latin America," in Diego Sanchez-Ancochea and Kenneth C. Shadlen. Eds. *The Political Economy of Hemispheric Integration. Responding to Globalization in the Americas*. New York and London: Palgrave Macmillan, 113–143.
- Abugattas, Luis. 2012. "Jordan: Model Reformer Without Upgrading?" *Studies in Comparative International Development*, 47, 2, 231–253.
- Agosin, Manuel. 2013. "Productive Development Policies in Latin America: Past and Present," Facultad Economía y Negocios, University of Chile, Working Paper 382.
- Aiyar, Shekhar, Romain Duval, Damien Puy, Yiqun Wu, and Longmei Zhang. 2013. "Growth Slowdowns and the Middle Income Trap," International Monetary Fund Working Paper WP/13/71
- Amsden, Alice. 2001. *The Rise of "The Rest." Challenges to the West from Late-Industrializing Economies*. Oxford, New York: Oxford University Press.
- Anlló, Guillermo, Roberto Bisang and Jorge Katz. 2015. "Aprendiendo con el agro argentino. De la ventaja competitiva a la ventaja competitiva," BID. Documento para Discusión
- Bértola, Luis and José Antonio Ocampo. 2012. *The Economic Development of Latin America since Independence*. Oxford: Oxford University Press.
- Block, Fred. 2011. "Innovation and the Invisible Hand of Government," in Fred Block and Matthew Keller. eds. *State of Innovation. The U.S. Government's Role in Technology Development*. Boulder and London: Paradigm Publishers, 1–26.
- Brynjolfsson, Erik and Andrew McAfee. 2015. *The Second Machine Age. Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York and London: Norton & Company.
- Calderón, César and Luis Servén. 2012. "Infrastructure in Latin America," World Bank Policy Research Paper 5317.
- Cimoli, Mario, Giovanni Dosi, and Joseph E. Stiglitz. 2009. "The Political Economy of Capabilities Accumulation: The Past and Future of Policies of Industrial Development," in Mario Cimoli, Giovanni Dosi, and Joseph E. Stiglitz. Eds. 2009. *Industrial Policy and Development. The Political Economy of Capabilities Accumulation*. Oxford: Oxford University Press, 1–16.
- Daude, Christian. 2010. "Innovation, Productivity and Economic Development in Latin America and the Caribbean," OECD Development Centre Working Paper No. 288.
- Devlin, Robert and Graciela Moguillansky. 2012. "What's New in the New Industrial Policy in Latin America?" World Bank Policy Research Paper 6191.
- Doner, Richard and Ben Ross Schneider. 2016. "The Middle Income Trap: More Politics than Economics," *World Politics*. 68, 4, 608–644.
- Dosi, Giovanni. 1984. *Technological Change and Industrial Transformation*. New York: St. Martin's Press.

- ECLAC. 2010. *Time for Equality. Closing Gaps, Opening Trails*. Santiago, Chile: ECLAC.
- Eichengreen, B., D. Park and K. Shin. 2013. "Growth Slowdowns Redux: New Evidence on the Middle-Income Trap," NBER Paper Series, WP 18673.
- . 2011. "When Fast-Growing Economies Slow Down: International Evidence and Implications for China," NBER Working Paper Series, WP 16919.
- European Union. 2011. *New Practical Guide to EU Funding Opportunities for Research and Development*. http://ec.europa.eu/research/participants/data/ref/fp7/204008/practical-guide-rev3_en.pdf (accessed 24 February 2017).
- Felipe, J. 2012. "Tracking the Middle-Income Trap: What is it, Who is in it, and Why? (Part 1)," Asian Development Bank Economics Working Paper Series No. 306, Asian Development Bank.
- Flehtner, Svenja and Stephan Panther. 2015. "Global and Domestic Inequalities and the Political Economy of the Middle-Income Trap," Paper prepared for the World Congress of Comparative Economics, Rome, June 25–27.
- Ford, Martin. 2015. *Rise of the Robots. Technology and the Threat of a Jobless Future*. New York: Basic Books.
- Foxley, Alejandro. 2012. *La Trampa del Ingreso Medio. El desafío de esta década para América Latina*. Santiago, Chile: CIEPLAN.
- Freeman, Richard. 2007. "The Challenge of the Growing Globalization of Labor Markets to Economic and Social Policy," in Eva Paus, ed. *Global Capitalism Unbound. Winners and Losers from Offshore Outsourcing*. New York and London: Palgrave Macmillan, 23–39.
- Gill, I., and H. Kharas. 2007. *An East Asia Renaissance: Ideas for Economic Growth*. Washington, D.C.: World Bank.
- Hausmann, Ricardo and Bailey Klinger. 2007. "The Structure of the Product Space and the Evolution of Comparative Advantage," *Center for International Development, Harvard University, Working Paper No. 128*.
- Hausmann, Ricardo, Jason Hwang, and Dani Rodrik. 2007. "What You Export Matters," *Journal of Economic Growth*, 12, 1–25.
- Im, F. G., and Rosenblatt, D. 2013. "Middle-Income Trap: A Conceptual and Empirical Survey," World Bank Policy Research Working Paper Series No. 6594, World Bank.
- Imbs, Jean and Romain Wacziarg. 2003. "Stages of Diversification," *American Economic Review* 93, 1, 63–86.
- Katz, Jorge. 2001. "Structural Reforms and Technological Behaviour: The Sources and Nature of Technological Change in Latin America in the 1990s," *Research Policy* 30, 1–19.
- Lall, Sanjaya. 2000. "The Technological Structure and Performance of Developing Country Manufactured Exports 1985-1998," *Oxford Development Studies* 28, 3, 337-369.
- Lee, Keun. 2013. *Schumpeterian Analysis of Economic Catch-up: Knowledge, Path Creation and the Middle Income Trap*. Cambridge and New York: Cambridge University Press.

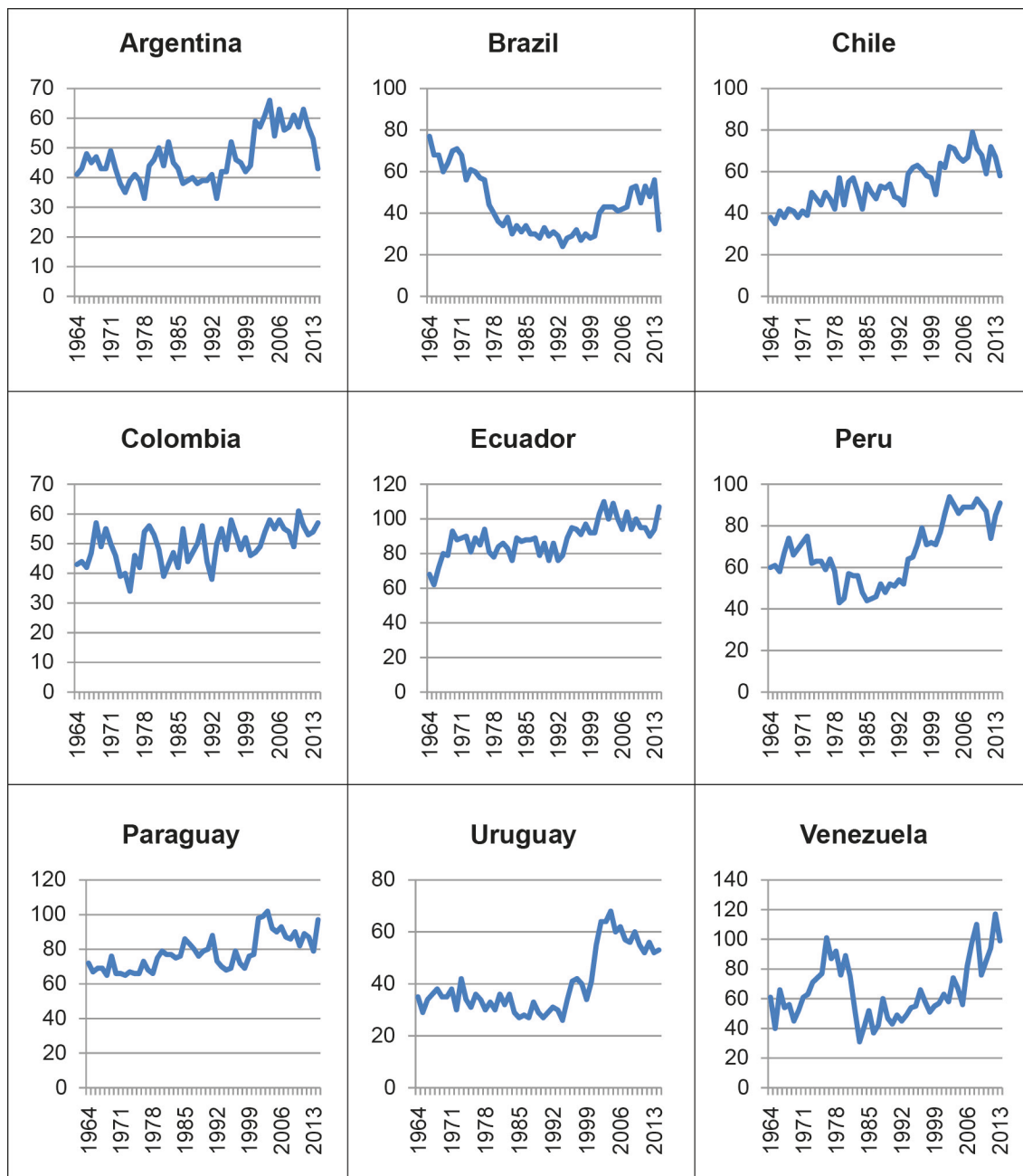
- Lustig, Nora. 2016. "Poverty and Inequality after the Commodities Boom," Presentation at the Annual Conference of the Latin American Studies Association, New York City, May.
- Mazzucato, Mariana. 2013. *The Entrepreneurial State. Debunking Public vs. Private Sector Myths*. London, New York, Delhi: Anthem Press.
- McMillan Margaret and Dani Rodrik. 2011. "Globalization, Structural Change and Productivity Growth," NBER Working Paper 17143, June.
- Milberg, William, Xiao Jiang and Gary Gereffi. 2014. "Industrial policy in the era of vertically specialized industrialization," in José Salazar-Xirinachs, Irmgard Nübler and Richard Kozul-Wright. Eds. *Transforming Economies. Making Industrial Policy Work for Growth, Jobs, and Development*, 155–178.
- Moreno-Brid, Carlos and Jaime Ros. 2009. *Development and Growth of the Mexican Economy: A Historical Perspective*. New York: Oxford University Press.
- Nelson, Richard and Sidney Winter. 1982. *An Evolutionary Theory of Economic Change*. Cambridge, MA: Harvard University Press.
- Ocampo, Jose Antonio, Codrina Rada and Lance Taylor. 2009. *Growth and Policy in Developing Countries. A Structuralist Approach*. New York: Columbia University Press
- OECD. 2016. *PISA2015. Results in Focus*. <https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf> (accessed 24 February 2017).
- Ohno, K. 2009. *The Middle Income Trap. Implications for Industrialization Strategies in East Asia and Africa*. GRIPS Development Forum, National Graduate Institute for Policy Studies, Japan.
- Paus, E. 2014. "Latin America and the Middle-Income Trap," Financing for Development Series. ECLAC, United Nations.
- . 2012. "Confronting the Middle Income Trap. Insights from Small Latecomers," *Studies in Comparative International Development*, 115–138.
- Paus, Eva and Kevin Gallagher. 2008. "Missing Links: Foreign Investment and Industrial Development in Costa Rica and Mexico," *Studies in Comparative International Development*. 2008,
- Paus, Eva, Nola Reinhardt, and Mike Robinson. 2003. "Trade Liberalization and Productivity Growth in Latin American Manufacturing," *Journal of Policy Reform* 2003, 1–16.
- Peres, Wilson. 2011. "Industrial Policies in Latin America," United Nations University. World Institute for Development Economics Research. Working Paper No.2011/48
- Perez Caldentey, Esteban. 2012. "Income Convergence, Capability Convergence, and the Middle Income Trap: An Analysis of the Case of Chile," *Studies in Comparative International Development*, 47, 2, 185–207.
- Prime, Penelope. 2012. "Utilizing FDI to Stay Ahead: The Case of Singapore," *Studies in Comparative International Development*, 47, 2, 139–160.
- Robertson, Peter and Longfeng Ye. 2013. "On the Existence of the Middle Income Trap," Business School, University of Western Australia, Discussion Paper 13.12.
- Rodrik, Dani. 2015. "Premature De-industrialization," NBER Working Paper. 20935.

- Sánchez-Ancochea, Diego. 2012. "A Fast Herd and a Slow Tortoise? The Challenge of Upgrading in the Dominican Republic," *Studies in Comparative International Development*, 47, 2, 208–230.
- Schneider, Ben Ross. 2016. "Upgrading in the 21st century: New Challenges for Industrial Policy and Institution Building," background paper for UNCTAD. *Trade and Development Report 2016*. Unpublished.
- Shadlen, Ken. 2005. "Exchanging Development for Market Access? Deep Integration and Industrial Policy under Multilateral and Regional-Bilateral Trade Agreements," *Review of International Political Economy*. 12, 750–75.
- Shapiro, Helen and Lance Taylor. 1990. "The State and Industrial Policy", *World Development*, 18, 6, 861–878.
- Stiglitz, Joseph and Justin Lin. 2013. Eds. *The Industrial Policy Revolution. The Role of Government beyond Ideology*. New York and London: Palgrave Macmillan.
- Whittaker, H., T. Zhu, T. Sturgeon, M.H. Tsai, and T. Okita. 2010. "Compressed Development," *Studies in Comparative International Development*, 45(4): 439–467.
- World Bank. 2016. *Poverty and Shared Prosperity 2016. Taking on Inequality*. Washington, D.C.: World Bank.
- . 2013. *China 2030. Building a Modern, Harmonious, and Creative Society*. Washington, D.C.: World Bank.
- UNCTAD. 2016. *Trade and Development Report 2016*. Geneva: United Nations Conference on Trade and Development.
- Yusuf, Shahid and Kaoru Nabeshima. 2009. *Tiger Economies under Threat. A Comparative Analysis of Malaysia's Industrial Prospects and Policy Options*. Washington: The World Bank.

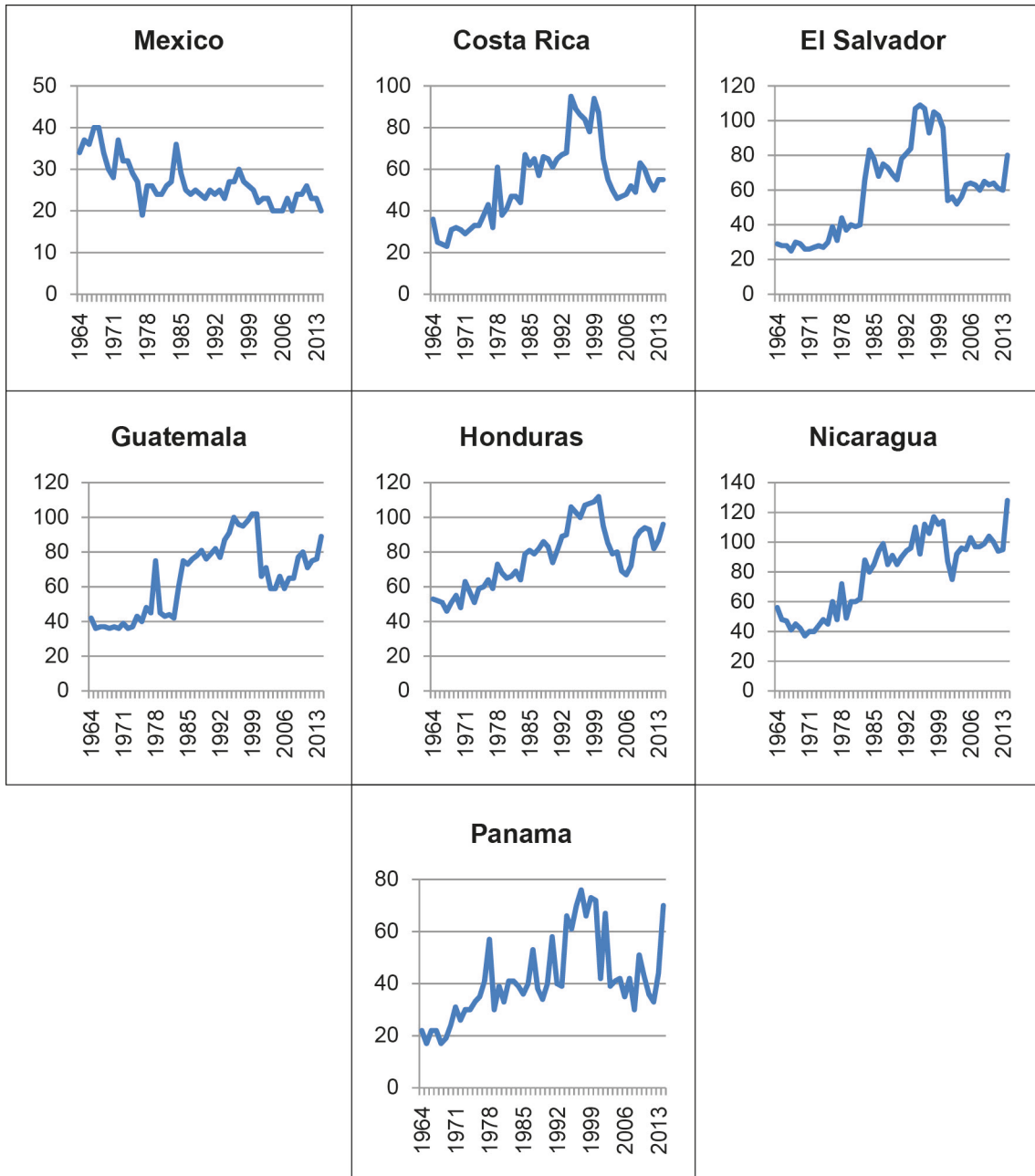
APPENDIX

Ranking in the Economic Complexity Index in Latin American and Asian countries, 1964–2014

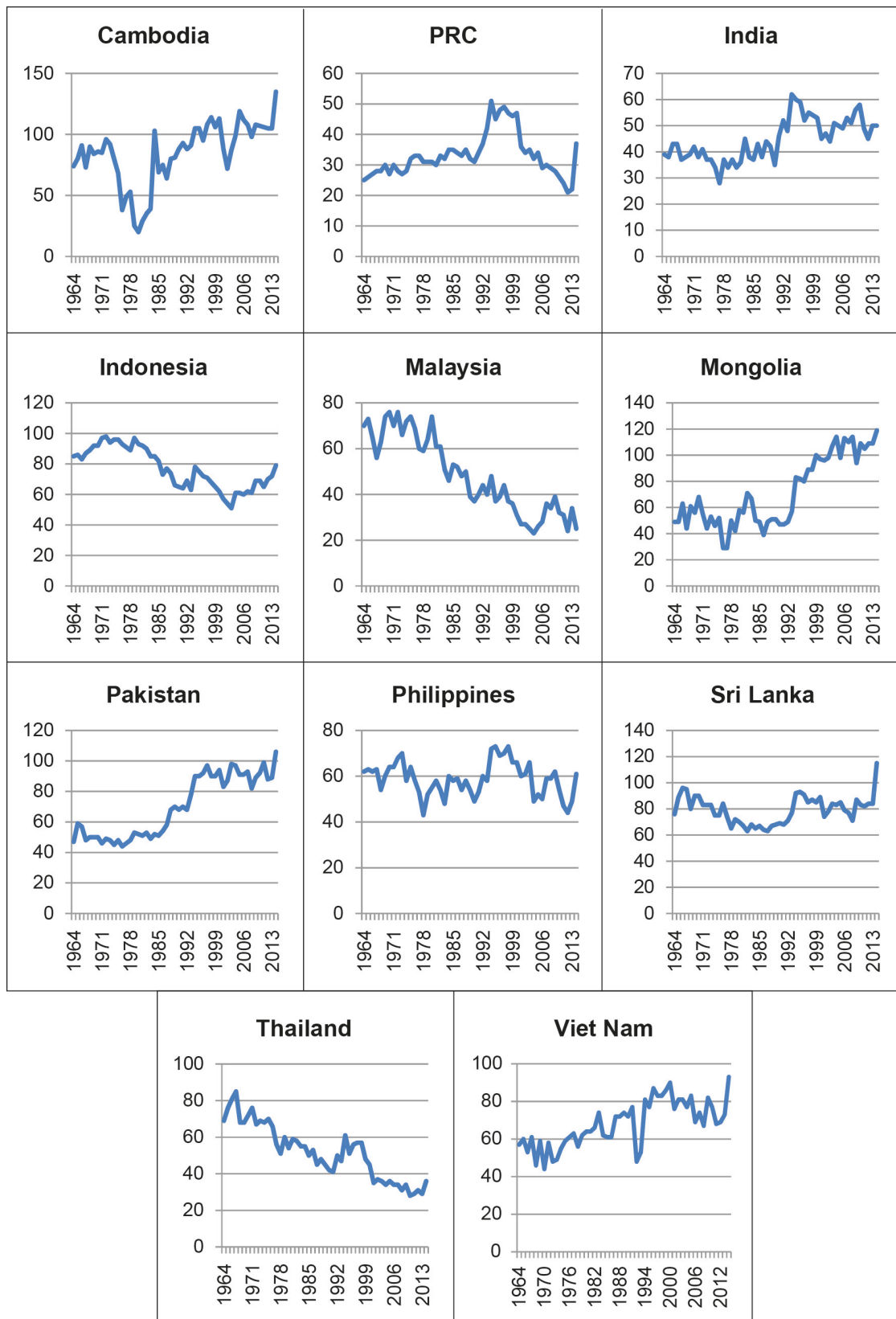
(a) South America



(b) Central America and Mexico



(c) Asia



PRC = People's Republic of China.

Source: "The Atlas of Economic Complexity," Center for International Development at Harvard University, <http://www.atlas.cid.harvard.edu> (accessed 24 February 2017).