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José Gabriel Palma Jonathan Pincus

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Productivity isn't everything,
but in the long run, it's almost everything.

Paul Krugman

Abstract

The middle-income trap was initially interpreted as an inevitable slowdown in economic growth as countries approach the technological frontier. Yet growth in Latin America (LA) stalled at low levels of labour productivity — about half of the levels of the technological leaders. Productivity growth in middle-income Southeast Asia also decelerated after the East Asian Crisis even though income per capita in these countries is lower than in LA. From our perspective, one of the key question in development economics is why in so few emerging countries the level of labour productivity have managed to break through the 50 percent barrier vis-à-vis that of the technological leaders. That is, why only very few have been able to sustain productivity gains long enough to get close of achieving high-income status. The main issue is the inability of countries to “upgrade” their growth strategies when the existing one have run their course and become exhausted. Nicholas Kaldor’s argument that manufacturing has the greatest scope to realize increasing returns to scale remains true, even in today’s decentralised, fragmented and niche-oriented manufacturing systems, but the limited size of domestic markets in the great majority of middle-income countries means that they must prioritise manufactured exports using all of the policy instruments still available to them.

1. – Introduction

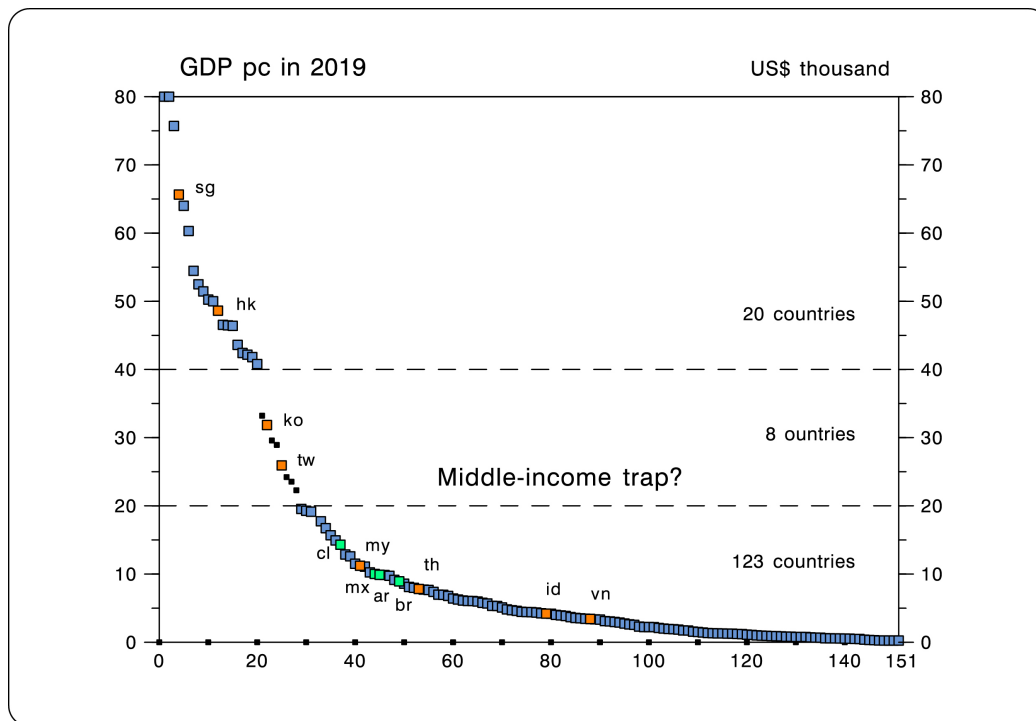
In each decade after the Second World War, a small group of countries outperformed the rest, achieving rates of economic growth much higher than the developing world average. Japan set the pace in the immediate post-war era, followed by the first generation of East Asian newly industrializing countries (NICs-1), including Hong Kong, the Republic of Korea, Singapore and Taiwan in the 1970s. In the 1980s and especially the 1990s, China and India posted growth rates that few had thought possible in the modern era.

The second tier Southeast Asian NICs (NICs-2), including Indonesia, Malaysia, Thailand and Viet Nam, were widely assumed to be the next in line. Despite showing some early promises, growth slowed after the East Asian Financial Crisis of 1997/98. Except for Vietnam, they were unable to regain momentum after the turn of the millennium despite tailwinds from the long commodity boom; the Global Financial Crisis of 2008 did not help matters either. If Malaysia and Thailand had been able to sustain their pre-crisis growth rates into the 21st century, output per person could have reached US\$19,000 and US\$17,000, respectively, ranking them among the most successful developing economies of the post-war period. However, because of slower growth from 2000 to 2019, Malaysia's GDP per capita was 70% lower and Thailand's 50% lower than prospective numbers, leaving both NICs-2 well below the US\$20,000 per capita threshold of Figure 1.

A key question regarding Southeast Asia is whether the region is experiencing its own version of a Latin American-style middle income trap. Unlike Japan and the NICs-1, has Southeast Asian economic growth stalled before these countries achieved a level of prosperity approximating the advanced countries of Europe and North America? Is the region destined to rely on commodities and foreign direct investment with no hope of building competitive domestic industries that rival the West?

Such concerns are understandable. The number of countries that have broken into the rich country group since World War II is extremely small. As seen in Figure 1 —where we chose 2019 as a reference year to avoid the impact of the Covid-19 pandemic—, only ten out of 151 countries have breached the US\$20,000 per capita GDP threshold since 1950, comprised of four NICs-1 and six from the European periphery. What is striking in the figure is the steep slope of the income curve above US\$10,000 per capita. One hundred twenty three of the 151 countries reported in the IMF World Economic Outlook database for 2019 fall below US\$ 20 thousand, but there were just eight in the next group from US\$ 20,000 to US\$40,000. While many countries have made the transition from low- to middle-income status since the Second World War, very few have managed to progress further —that is, have succeeded in their attempt to “catch-up” to the production frontier.

Figure 1. The middle-income trap as a “no man's land”



- Other than Korean and Taiwan, the six countries in the US\$20 to US\$40 thousand range are from the European periphery (Italy, Spain, Slovenia, Estonia, Czech Republic and Portugal). **ar**=Argentina; **br**=Brazil; **cl**=Chile; **id**=Indonesia; **mx**=Mexico; **my**=Malaysia; **th**=Thailand; and **vn**=Vietnam.¹
- Source: IMF World Economic Outlook database (<https://www.imf.org/en/Publications/SPROLLs/world-economic-outlook-databases>)

The NICs-1 countries are among the very few that have made the transition, with Korea and Taiwan now in the US\$ 20 to US\$ 40 thousand GDP pc range, while Singapore and Hong Kong have even risen above the latter threshold.

It is often said that the handful of successful emerging countries able to escape “the trap” —in this case, go above the US\$ 20 thousand threshold —only succeeded because they benefited from unique external circumstances, such as massive U.S. financial support during the Cold War (Korea and Taiwan), or proximity to Western Europe —i.e., access to the European single market and large transfers from the European Union. Hong Kong and Singapore are said to have benefited from niche trading opportunities as open port city-states attached to large, isolated hinterlands.

This reference to special conditions lends itself to various forms of development pessimism, which hold that countries are locked in place by the global capitalist system (left-wing variant) or by the dysfunctionality of their own politics and institutions, often associated with path-dependent issues of their own history (right-wing variant).² For both brands of development pessimism, the exceptions prove the rule that catching-up is nearly impossible.

¹ Throughout the paper acronyms for countries are identical to their internet domains. The figure excludes high-income oil producing countries in the Middle East (Qatar, United Arab Emirates, Kuwait, Bahrain, Saudi Arabia and Oman), and the especial case of Puerto Rico. The top two countries in the ranking, Switzerland and Ireland, have a GDP pc above the range of the Y axis (US\$85,686 and US\$80,482, respectively).

² For the former, the global division of labour dominated by the rich countries has blocked industrialisation as a path to advancement (Arrighi, 2005). Acemoglu and Robinson’s *Why Nations Fail* (Acemoglu & Robinson, 2013) argues that developing countries must replicate the “inclusive” economic political institutions of the

So, as we already suggested above, one of the key questions in development economics today is why, given the fact that many countries have managed to make the transition from low- to middle-income status, have so few taken the next step? Oversimplification of complex (and surely over-determined) phenomena, such as attributing success solely to “tall winds” from Cold War alliances or European integration, is ultimately unhelpful. Moreover, as one of the authors has argued in the Latin American context, although many countries have achieved high rates of growth at one time or another, none have had the capacity to sustain growth (Palma, 2019a, and 2022a). What is needed is not just the speed of a middle-distance runner but the stamina of a marathoner. And this is precisely what has characterised the NICs-1: they may have received a lot of help at the early stages of development, but they then managed to maintain high rates of growth, with little or no external support, for the next half a century!

This paper is an attempt to answer these questions, drawing on the contrasting experiences of Latin American and Southeast Asian countries to shed light on the nature of the economic challenge facing middle income countries. We begin with the mainstream account of the middle-income trap, which holds that growth slowdowns are to be expected as these countries approach the technological frontier. We show that this interpretation is inconsistent with the evidence, because growth in LA and Southeast Asia has slowed at relatively low levels of labour productivity—that is to say, at a great distance from the technology frontier. We then delve more deeply into the Latin American and Southeast Asian cases. In the former, productivity growth is restricted to the commodities sectors, but employment growth is mostly confined to services and construction, and in some cases in Central America and in Mexico to assembly manufacturing. However, no sector has shown a capacity to achieve both productivity and employment growth. The relative success of Southeast Asian countries lies in their capacity to record both productivity and employment gains, largely in the manufacturing sector. However, after the East Asia Financial Crisis, and continuing with the Global Financial Crisis, productivity growth in the NICs-2 has slowed even as employment growth has been sustained. These empirical findings strengthen the case for the special role of manufacturing, particularly manufacturing for export, in the development process first put forward by Nicholas Kaldor in the 1960s. Although the policy tools favoured by Kaldor and his followers are now disallowed under multilateral and bilateral trade and investment agreements, middle-income countries still have the means to promote the growth of domestic manufacturing industry. What is often lacking is not the means, but the will.

2. - The “middle income trap” in Latin America and Asia

In mainstream economic growth theory, the long-run level of income per capita is given by the savings rate, including (in some versions) the accumulation of knowledge and skills (human capital). This conclusion flows from the assumption of constant returns to scale and diminishing returns to the factors of production. The middle-income trap, a term coined by Gill et al. (2007), reflects this tradition, predicting that growth will taper off as capital–labour ratios rise and middle-income economies approach the global technological frontier (Kharas and Gill, 2015). However, in countries with few or no natural resources, the trap manifests much earlier, when countries are priced out of labour-intensive activities but are not yet competitive in technologically more advanced operations and industries. And countries rich in natural resources fall into the trap when they exhaust their merely extractive development model and are unable to take the next step towards processing their commodities.

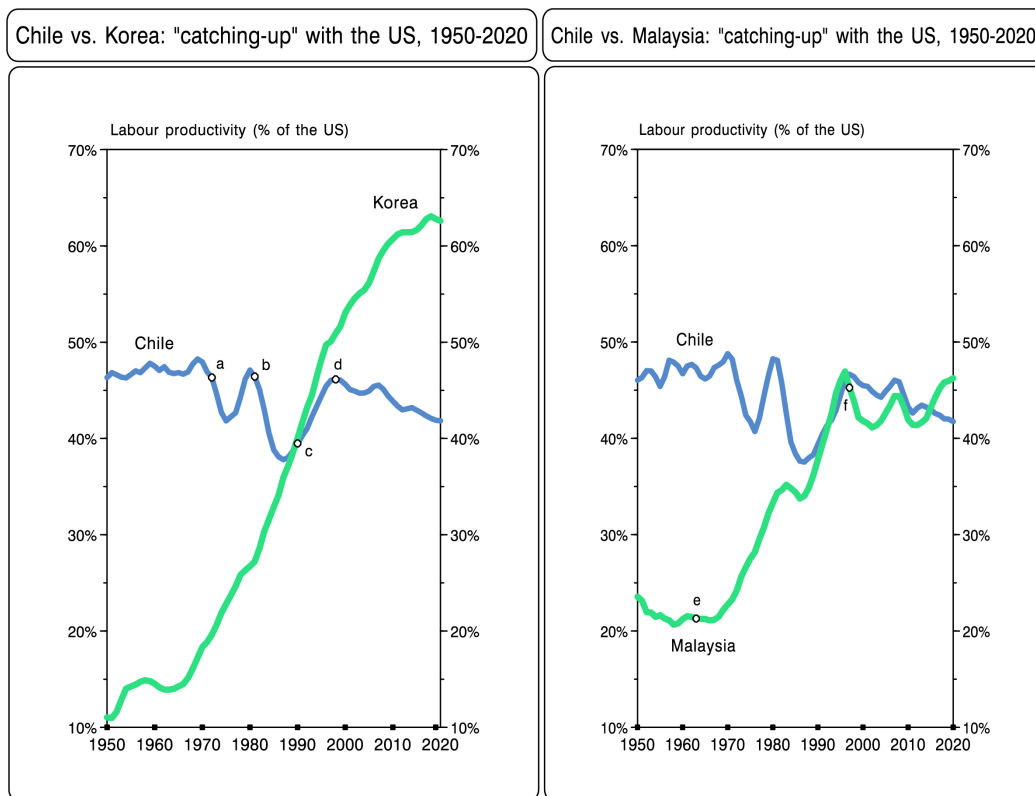
As in the mainstream narrative the middle-income trap is the result of diminishing returns to capital as countries exhaust the relatively easy gains from importing technology, then the solution must lie in transitioning to industries and activities that generate increasing returns to scale. According to Gill et al, middle-income countries can do that and escape the trap by adopting orthodox economic policies, such trade and investment liberalization, enforcement of intellectual property rights, and a

advanced countries. Yet, many have argued that the results of pursuing this strategy in Latin America have thus far been less than encouraging (Bértola & Ocampo, 2012; Palma, 2010 and 2022a; Ros, 2011).

stronger focus on research, education and skills training to facilitate entry into niche industries and products that benefit from knowledge spillovers (Gill et al., 2007). This is the core of the “more of the same but better” strategy favoured by the international financial institutions: more liberalization combined with investment in research and development, and in education to create supply side conditions conducive to the growth of technology-intensive industries.

At first glance, the evidence from LA and Southeast Asia is apparently consistent with the mainstream version of the middle-income trap. Growth in most Latin American countries has stalled for decades, while Southeast Asian economies have failed to sustain the high growth trajectory of the years before the East Asian Financial Crisis. The lacklustre performance of middle-income countries in both regions, but especially in LA and also South Africa, suggests that productivity growth is more difficult to achieve at higher and more complex stages of the catching-up process (Paus, 2014; Tran Van Tho, 2013; Palma 2019a and 2022a). In other words, there is a problem! In Argentina, Brazil, Chile, Mexico, Colombia and the NICs-2, the growth slowdown set in at levels of labour productivity levels far removed from the technological frontier (for practical purposes, here considered to be the productivity level of the United States). Labour productivity in Latin American and Southeast Asian middle-income countries, such as Chile and Malaysia, ran into a ceiling at 50% or less of average US labour productivity levels; this contrasts with a first-generation NIC, such as the Republic of Korea, which has already achieved 65% of US labour productivity (Figure 2).

Figure 2. Productivity gap of NICs-1 (Korea), NICs-2 (Malaysia) and Latin America (Chile) relative to the US, 1950-2020



● **a** = election of President Salvador Allende; **b** = 1982 financial crisis; **c** = return to democracy after 17 years of dictatorship; **d** = end of the rapid period of recovery and catching-up after the return to democracy;³ **e** = Malaysian independence; and **f** = 1997 Asian financial crisis.

³ Note that the end of Chile's catching-up period in 1998 was not marked by a political or financial crisis, or natural disaster. As one of the authors discusses elsewhere, Chile's productivity growth decelerated from the end of the 1990s as it was unable to upgrade its 'extractive' model when it ran of steam (Palma, 2019a). This characterised all periods of rapid growth in every Latin American country since the Second World War: the

● Source: TED (2022). Data in international US\$ 2021.

In PPP dollar terms, there appears to be a “glass ceiling” in Chile’s average productivity levels vis-à-vis the frontier, at about half of the US level. Every time Chilean productivity has approached this point, it has stalled. In non-PPP dollars the picture is similar, but Chile’s relative position vis-à-vis the frontier falls to about a level around one-third of US productivity — and so does the “glass ceiling”!

As figures 3 and 4 below indicate, this is a feature common to all high-middle income Latin American economies and South Africa: at one time or another they draw near to their “glass ceiling”, only to fall back again.

Chile is unique within the region in that it has managed to recover more quickly than others after repeated downward cycles, especially the one that followed the 1982 debt crisis. However, it has never managed to climb back to where it was relative to the US before that crisis. In turn, after the 1982 crisis, Brazil, Mexico and Argentina all lost the gains that they had made since 1950 (see Figure 3 and Figure 4 below).

Korea, by way of contrast, shows no signs of this “50% vertigo”! The same with the other NICs-1; Singapore, for example, at the time of independence in 1965 had the same relative productivity position vis-à-vis the US as Chile (just below 40%). Twenty-eight years later it had surpassed the US, while Chile was still stuck below its “glass ceiling” — in fact, it was even below where it had been in 1965.

However, after their 1997 financial crisis the NICs-2 began to lose their capacity to sustain productivity growth by continuing to upgrade their productive strategies (Figure 2, right panel). Malaysia, for example, now faces a similar problem to LA: “hesitation” when it comes to breaking through the “middle-income trap”. As the country with the highest GDP per capita in the NICs-2 group, Malaysia could be a harbinger of what awaits the rest of the region.

As suggested, the main issue in LA’s “middle-income trap” has been the region’s inability “to upgrade” when the existing development model — first import substitution, or ISI, and then the extractive strategy of the neo-liberal model since the 1980s — has run its course.⁴ In both instances “Latin America’s neophobia”, or fear of the new, has meant that these countries have continued with “more of the same” long after the respective engine of growth (ISI in one case, extractive activities in the other) had lost their potential to drive productivity growth.⁵ So, when the extractive cycle, pursued since the economic reforms (Chile started earlier, after the 1973 coup d’état) had run its course, they simply were unable to rise to the challenge of devising a way to upgrade their growth strategy by developing new engines of productivity growth.

And it was not as if they lacked options: promoting backward and forward linkages in natural resources, like the processing of primary exports both from agriculture and mining; a “green new-deal” (based on investment in renewable and clean energy systems and technologies, the reengineering of their mining activities to make them more sustainable from an environmental point of view, and transforming agriculture to more organic forms while reducing environmental damage); and the spread of the new technological paradigm throughout the economy, including digitalisation (especially of the huge service sector) were all realistic possibilities. Yet they opted to double down on the same extractive activities despite their clear loss of momentum in terms of productivity growth (see Section 6 below).

In contrast to Gill and Kharas’s interpretation, Figure 3 indicates that the slowdown in productivity growth began well before these countries were anywhere near the productivity frontier — in fact, not even halfway there. And in non-PPP terms, even much further away! The figure compares Mexico and Vietnam (left panel) and Brazil and Indonesia (right panel). As in the Chilean case,

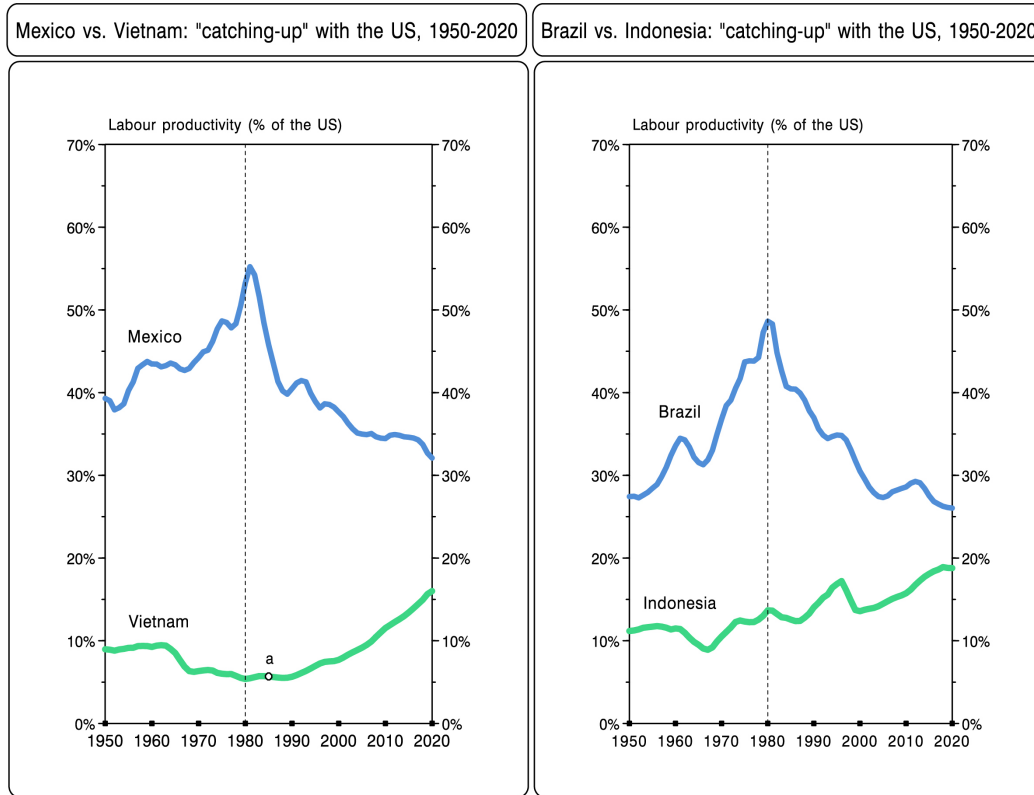
inability to sustain periods of “catching-up” as countries tend to stick with development strategies when they had already delivered whatever they could and had become ineffectual (Palma, 2022a).

⁴ See Palma (2010), (2012b), (2019a), and (2022a).

⁵ Ibid.

Mexico and Brazil came to the brink of the glass ceiling and Mexico even seems to have ventured beyond it for a short time (although with a slightly different indicator; see notes to Figure 3), only to fall back well below the 50% mark after the 1982 debt crisis.

Figure 3. Productivity performance of Mexico, Vietnam, Brazil and Indonesia relative to the US, 1950-2020

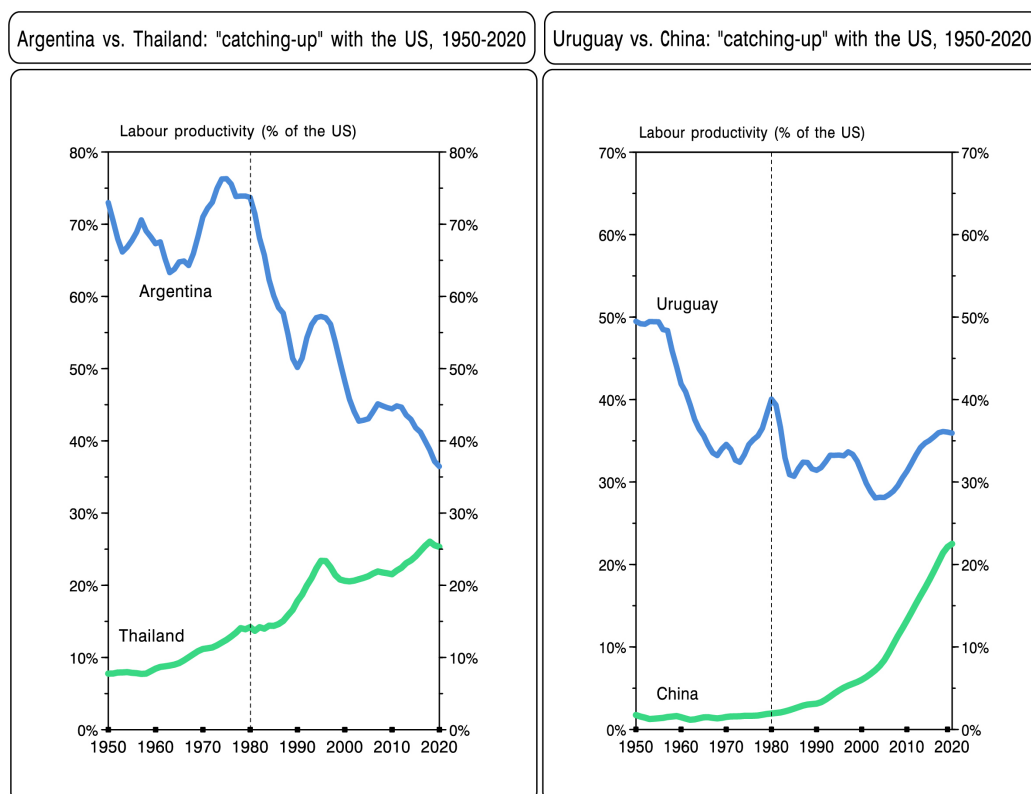


• a = beginning of economic reforms in Vietnam.

Source: TED (2022). As there are problems with Mexico's employment data before 1993 (underestimation of informal employment), for this country, instead of relative productivity with the US, the statistic used (here and below) is relative income per capita with the US.

In Figure 4 we see further examples of this phenomenon. Although hard to imagine now after fifty years of almost uninterrupted cyclical decline, Argentina in the early 1970s still had an average productivity level (measured in international US\$ 2021) far higher than any other country in LA or Asia, including Japan and Hong-Kong, as well as Spain and Portugal, with Singapore and Finland just catching-up (TED, 2022). What followed was one of the most devastating economic reversals in recorded history — compare to Korea's average productivity level, for example, during this half a century it switched from being four times higher to about half; and with Thailand (Figure 4) from being six times higher to just about 50% higher.

Figure 4. Productivity performance of Argentina, Thailand, Uruguay and China relative to the US, 1950-2020, 1950-2020



• Source: TED (2022).

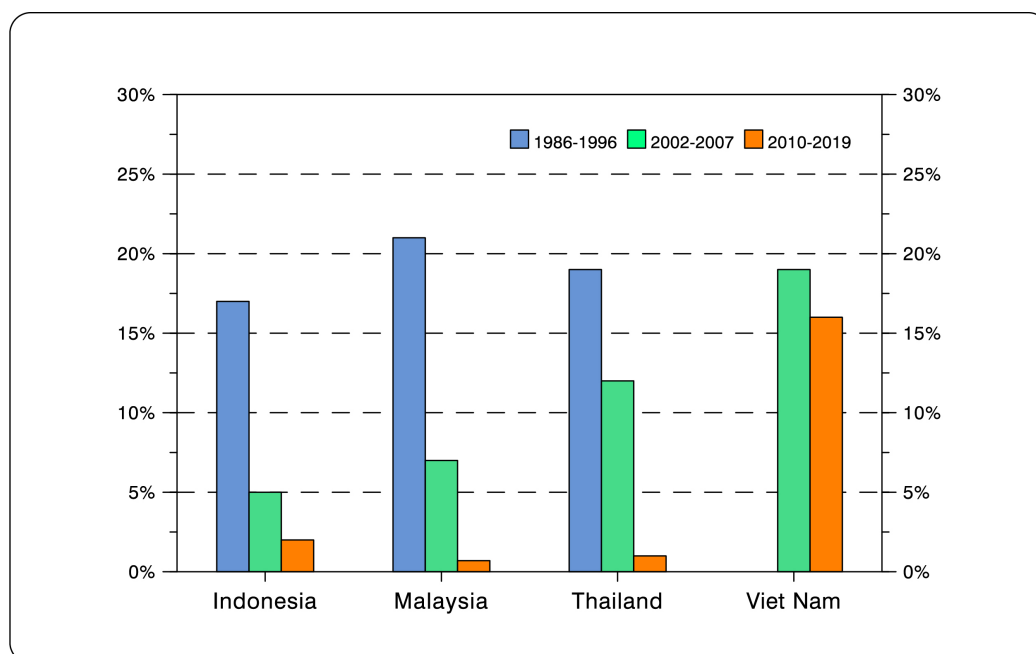
Uruguay was also an early challenger of the 50% ceiling, but now all that is in the distant past. Figure 4 also confirms that despite forty years of exceptionally rapid progress, China and the NICs-2 are still quite a distance from the technology frontier, having entered the period of rapid economic growth at extremely low levels of output per person.

The challenge facing the NICs-2 is to come up with viable and sustainable industrialisation strategies in an era when traditional policy instruments — trade protection, financial controls, local content requirements and export controls — are either no longer available, or extremely difficult to implement.⁶ The slowdown in productivity growth in countries like Thailand, Malaysia and Indonesia after the 1997 East Asian Financial Crisis marked the exhaustion of the post-Plaza Accords manufacturing boom that relied heavily on Japanese inward investment to generate exports and to produce import substitutes in automobiles and electronics. The new configuration that emerged after the crisis was shaped by the rise of China as the hub of East Asian manufacturing networks spanning Korea, Taiwan, Japan and Southeast Asia. Yet this was not simply the replacement of an ailing lead goose (Japan) by a Chinese gosling. With trade and investment liberalisation, lower shipping costs and digitisation, production systems fragmented (mobilising multiple producers of specialised components), decentralised (involving cross border and cross-regional trade), and in constant flux. China was the lowest cost producer and could also operate on a scale that far surpassed the countries of Southeast Asia.

⁶ Despite strong evidence of the efficacy of capital controls (Palma, 2012a), and the fact that they are still perfectly legal under IMF rules, they are often prohibited under bilateral free trade and investment agreements such as the US-Chile FTA signed in 2003 (International Monetary Fund, 2012; Pizarro, 2006). See also (Palma, 2021).

The NICs-2, especially Malaysia and Thailand, were increasingly priced out of labour-intensive activities, but were also unable to keep up with China when it came to upgrading to more capital and technology-intensive operations. Over the last decade, manufactured exports have lost momentum and were no longer the engine of growth except in newcomer Viet Nam, which assumed the role of low-cost assembler for foreign companies moving out of China either because of rising labour costs or to prevent their technological advances from leaking into Chinese enterprises (Figure 5).

Figure 5. Rate of growth of manufactured exports from the NICs-2



• Source: World Bank, World Development Indicators; hereafter WDI (2020).

By the time of the Covid-19 pandemic, the NICs-2, except Viet Nam, were already showing clear signs of hesitation in catching-up to the productivity frontier even though they had only reached about half the distance to the Latin American “glass ceiling” (an issue analysed in Section 8 below).

3. - Latin America vs. NICs-2 in output, employment and productivity

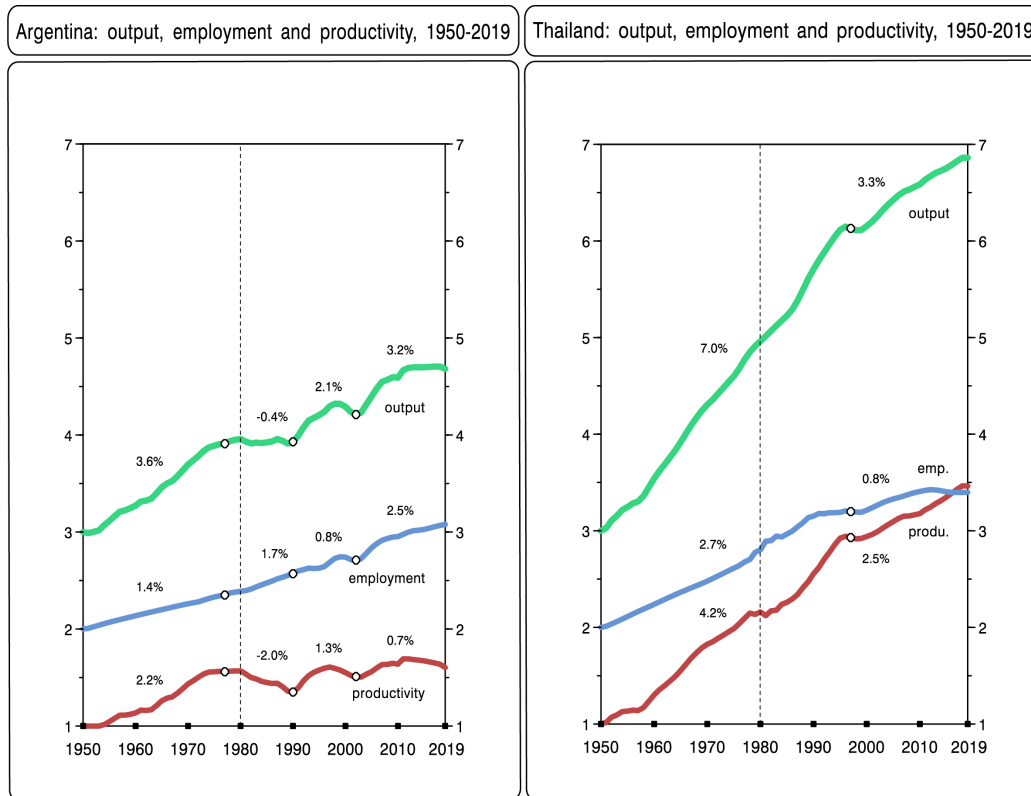
Whether achieved through capital accumulation, technological change, efficiency gains or industrial policies, to redirect resources to activities with higher long-term productivity growth potential is the main driver of sustained economic growth and the process of catching up. It is also at the foundation of the Myrdalian/Youngian/Keynesian/Kaldorian concept of “cumulative causation”, emphasising positive feedback 'loops' that are capable of generating self-perpetuating growth.

Except for commodity extraction, Latin America’s reversal of fortunes vis-à-vis the Asian NICs (both NICs-1 and NICs-2) recounted in the previous section is about their divergent labour productivity trends. Remarkably, output growth in LA after 1980 —with the exception of Chile for a relatively short period of time (1986-1998)— is almost entirely attributable to growth of employment, with virtually no improvements to average labour productivity (output per person) over a span of four decades. That is, the disparity in growth rates between LA and Asia is due to the fact that while both regions recorded steady increases in employment, Asian countries also managed to post respectable productivity gains.

Since 1980, the NICs-2 have closed the productivity gap with LA as productivity growth came to a virtual halt in the latter region. In Argentina, the slowdown appeared even before that date

as the country embarked on early experiment in Chicago-style neo-liberal economic reforms under Minister of Economics José Alfredo Martínez de Hoz during the late 1970s. Figure 6, which compares the rate of growth of output, productivity and employment in Argentina and with that of Thailand, reveals that in real terms Argentina's pre-Covid-19-pandemic average productivity (just above US\$ 50 thousand in PPP dollars of 2021) is just about the same than it was in 1980. During this four decades, the Argentine economy has grown mainly through additions to employment, but even here (with its low rate of population growth) Argentina's record is worse than most of the rest of LA.

Figure 6



- Each series is an index number of a 3-year moving average (in log-scale), with base 1 in 1950 for productivity, 2 for employment, and 3 for GDP. The same in similar graphs below. Productivity is output per worker.
- Source: TED (2022).⁷

Argentina's performance stands in sharp contrast to Thailand, which, at least until the East Asian Financial Crisis, achieved impressive growth of output and labour productivity. In fact, between 1950 and 1997 it multiplied the former by a factor of 24 and the latter by 7. The statistics for Argentina for the same period are just 3 and 1.3, respectively. Despite the slowdown since its financial crisis, average productivity in Thailand has still more than doubled in value terms since 1997, (it increased by a factor of 2.5) while Argentina's average productivity has been flat. Furthermore, in Thailand the contribution of labour productivity to GDP growth has increased in each successive period: between 1950 and 1980 productivity contributed nearly 60% of GDP growth; from 1980 to 1997 70%; and 76% from 1997 to 2019. The slowdown of Thai productivity growth, along with GDP growth, after the financial crisis —evidence of an early encounter with a Latin American-style “middle-income trap”— followed a similar pattern to that of Malaysia and Indonesia.

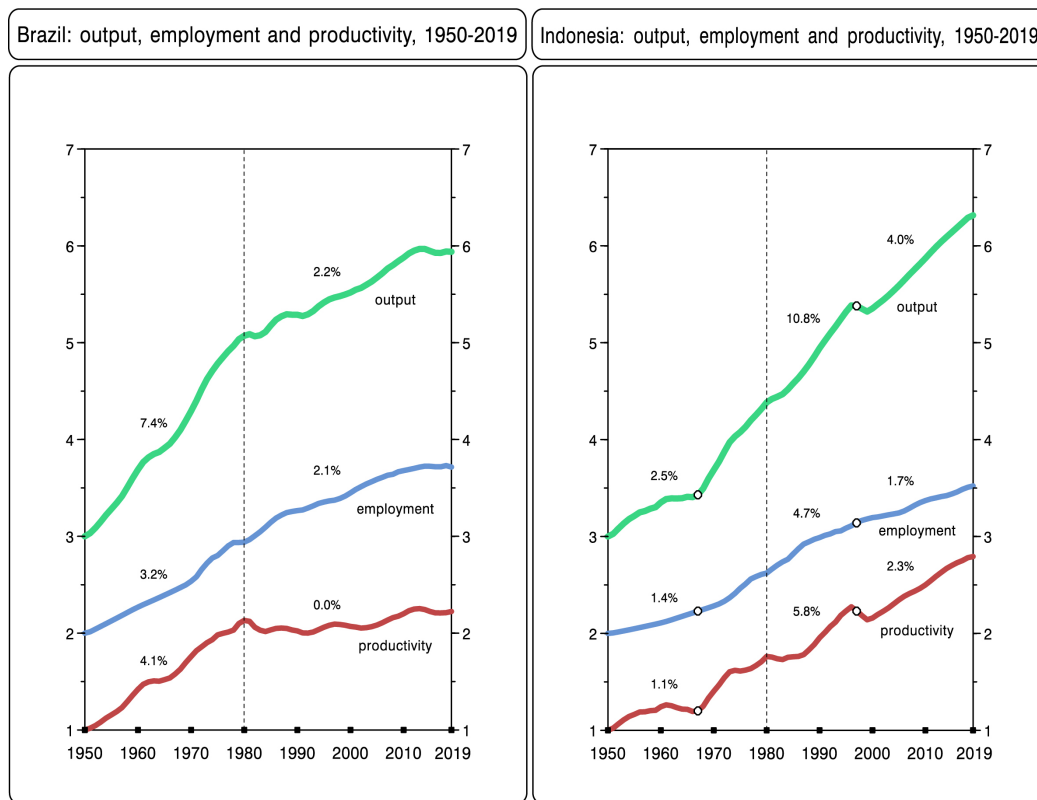
Average productivity growth in Brazil came to an abrupt halt with the end of the import substitution period and the 1982 financial crisis (Figure 7). Since then, as in most of LA, GDP growth

⁷ Data is shown until 2019 to exclude the impact of the COVID-19 pandemic. The same in figures below.

is entirely the result of employment creation. However, despite a rapid increase in employment, rising faster than population growth, the income share of the bottom 40% of the population (one of the lowest in the world) increased by only four percentage points in the 30-year period between 1988 and 2018.⁸ At the other end of the spectrum, *Forbes* magazine reports that (in relative terms) no other region of the world has created as many millionaires, centa-millionaires and billionaires as LA in recent times, and even under successive Workers' Party governments the number of millionaires and billionaires trebled (Andrade, 2020). Even with the economy in crisis, a new *Forbes*-type millionaire emerged every 27 minutes. Today there are more billionaires in Brazil than in Korea, and more in Chile than in Saudi Arabia (Palma 2019b).

As in Thailand, both GDP and productivity in Indonesia increased at a rapid rate before the 1997 crisis; GDP multiplied by a factor of 8 and average labour productivity three-fold in the three decades from the late 1960s to 1997. The contribution of productivity to GDP growth has also increased in Indonesia over time from 44% under post-independence Sukarno governments from 1950 and 1966; 55% from the rise of the Suharto military government until the financial crisis in 1997; and 58% from the beginning of the post-Suharto period until 2019. Productivity growth since the 1997 crisis decelerated to less than half that of the previous period for reasons discussed above even though the level of average productivity is only one-fifth of that of the United States.

Figure 7



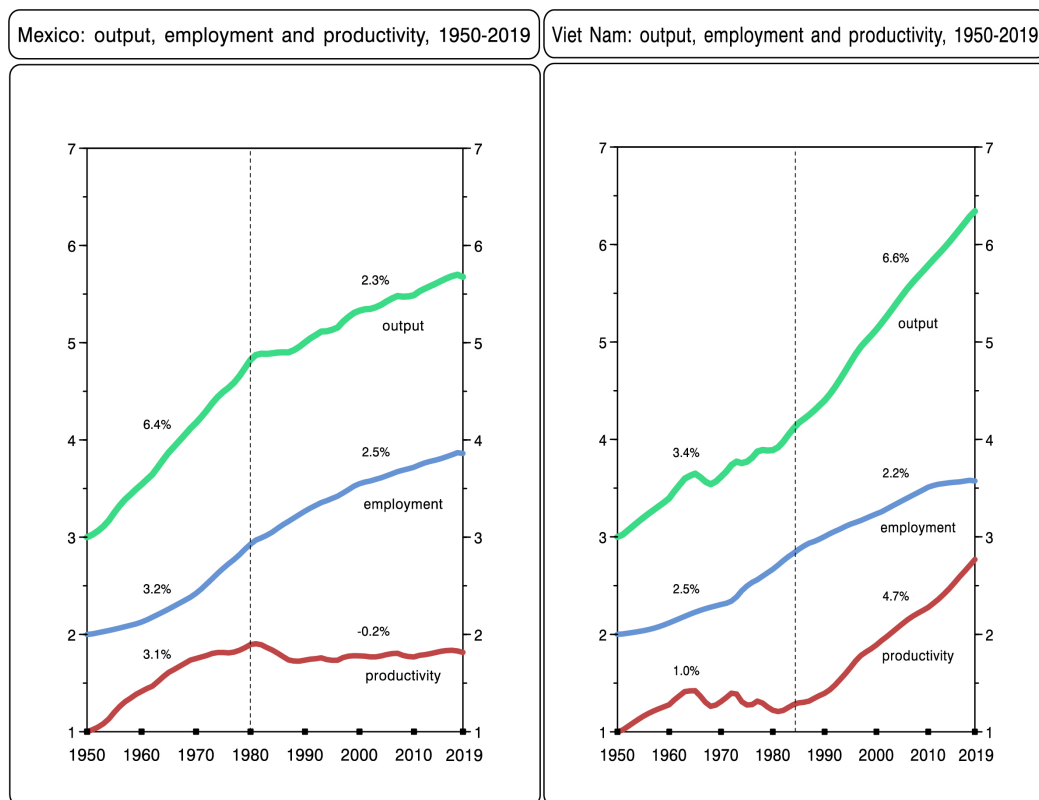
- Indonesia's second period covers 1967 to 1997.
- Sources: TED (2022).

The contrast between Mexico and Vietnam since the 1980s is even more striking (Figure 8). Both countries have emerged as assembly platforms for foreign manufacturing firms, in Mexico's case because of proximity to the US and trade agreements that have given this country full access to US

⁸ World Income Distribution (WYD) Dataset (<https://stonecenter.gc.cuny.edu/research/world-income-distribution-wyd-dataset-1988-2008/>). Data available since 1988. See (Palma, 2012b).

markets, and in Viet Nam because of low wages, stability, proximity to China and improving infrastructure.

Figure 8



● Source: TED (2022).

Despite enjoying preferential access to the US market since the 1980s, and full access since 1990, and having received the highest proportion of FDI in the world relative to its working population, Mexico is another Latin American case of productivity stagnation since 1980.⁹ Thus, the productivity of the average worker today in Argentina, Brazil and Mexico — which together (after the collapse of the Venezuelan economy) represent well over 80% of LA's GDP — is the same as it was four decades ago. In the meantime, in China the average worker has multiplied his or her productivity by more than a factor of 20, in India by more than a factor of six, in Korea, Taiwan and Viet Nam by five, in Thailand by four and in Indonesia and Malaysia by three. Even Chile, the best performer in LA, has not even managed to double average labour productivity.¹⁰

As the figure indicates, Vietnam has achieved one of the fastest, sustained rates of average productivity growth in the world from the introduction of reforms in the early 1990s until the present. Only China and India have done better in this respect. In all three cases initial average productivity levels were extremely low, and even now are below the levels of high middle-income countries in LA — although in PPP terms China's average productivity has already caught-up with Brazil's.¹¹

Chile was the only country in the Latin American group able to generate rapid productivity growth, at least for a period of 12 years starting from the recovery from the 1982 debt crisis (1986-1998) (Figure 9). However, from 1998 — when the Central Bank appointed a new Chicago-trained President who overreacted to the 1997 East Asian Financial Crisis in the usual radical-monetarist way

⁹ See Moreno-Brid and Ros (2009); and Palma (2005b).

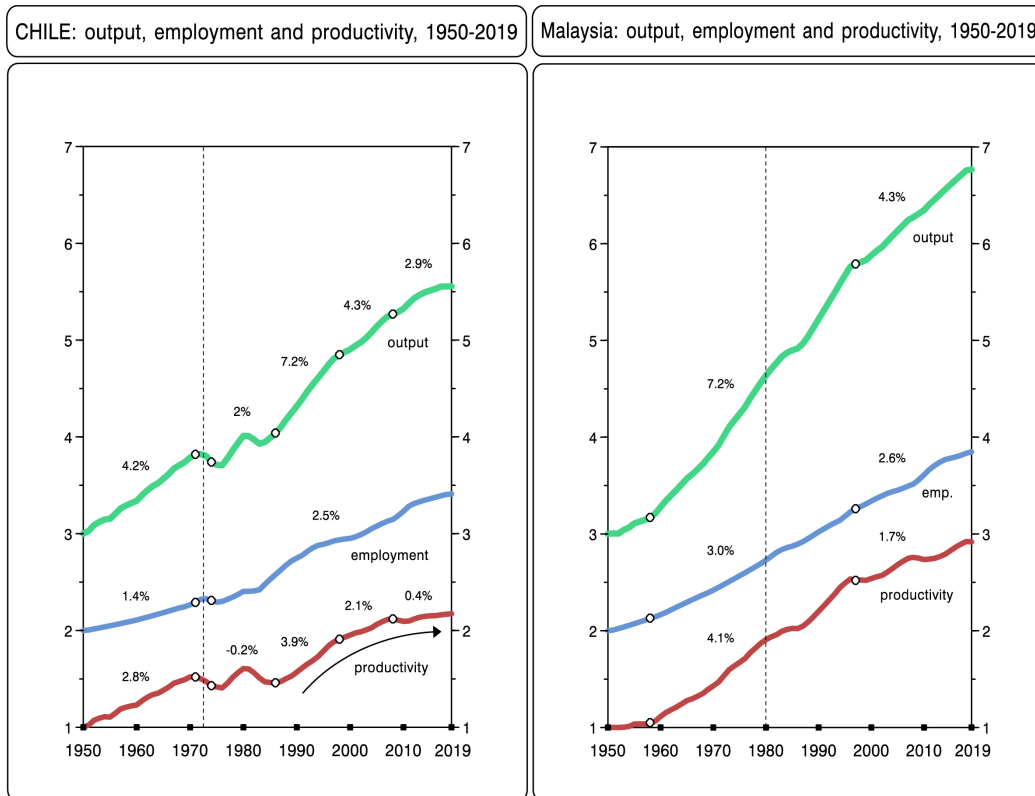
¹⁰ TED (2022).

¹¹ Idem.

— the growth-rate not only fell due to the impact of the new monetary policy, but it never properly recovered; so, over the next decade it fell by about half, and then dropped again to nearly zero from 2008 to 2019 (Figure 9).¹² The continuous decline in productivity growth, precipitated by the change in monetary policy in 1998, was mainly due to the failure of the domestic elite, FDI and government to upgrade their “extractivist” economic strategy when this ran its course (see also below). The contribution of productivity growth to GDP growth fell from 54% during the period of rapid growth (1986-1998) to just 14% in 2008-2019.

In other words, Chile, which was once an exception, eventually reverted to the regional norm: since the introduction of neo-liberal economic reforms, GDP growth in most countries of the region is almost entirely explained by employment creation. Productivity growth need not apply. Furthermore, as Chile has generated employment at about twice the rate of population growth, it was only a matter of time until the country ran out of cheap labour. This began to happen in the 2000s and the government opted to open immigration from nearby countries and Haiti, adding the equivalent of 10% of the labour force in a short period of time. This replenished the supply of cheap labour allowed the process of GDP growth fuelled almost entirely by low-wage employment creation (mainly in services and construction) to continue.

Figure 9



● Source: TED (2022).

One of the main differences between these two regions is that LA’s abrupt cycles are not found in emerging Asia, even though they had to deal with the same unstable world economy and self-destructive international finance, and their own financial turbulence (1982 and 1997).¹³ Emerging Asia’s Keynesian pro-growth and anti-cyclical macroeconomics helped, while LA’s growing

¹² Palma (2019a).

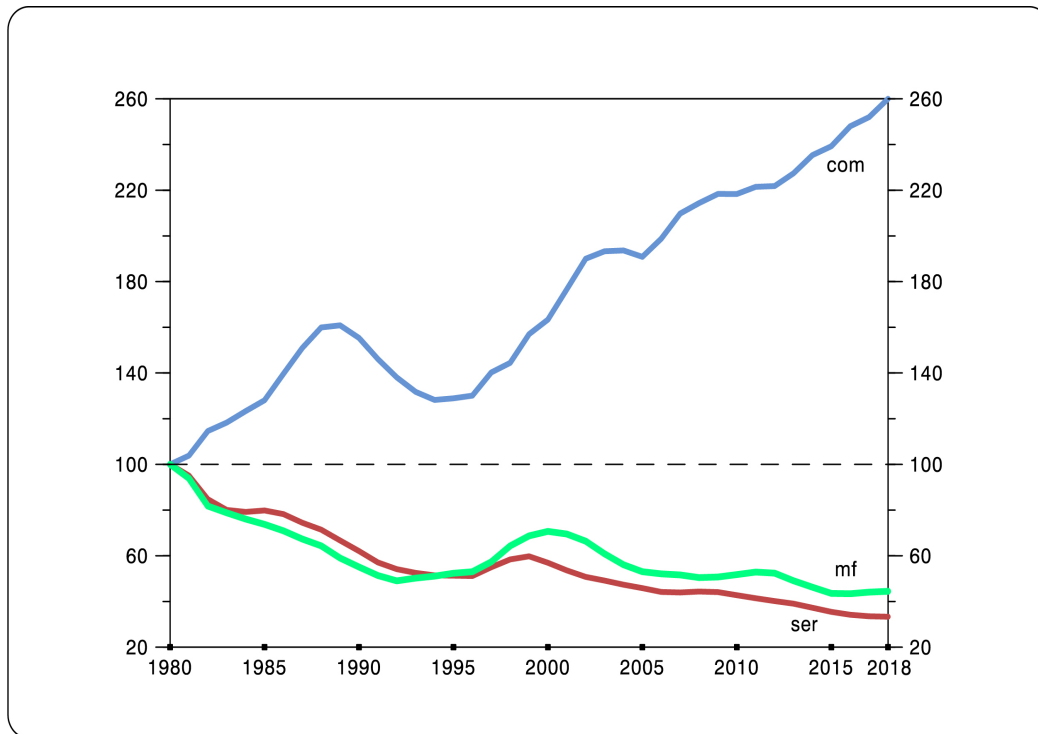
¹³ For South Korea’s macroeconomic policies, see Chang (1993); for Chile, Ffrench-Davis (2018). For a comparison, Palma (2012a). For the subject in general, Taylor (2010).

monotonic obsession with inflation targeting and pro-cyclical exchange rates, and ‘independent’ Central Banks insisting that growth is someone else’s job, didn’t. For Keynes, policy making is precisely about the opposite: a rapid and sustain rate of growth requires *a close coordination* of all aspects of policy — as brilliantly explained in his *General Theory*, Chapter 12.¹⁴

4. - Manufacturing and Latin America’s Productivity Collapse

Further disaggregation of productivity trends in the two regions reveals the central role of manufacturing in both the productivity collapse in LA and continuing productivity growth in the NICs-2. The differential performance in the two regions comes through clearly in Figure 10, which compares productivity growth in manufacturing, commodities and services in Brazil and Indonesia since 1980.

Figure 10. Brazil: productivity gaps with Indonesia, 1980-2018



● **com** = commodities (agriculture plus mining); **mf** = manufacturing; and **ser** = services. Each line is an index number (1980=100) of the ratio of labour productivity in the Latin American and NICs-2 country (each in real terms and domestic currencies; base year 2015, three year moving averages). An increase implies that the Latin American country is moving further away from the NICs-2 country, and a decline that it is being “caught-up” by (or is falling behind) the NIC-2 country.

● Source: ETD (2022).¹⁵

The picture that emerges in Figure 10 is a good summary of the dichotomy of development models followed by LA and the NICs-2. On the one hand it shows Brazil’s strong productivity performance in commodities following its mere “extractive” model. On the other, it confirms the complete neglect of manufacturing — even in commodity processing industries such as steel (which continues to be a

¹⁴ In chapter 12, Keynes analyses how investment decisions are inevitably made under radical uncertainty, to which there is no rational answer — these, therefore, not only tend to lead to sub-optimal levels of investment, but also to occasional drastic revisions, giving rise to economic instability.

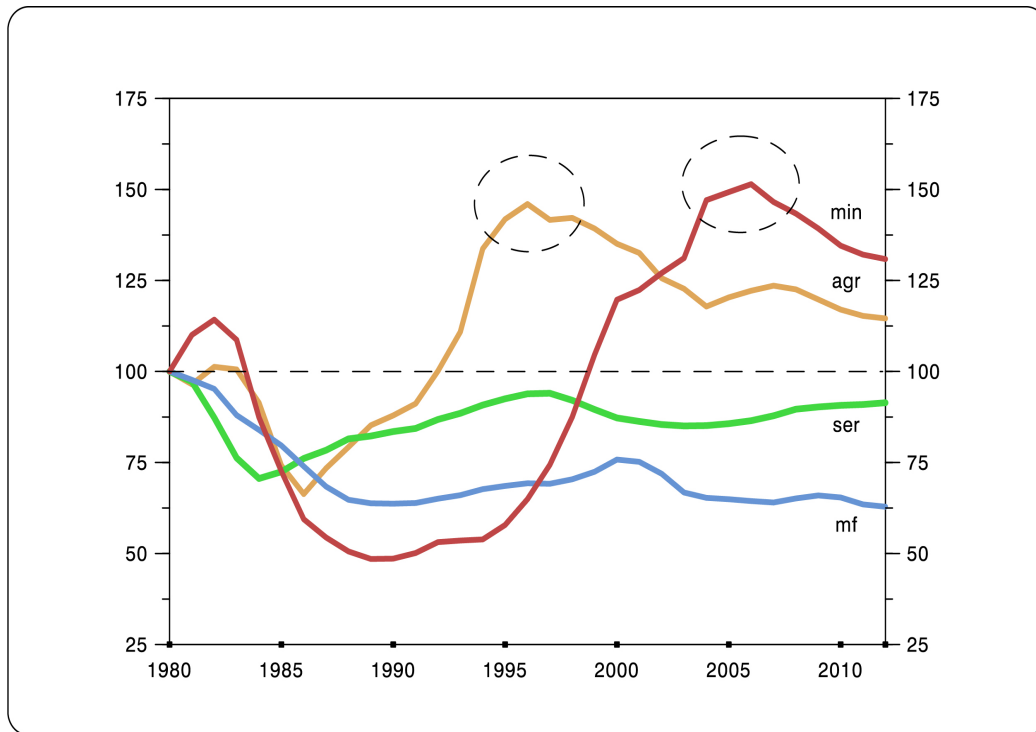
¹⁵ The dataset, at 2015 prices, only spans from 1990 to 2018. This was brought back to 1980 with rate of growth from a previous version of this dataset, at 2005 prices, which provides data for the 1980s.

mostly inward-looking industry). At the same time, and not surprisingly (see below, section 9), the relative collapse of productivity growth in services follows that of manufacturing.

As is well-known, this “extractive” strategy has had a huge environmental impact, particularly the devastation of the Amazon resulting from the uncontrolled expansion of the soy and cattle industries, leading to massive deforestation, as well as the pollution of waterways from indiscriminate mining.

Figure 11 compares productivity in Chile with the production frontier (the US) and shows two facets of a purely extractive export sector. From the mid-1980s onwards (i.e., post 1982 financial crisis recovery), Chilean agriculture (including forestry, fish-farming, fruit, vegetables and wine) was the leading edge of the “catching-up” process, outperforming manufacturing, mining and services until the mid-1990s. At this point agriculture lost productivity-growth momentum, replaced by mining as the productivity growth engine of the economy. But from around 2005 mining also ran out of steam.

Figure 11. Chile's productivity gaps with the United States, 1980-2012



• **agr** = agriculture; **mf** = manufacturing; **min** = mining; and **ser** = services. Lines as in Figure 10.

• Source: GGDC (2018). This dataset provides data only until 2012.

Why did productivity growth in the extractive sectors plateau and then reverse? Part of the answer is straightforward: when these activities reached international levels of competitiveness, the demanding “catching-up” period — with its requirement of rapid productivity growth — was over. From then onwards, the extractive sectors just sought to increase output while remaining competitive. From the perspective of the national economy, the strategy of boosting productivity (and “catching-up”) by trying to achieve international competitiveness in commodity production had run its course. Sustaining productivity growth would have required the development of higher value-added activities within the sector in the form of backward and forward linkages, such as the industrialisation of commodities, while fostering associated industries and services. However, this was clearly not the priority of the corporations (foreign and domestic) involved in extractive activities — and for reasons that had little to do with “comparative advantage” (i.e., relative production efficiencies), and a lot to do with trade distortions, such as China’s policy of incentivising imports of unrefined commodities.

Furthermore, governments were not prepared to do anything about it — even the easily achieved step of eliminating the pollution created by transporting bulky products to Asia.¹⁶

A further sign of the mere “extractive” strategy having run its course is that Chile has begun to lose market share in its exports, including in its main export, copper. While in the early 2000s Chile’s share in world exports of copper stood at 40%, by the end of the 2010s it had fallen to 27%.¹⁷

The willingness of successive centre-left governments to “interfere” in the market to support purely extractive activities (such as forestry, fish farming and mining,) — and with shamelessly “vertical” policies¹⁸ —, but their reluctance to do the same for the industrial processing of commodities, is remarkable. As discussed below, it seems that the “new left” in LA has never been able to banish the ghosts of its ISI pro-manufacturing-at-any-cost past! When it comes to adding manufacturing value to commodities, or to regulating extractive activities to reduce their huge environmental impact, or controlling the quality of primary production (e.g., the excessive use of antibiotics in fish farming), they suddenly turn into strict “free-marketeers”.

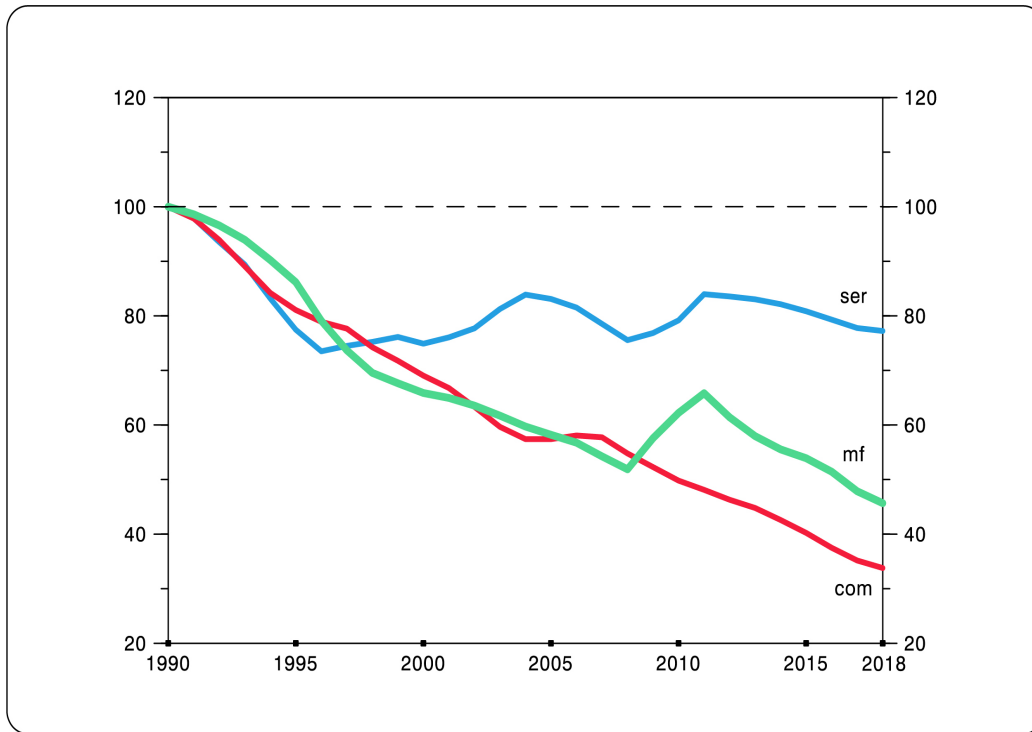
In the case of Argentina and Mexico, unlike Brazil and Chile, even productivity levels in commodity production have fallen behind vis-à-vis countries such as Thailand and Vietnam (Palma and Pincus, 2022). In fact, Figure 12 shows how Mexico has lost ground to Viet Nam in every sector, including commodities, which is the one bright spot in other Latin American countries. Manufacturing productivity also declined relative to Viet Nam, although growth of manufacturing in both countries relies heavily on assembly operations of foreign firms. The superior performance of services in Viet Nam compared to manufacturing and commodities is largely due to a successful tourism industry and supporting services for assembly operations such as transport and logistics.

¹⁶ China only wants Chilean copper as “concentrates” — i.e., a mud with only about 30% of purity—, and it is prepared to put pressure on mining conglomerates so that they don’t refine this mineral in Chile. In the 1960s, when US corporations controlled copper in Chile, at least they exported copper with 99% purity... China is also the only country in the world that buys Chilean walnuts in their shell! It also wants Brazilian iron as iron ore, Argentinean soya as beans, Venezuelan heavy-oil unrefined, and so on.

¹⁷ Data from UNComtrade (<http://comtrade.un.org>).

¹⁸ In the language of neo-classical theory, a “vertical” policy is one directed to a specific activity, while a “horizontal” one is open to all sectors of the economy.

Figure 12. Mexico: productivity gaps with Viet Nam, 1990-2018



• **com** = commodities (agriculture plus mining); **mf** = manufacturing; and **ser** = services. Lines and methodology as in Figure 10.

• Source: ETD (2022). Data for Viet Nam available only since 1990.

Unusually within the Latin American context, Mexico's worst performing sector relative to Viet Nam is commodities. Viet Nam's thriving agricultural sector is a world leader in several commodities, such as rice, pepper and coffee to fish and shellfish. Although Mexican exports of fruit and vegetables to the US have increased steadily, Mexico is a net importer of food in most years. The relative productivity performance of Mexico's service sector is better than the rest of LA. However, the rate of informality in the Mexican labour market is particularly high in services, and official surveys routinely undercount workers in this sector. Therefore, employment in services may be much higher than official statistics suggest.

5. - Output, employment and productivity in the commodities and services and construction sectors of Latin America

A stylised fact common to Latin American economies is its "sectoral-dichotomy", in which one sector, commodities, generates all the productivity growth while another, services and construction, generates employment. Palma (2019a) refers to the Latin American economic model since the 1980s reforms as "dual-extractive": extractive because commodities are the main (often only) productivity driver of these economies; and "dual" because of the "one-thing-at-a-time" inability of any one sector to deliver both productivity growth and employment generation. In contrast to emerging Asia, the norm is that no single sector manages to walk and chew gum at the same time.

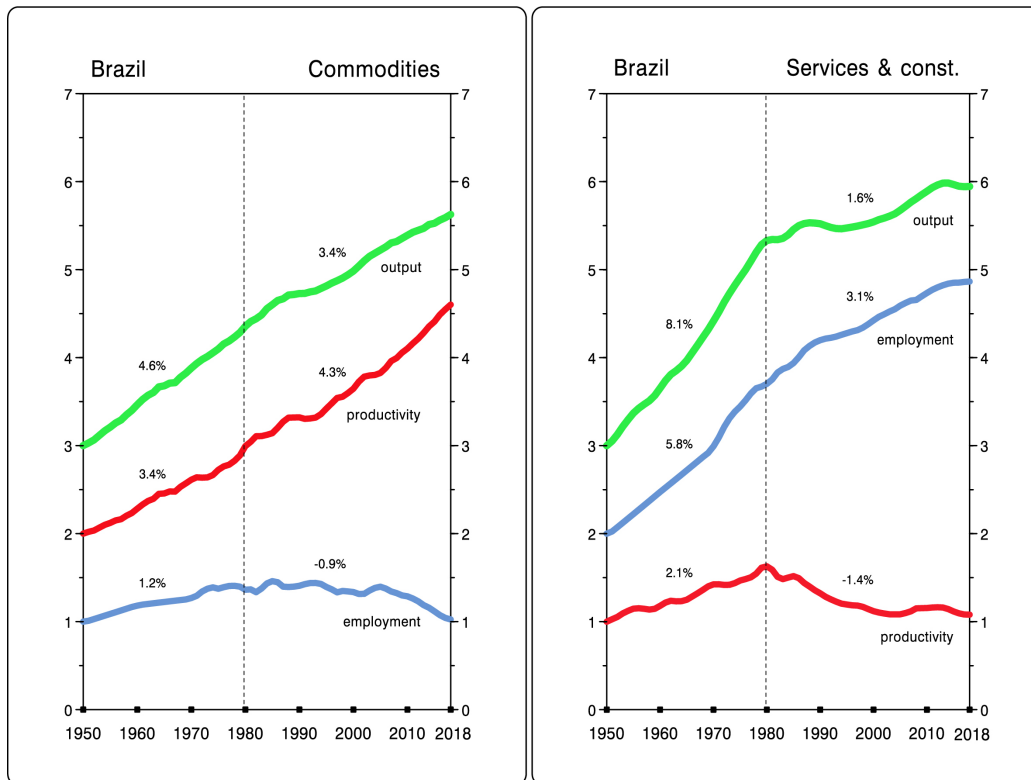
One outcome of this model is higher market inequality since the dichotomy leads to higher wage and profit dispersion (Palma, 2011, 2019b). What is on offer, as in Chile, is either a minimum wage (or thereabouts) for one's working life in services and construction (sectors that ended up accounting for 86% of employment in 2018), or as in the case of one state-owned copper mine, an average pay package (including perks) amounting to US\$ 120 thousand a year. The same in terms of

profits: a life-long hand to mouth existence for small and medium sized companies (often at the mercy of a few large corporations), versus a few conglomerates (domestic and foreign) appropriating all the rents and blocking the access of others to those rents.¹⁹ Douglas North has rightly called this a “limited access order”.²⁰

The GDP slowdown in many Latin American countries in the recent past is related to the key flaw of this development strategy: as the productivity growth potential of extractive industries begins to fade, and as this strategy has proved unable to generate new engines of productivity growth, employment creation in services and construction becomes the *sole* driver of GDP growth.

Figure 13 compares these two key sectors of Brazil’s economy, one generating productivity, the other employment.

Figure 13. Brazil: output, employment and productivity in commodities and in services and construction, 1950-2018



● **commodities** = agriculture and mining; **and const.** = construction.

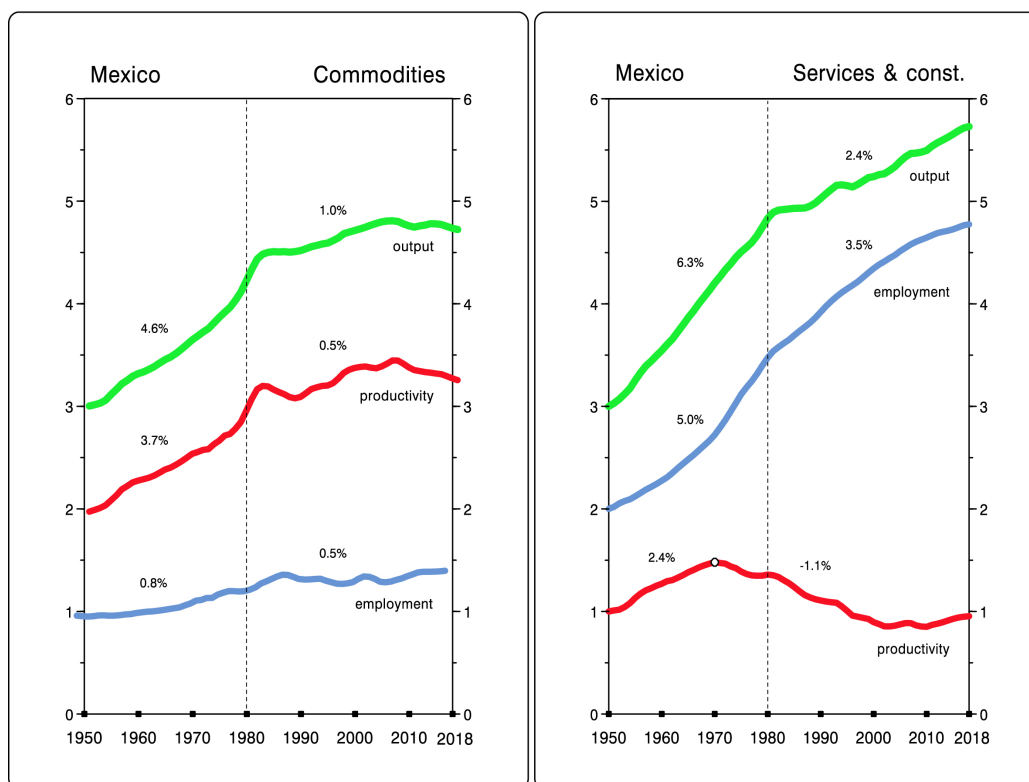
● Source: ETD (2022).

Mexico is a unique case in LA as its rather large commodity sector has been unable to deliver almost any productivity growth since the 1982 debt crisis and the launch of radical economic reforms (Figure 14). However, services and construction have generated as much employment as in the other main Latin American economies analysed in this paper. As Figure 8 above indicates, as its overall average productivity growth since 1980 has been slightly negative, this is an economy in which its GDP growth is even slower than the rate of job creation.

¹⁹ Palma (2020b).

²⁰ North et al. (2007).

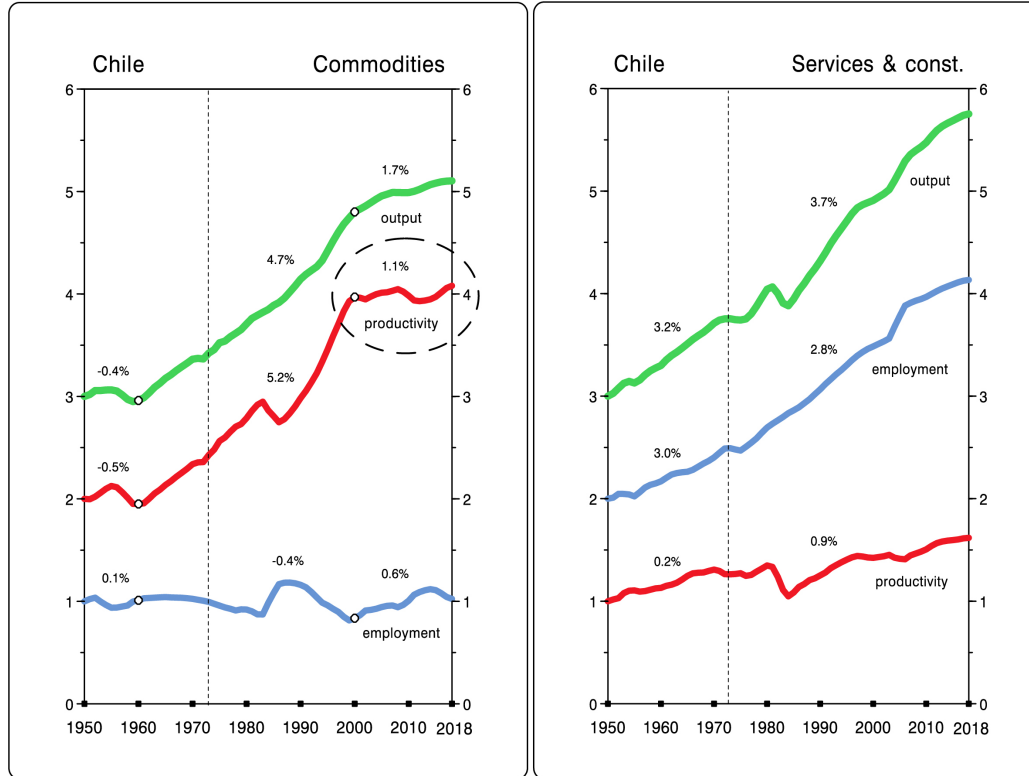
Figure 14. Mexico: output, employment and productivity in commodities and in services and construction, 1950-2018



- commodities = agriculture and mining; and const. = construction.
- Source: ETD (2022).

Although in Chile commodities have also delivered a fast rate of productivity growth and services and construction sustained employment generation, productivity growth in commodities (as in Argentina) slowed towards the end of the period as extractive activities began to suffer from diminishing returns (Palma, 2019a). As a result (and as mentioned above), Chile begins to lose market share in its overall exports, and in its main export, copper.

Figure 15. Chile: output, employment and productivity in commodities and in services and construction, 1950-2018



- commodities = agriculture and mining; and const. = construction.
- Source: ETD (2022).

As Chile does not have an Amazon frontier to raid in order to extent the “sell-by date” of its extractive model, it seems obvious that what follows is that the only way forward is to add value to commodities via their industrialisation — both “upstream” (inputs needed for production), and “downstream” (adding manufacturing value added to commodities). However, as discussed in detail in Palma (2019a), there are obstacles. Processing of commodities may not be the most sophisticated form of manufacturing, but it is capital intensive and generates low rates of returns as its products are homogenous (therefore operate in more competitive markets). For example, investment per worker in the advanced countries that have embarked on the industrialisation of resource-based activities, such as Australia and the Nordic countries, is between four to five times higher than in Chile. These levels are even higher than those of advanced emerging Asian countries, such as Korea, Taiwan or Singapore, where industrialisation strategies have concentrated on knowledge-intensive and “knowledge-spillover”-intensive products.

And as all the rents from natural resource exploitation are entirely captured on the extractive side of the business, and since markets for industrialised commodities tend to be more competitive than for other manufacturing activities, there are few rents to be captured there as well. Other than operating profits, rents associated with innovation are the ones on offer — not Chile’s forte as its investment in R&D hardly reaches 0.3% of GDP (or just 2% of Korea’s in real dollar terms).

Therefore, domestic and foreign capital involved in commodity extraction has been reluctant to move “downstream”. As already mentioned, the only copper producer that bothers to smelt its copper concentrates at home is a state-owned company (Codelco). Most private mines are quite happy to export a product, about 70% of the volume of which consists of ore slag even though a study

conducted by a think tank close to the multinational operating in Chile acknowledges that to export refined copper from Chile would be a great business.²¹

However, despite this and also against all other evidence — except for China's pressure on mining corporations to export primary commodities to China with a minimum degree of processing —, Chile is moving in the wrong direction at a remarkable speed: if at the time of economic reforms the country's export of copper hardly contained any 'concentrates', in 1990 this type of primitive mineral already represented 12% of copper exports, and by today it represents about half of the total; furthermore, it is estimated that by 2035 this share is likely to reach three-quarters. So, absurdly enough, Chile's main export product *by volume* is already the slag of that 'concentrate' —a product that simply ends up in a foreign dump. What an indictment of the inefficiencies of distorted markets and emasculated States!

And here the issue is larger than just one export diversification (important as it is): if those 'concentrates' were to be smelted in Chile rather than abroad (mainly in China), the overall damage to the environment of this activity would decline by one-third as the pollution created by the unnecessary maritime transportation of this ore slag is a significant contributor to global warming.²²

6. - Latin America's manufacturing collapse

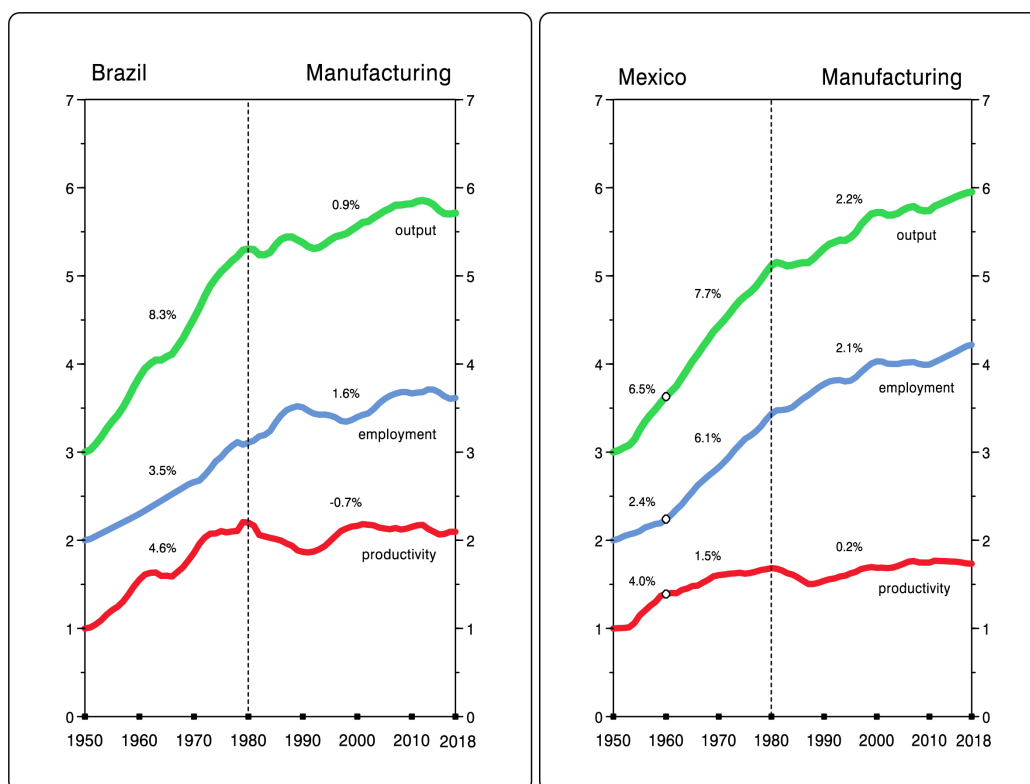
The collapse of Latin American manufacturing following the launch of neo-liberal economic reforms in the late 1980s marked the end of a dynamic period of industrialisation (Figure 16). As already mentioned, the two powerhouses, Brazil and Mexico, multiplied their manufacturing output by a factor of 11 and 9 between 1950 and 1980.²³ What followed was a record-breaking growth-deceleration: manufacturing output growth in Brazil dropped by more than seven percentage points (from 8.3% to 0.9% p.a. — or by 90%) and in Mexico by more than five points (from 7.5% to 2.2% p.a. — or by more than 70%) between 1950-1980 and 1980-2018. This occurred in Mexico despite the introduction of the North American Free Trade Agreement (NAFTA) and the reallocation of American and Asian manufacturing facilities into Mexico. Furthermore, as productivity growth stagnated in these two countries, and in Argentina, the productivity of the average manufacturing worker today in these three countries (as is also the case for the average Latin American manufacturing worker) is no higher than it was at the time of the 1982 debt crisis. In fact, in Brazil and Argentina productivity levels today are similar to those recorded in the mid-70s — and Mexico is not far behind.

²¹ <https://www.cesco.cl/2020/07/09/exportar-cobre-refinado-es-buen-negocio/>.

²² See Palma (2019a); and Sturla-Zerene et al., (2020).

²³ TED; see also (Palma, 2010, 2019a and c).

Figure 16. Brazil and Mexico: output, employment and productivity in manufacturing, 1950-2018



● Source: ETD (2022).

The orthodox theory of international trade, new and old, would predict that trade liberalisation and growing competition from emerging Asian manufacturing would lead to offshoring of Latin American labour-intensive (and frequently lower productivity) manufacturing activities (or segments of value-chains), and the retention of more productive (and productivity-enhancing) activities. In turn, greater concentration on higher value-added, more dynamic activities would generate more rapid productivity growth based on specialisation and increasing returns. From this perspective, from a simple arithmetical point of view, the outcome of deindustrialisation in LA should have resulted in an increase in average productivity as manufacturing employment would decline more than output.²⁴

Surprisingly, in the three larger economies with more manufacturing advanced sectors the opposite was the case as employment continued to grow (especially in Mexico) while productivity stalled. Not for the first time, the real world does not fit in orthodox models. Evidence available so far indicates that as well as some labour-intensive manufacturing activities, industries that were transferred from LA to emerging-Asia were simply those more mobile or ‘footloose’ but not necessarily less productive.²⁵ At the same time, reduction in transport costs led to the transfer to Asia of many manufacturing activities that had been up to then normally “tied to the geographical source of their main input”, such processing of bulky commodities.

The slowdown of manufacturing in the three largest economies and in most of countries of the region, as well as the collapse of this activity in Venezuela, reduced LA’s share of emerging market manufacturing output from over half of all manufacturing production in 1980 to only one-tenth in

²⁴ On deindustrialization, see Palma (2005a) and (2019c).

²⁵ Palma (2010).

recent years.²⁶ In fact, in manufacturing the relative rise of China is almost the mirror image of LA's decline.²⁷

This raises the obvious question (which is, of course, beyond the scope of this paper) of why LA wasted its unique opportunity to benefit from globalisation given by its supremacy in manufacturing in the developing world before 1980.²⁸ Instead, it was crushed by it!

7. - The NICs-2 Story

The major economies of Southeast Asia pursued import substitution policies from independence until the 1980s, developing consumer goods industries behind protective tariffs and using local content rules to push investment upstream into heavy industries like steel, cement and automobile components. But with relatively small internal markets, heavy reliance on foreign investment and, (in contrast to the NICs-1) an absence of export promotion policies, the NICs-2 ultimately faced balance of payments constraints and rising levels of foreign debt, worsened by a steep fall in commodity prices in the 1980s.

A major turning point in the region was the Plaza Accords in September 1985, in which Japan, West Germany, France, the United Kingdom and the US agreed to reduce the value of the US dollar vis-à-vis the currencies of America's main trading partners. The value of the dollar had appreciated by 50% after the Federal Reserve's adopted a tight money policy at the end of 1979. Following the accords, the Japanese yen appreciated from ¥242 to the US dollar to ¥122 in November 1988, prompting Japanese exporters to relocate manufacturing operations abroad to countries with US dollar currency pegs. Southeast Asia was a preferred destination owing to the region's abundant supply of cheap labour. China was not a major recipient of Japanese inward investment until the mid-1990s.

The rise of the yen was a brake on Japanese growth, triggering five Bank of Japan interest rate cuts in quick succession, reaching a post-war low of 2.5% in 1987. In a dress rehearsal for the Global Financial Crisis of 2008, ultra-low interest rates — in the context of a sluggish economy with low levels of investment and productivity growth — fuelled speculation in equities and properties. By 1989, Japanese land and buildings were valued at US\$24 trillion, four times that of the US (Sheng, 2009, p. 65). Low Japanese interest rates and US dollar pegs in Southeast Asia emboldened the carry trade or the practice of borrowing in yen to acquire high-yielding Southeast Asian assets. The resulting currency mismatch intensified the East Asian Financial Crisis when it arrived in 1997.

In the decade before the crisis, Southeast Asian manufacturing became increasingly integrated into Japanese production networks. Japanese FDI in Indonesia, Thailand, the Philippines and Malaysia increased 66% in real terms from 1970 to 1985 and more than nine-fold from 1985 to 1996 (UNCTAD, n.d.). Manufactured exports from the Association of Southeast Asian Nations (ASEAN) countries rose nine-fold from 1985 to 1996. Governments built export processing zones and transport and logistics infrastructure to attract investment, while also deploying local content requirements and other instruments to boost domestic value added and upgrade technological capabilities, such as in the Thai and Indonesian automobile industries.

However, the boom had already begun to lose momentum by the early 1990s as Japan's prolonged recession deepened. The 1997 Asian financial crisis brought it to an abrupt end. In contrast to the activist response to the 2008 North Atlantic financial crisis, donors and international agencies offered only modest financial assistance to distressed NICs-2 in 1998, and, to make matters worse, made support conditional on orthodox adjustment policies, ostensibly to tackle the crony capitalism donors blamed for the severity of the crisis.²⁹ The result was a severe contraction in output, employment, and domestic demand and a delayed recovery. Reversing the boom seen prior to 1997,

²⁶ WDI database (<http://databank.worldbank.org>).

²⁷ Palma (2010), and (2019c).

²⁸ At that time, one would have certainly preferred a Latin American-built car to an Indian one, a Latin American white-good to a Chinese one, or to fly in a Brazilian-made airplane than in a Russian one.

²⁹ See Singh (1998); and Palma (2012a).

private and public investment in Indonesia, Malaysia and Thailand declined and remained subdued, not just in the years immediately after the crisis, but also for the next two decades (Palma and Pincus, 2022), while Viet Nam withstood the direct effects of the Asian financial crisis, buffered by a closed capital account and limited overseas commercial borrowing.

Southeast Asia's productivity growth slowdown after the Asian financial crisis signalled the exhaustion of the post-Plaza Accord boom. After the crisis, China emerged as the benchmark for low-cost production and simultaneously managed to upgrade its managerial and technological capabilities across a broad range of industries. The NICs-2, especially Malaysia and Thailand, were priced out of many labour-intensive activities and were unable to keep pace with China's drive into capital- and technology-intensive operations; this remained the case despite years of incentive schemes and complementary public investments. Indonesia lost competitiveness during the 2004 to 2013 commodity boom when surging prices for coal, palm oil and metals led to exchange rate appreciation and rising real wages in manufacturing. There was even talk of 'premature' deindustrialization in Indonesia, Thailand and Malaysia (Rasiah, 2020).³⁰ Manufactured exports lost momentum except in Viet Nam, which assumed the role of low-cost assembler for foreign companies moving out of China (Palma and Pincus, 2022).

To revive exports, Southeast Asian countries have sought to integrate more deeply into regional production networks, entering into a vast array of overlapping trade and investment agreements. In 1997, no country in the region was party to more than two or three such agreements, but, by 2020, Indonesia had signed 45 such agreements, Thailand 40, Malaysia 36, and Viet Nam 26 (ADB, 2021). These agreements promise to expand access to foreign markets, but also contain tough provisions on patents and trademarks, non-tariff or other trade barriers, government procurement, limits to the scope of state-owned enterprises, the opening of domestic financial markets, and compensation to multinationals in case any policy or regulatory change (for example, in industrial policies or in environmental regulation) affects their profitability — no matter how reasonable the change may be.³¹

Competition from China is an important factor. China's share of world manufactured exports rose from 4.6% in 2000 to 18.1% in 2019.³² An astonishing feature of China's export growth was the range of products involved: over the same period, China more than doubled its global market share in more than 60% of export products in 2000, accounting for 88% of exports by value in 2019. China's export prowess increased pressure on Southeast Asian countries, particularly in labour-intensive industries like garments, shoes, electronics and furniture. Viet Nam was the only country among the NICs-2 that sharply increased its share of global manufactured exports, from 0.1% in 2001 to 1.7% in 2018.³³ Vietnam's performance was boosted by assembly of telephone handsets — which rose from nil to 9% of world's exports from 2009 to 2018 — and more traditional labour-intensive exports like garments and footwear. Indonesia and Malaysia lost ground while Thailand achieved modest growth in its share of world manufactured exports largely based on its success in vehicles and automotive components (Table 1). All four of the Latin American countries considered here held steady or lost ground, including Mexico, which increased its share of vehicle and components exports by a wide margin. The expansion of North American auto assembly in Mexico increased the country's share of the global pickup truck market from 11% to 18%. However, Mexico lost market share in other labour-intensive operations, including automobile wiring assembly and electronics.

³⁰ The concept of "premature deindustrialisation" was introduced to the literature by Palma (2005a), and (2008). For an equivalent concept, developed a decade later, see Rodrik (2015).

³¹ A key characteristic of recent trade agreements (like the so-called TPP-11) is to introduce the concept of 'indirect expropriation': any change of policy or regulation (no matter the reason) that may affect the profitability of multinationals (or large domestic conglomerates that qualify as multinationals) would be subject to compensation, and the amount of this will be determined by international courts. See <https://www.ciperchile.cl/2021/01/26/todo-lo-que-siempre-quiso-saber-sobre-el-tpp-11-pero-nunca-se-atrevio-a-preguntar/>.

³² UN Comtrade database.

³³ UN Comtrade database, three year averages.

Thailand's relatively strong performance derives from its emergence as an automotive export hub for Japanese assemblers and parts manufacturers. These industries were initially developed from the 1960s behind tariffs, local content requirements and limits on foreign ownership. When the Plaza Accords raised the cost of importing Japanese components, supplier firms relocated to Thailand to reduce costs and benefit from the US dollar currency peg. Public infrastructure investments facilitated the formation of a production hub on the Eastern Seaboard consisting of a deepwater port (Laem Chabang), a large petrochemical complex, and large-scale investment in highways, electricity, telecommunications and water supply (Warr and Archanun 2017). The sector was liberalized after the East Asian Financial Crisis, attracting more foreign investment and hastening the shift to export promotion. Yet by the early 2000s Thailand possessed considerable productive and technological capacity in automobile assembly and component manufacturing, which encouraged Japanese auto companies to regard Thailand as a regional production hub, including the establishment of R&D centres specifically for models produced in Thailand for the global market. Incentives to localize high value-added components continue, although now in the form of tax incentives and oriented to the development of environmentally-friendly cars (Patarapong Intarakumnerd 2021).

The important place of automotive components and assembly to Thai manufacturing is apparent in Table 1, which lists the NICs-2 top winners and losers in terms of global market share. Indonesia has also achieved some success exporting cars, motorbikes and parts having followed a similar trajectory to Thailand, although coordination of investment, training, research and infrastructure policy was less consistent (Natsuda, Otsuka and Thoburn 2015). Still, the country has achieved a foothold in the regional automotive industry and also benefits from a large domestic market. Steel is another industry established in the 1970s that has been supported by a fast-growing domestic market and inward investment. In 2021, Indonesia surpassed India as the world's second largest producer of stainless steel as three large-scale Chinese production facilities came on-stream.

Two sets of policies have been instrumental to the revival of steel manufacturing: a steep increase in infrastructure investment launched by the Joko Widodo administration starting in 2014; and a ban on exports of raw nickel — which is used in the production of stainless steel — in January 2020. Indonesia is the world's largest producer of the metal, accounting for about one third of global supply. Malaysia has increased market share in specialized electronic and industrial equipment (Table 1).

Thailand, Malaysia and Indonesia have lost ground to China and Vietnam in labour-intensive manufacturing including garments, furniture and electronics assembly. The Malaysian electronics and semiconductor industries are a good example. Despite decades of incentive programs and training schemes, backward linkages to research- and innovation-intensive segments of production. The industry remains dominated by foreign firms, and increasingly employs migrant labour from Indonesia to sustain its labour-intensive operations (Henderson & Phillips, 2007).

Thus, the growth of productivity and employment in Indonesian, Malaysian and Thai manufacturing decelerated after 2000 as these countries lost competitiveness in labour-intensive industries and were subject to intense competition from imports in their home markets (Figure 17 to 19). Thai manufacturing has been held back by an overvalued currency and continued political instability, which have deterred domestic and foreign investment.³⁴ Processing of natural resources is an important segment of Malaysian industry, with petroleum products, vegetable oils and wood products comprising about one-third of manufactured exports.³⁵ During the commodity boom from 2004 to 2013, Indonesia allowed its exchange rate to appreciate and tightened restrictions on inward foreign investment. Processed raw materials including paper, tires and vegetable oils gained market share, but inward investment in electronics flagged (Table 1).

³⁴ Private investment averaged 32% of GDP and public investment 9% for the period 1994-1997, falling to 17% and 6% respectively for the years 2016-2019 (data from WDI).

³⁵ Data from the Department of Statistics, Malaysia (<https://newss.statistics.gov.my/newss-portalx/ep/epForgotPasswordForm.seam>).

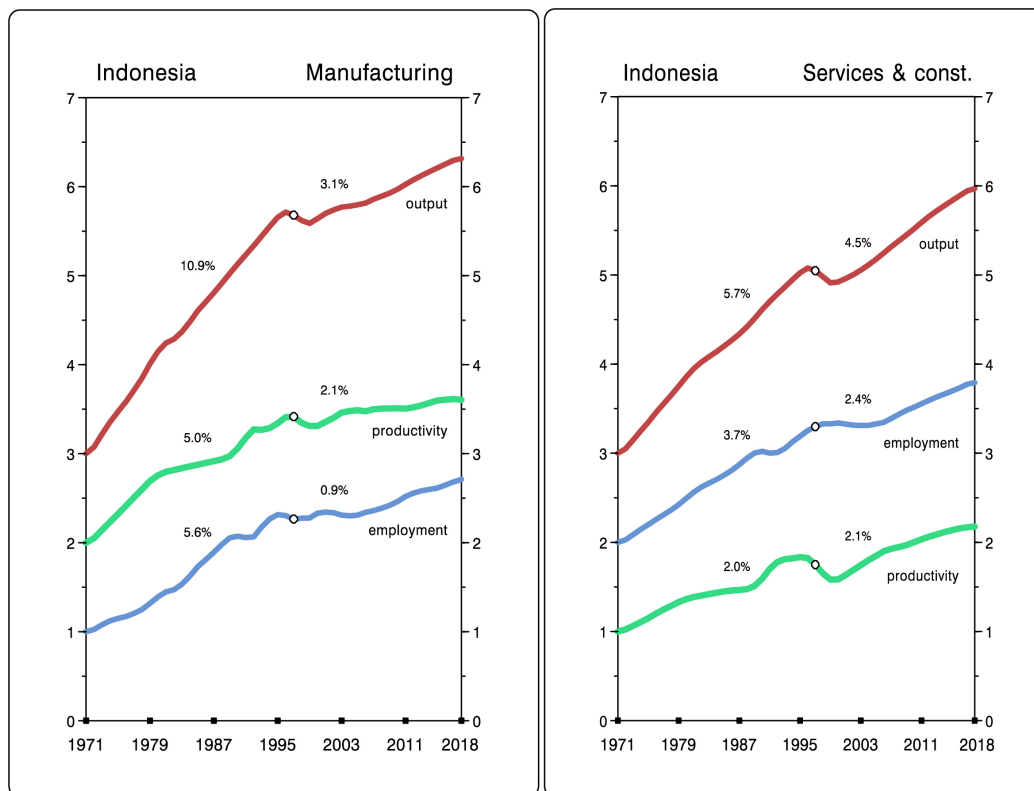
Table 1. NICs-2 Exports gaining and losing market share, 2001-2018

Goods gaining market share (% exports 2018)		Goods losing market share (% exports 2018)	
Indonesia			
Coal	13.0%	Natural gas/liquid	4.5%
Fixed veg oils not soft	5.6%	Crude oil	2.4%
Palm oil	4.9%	Copper ores/concentrates	2.3%
Natural rubber	2.5%	Articles of apparel	1.8%
Footwear	2.2%	Gold non-monetary ex ore	1.5%
Passenger vehicles	2.0%	Veneer/plywood	1.0%
Paper/paperboard	1.1%	Crustaceans/mollusks	0.6%
Processed animal/veg oils	1.0%	Furniture	0.5%
Natural gas, gaseous	0.9%	Computer equipment	0.5%
Pulp and wastepaper	0.8%	Other telecoms equipment	0.5%
Malaysia			
Crude oil	7.5%	Electronic values and transistors	13.1%
Natural gas	2.4%	Natural gas, liquified	2.4%
Other measure/control apparatus	1.4%	Fixed veg oils not soft	2.4%
Other electrical equipment	1.3%	Palm oil	2.2%
Piezo-elect crystals	1.2%	Computer equipment	2.2%
Headgear/non-textile clothing	1.0%	Diodes/transistors	1.7%
Plastic/rubber clothing	1.0%	Office equipment parts	2.8%
Processed animal/veg oils	1.0%	Other telecom equipment	1.5%
Other specialized industrial machines	0.9%	Electric circuit equipment	1.1%
Other auto data processing equipment	0.9%	Radio/tv transmit equip.	0.9%
Thailand			
Passenger cars	4.6%	Electronic values and transistors	2.4%
Motor vehicle parts/engines	4.2%	Rice	2.2%
Goods/service vehicles	3.2%	Natural rubber	1.9%
Computer equipment	3.1%	Electric circuit equipment	1.1%
Gold non-monetary ex ore	2.6%	Office equipment parts/accessories	1.0%
Auto data processing storage units	2.4%	Fish/shellfish, preparations	0.9%
Crude oil	1.5%	Jewelry	0.9%
Industrial heat/cool equipment	1.2%	Other telecomms equipment	0.8%
Rubber tires/treads	1.1%	Precious metal jewellery	0.8%
Air-conditioning equipment	1.1%	Other office equipment parts	0.6%
Vietnam			
Telephone handsets	11.1%	Crude oil	1.1%
Radio/tv transmit equipment	7.7%	Crustaceans/mollusks	0.7%
Footwear	6.9%	Rice, milled	0.6%
Office equipment parts/accessories.	3.3%	Coal non-agglomerated	0.1%
Valves/transistors	2.6%	Tea and mate	0.1%
Articles of apparel	6.4%		
Furniture	1.6%		
Fruit/nuts, fresh/dried	1.3%		
Computer equipment	1.3%		
Electrical distribution equipment	0.9%		

- The table lists exports for which the country's share of global exports has increased from 2001 to 2018 (measured in three year averages) and gives the share of each of these goods in total exports in 2018.
- Source: UN Comtrade SITC Rev 3, 4 digits.

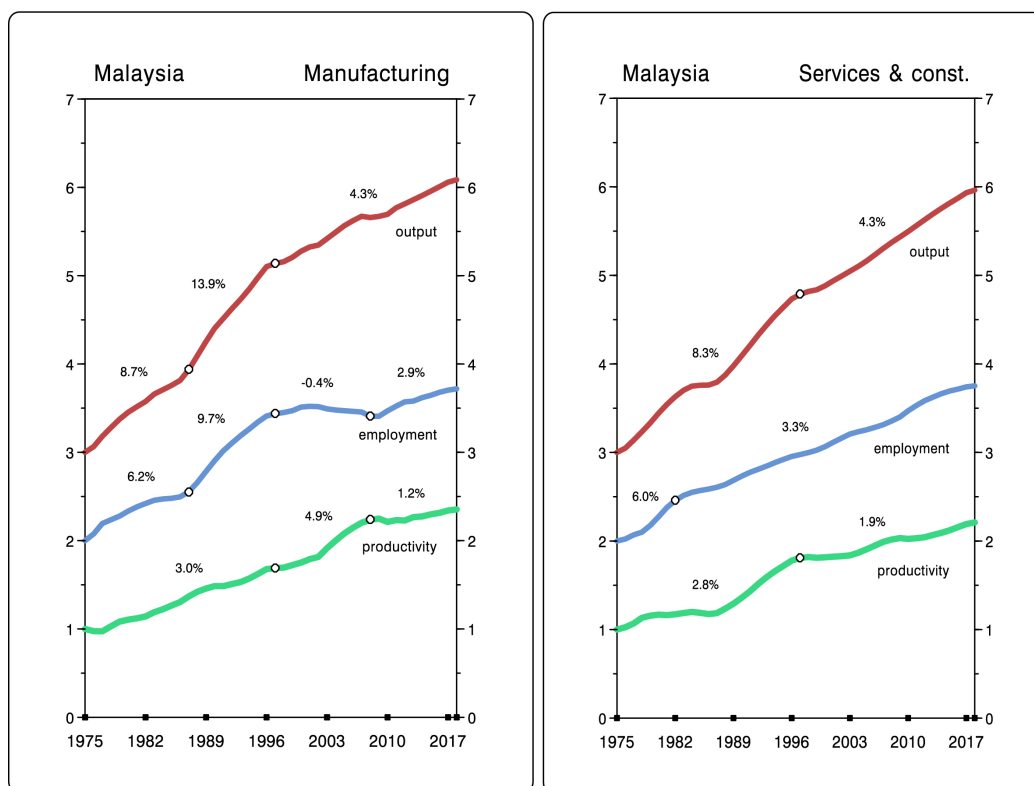
The service sector in the NICs-2 is highly variegated, encompassing modern services (finance, health and education) and low-productivity jobs like petty trade and domestic service that absorb underemployed workers from both rural and urban areas. Slow growth of employment in manufacturing, and declining labour use in small-scale agriculture (from mechanization and chemical use) have resulted a shift of workers into low-wage services, especially in Indonesia and Thailand. See Figures 17 to 20.

Figure 17. Indonesia: output, employment and productivity in manufacturing and in services and construction, 1971-2018



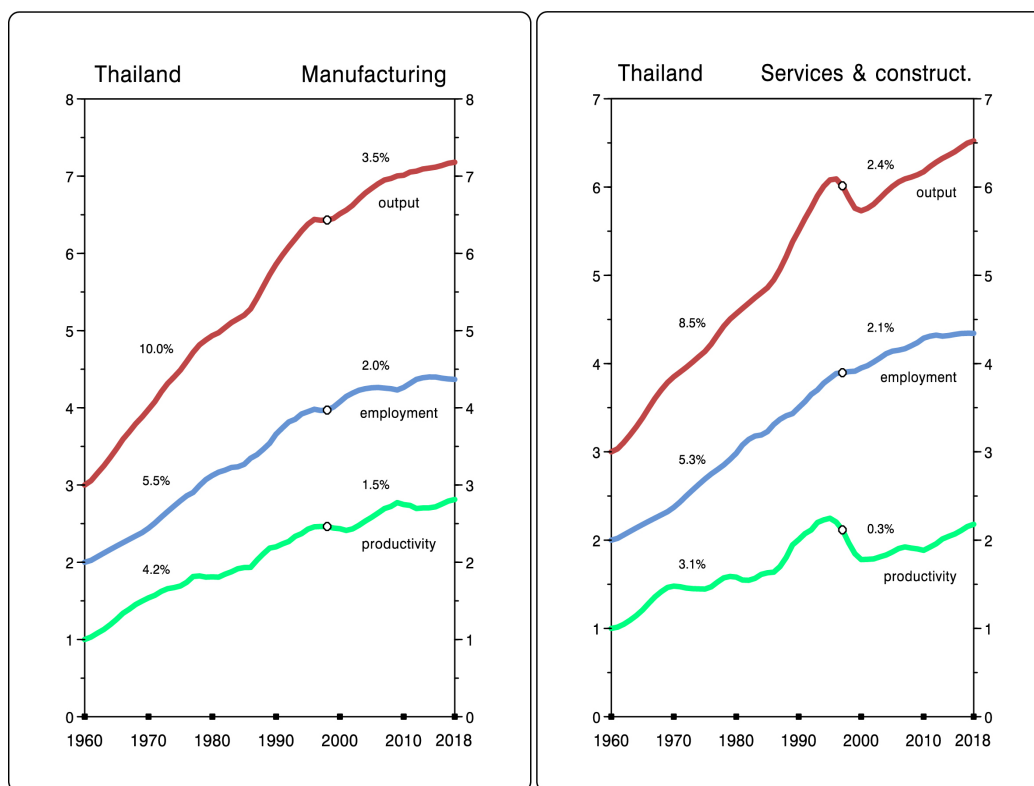
- Source: ETD (2022).

Figure 18. Malaysia: output, employment and productivity in manufacturing and in services and construction, 1975-2018



● Source: ETD (2022).

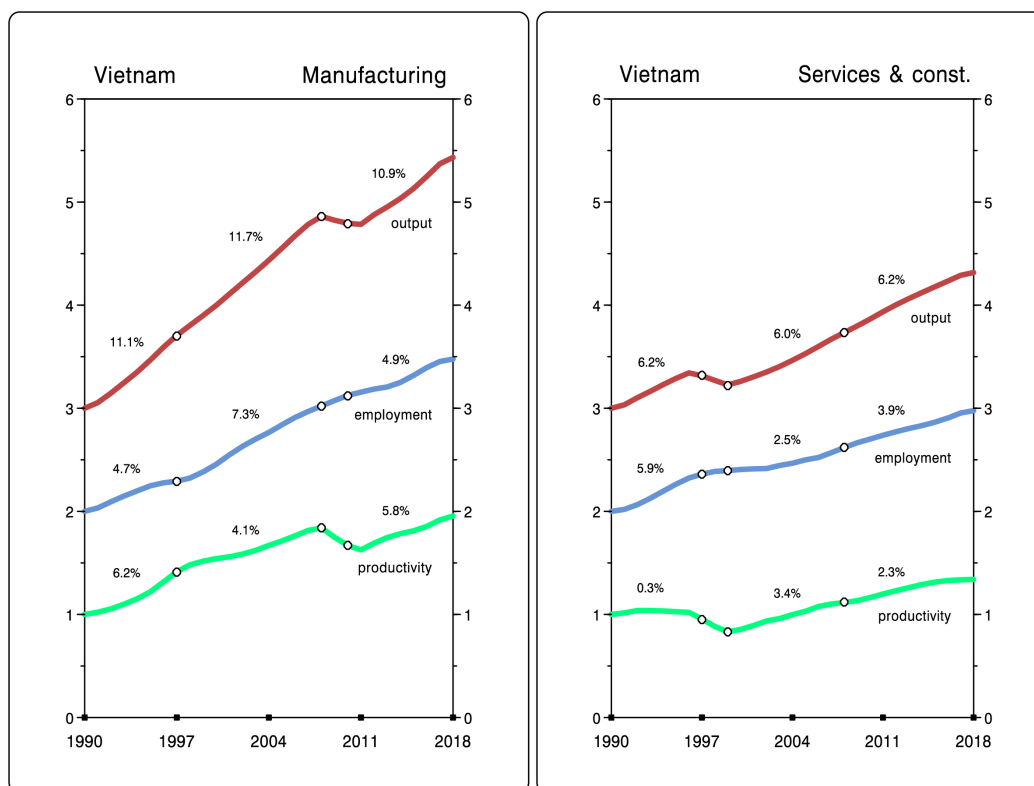
Figure 19. Thailand: output, employment and productivity in manufacturing and in services and construction, 1960-2018



● Source: ETD (2022).

Viet Nam is the outlier in the group. Still at the relatively early stages of industrialisation, Viet Nam has recorded extremely rapid rates of employment growth in manufacturing.

Figure 20. Vietnam: output, employment and productivity in manufacturing and in services and construction, 1990-2018



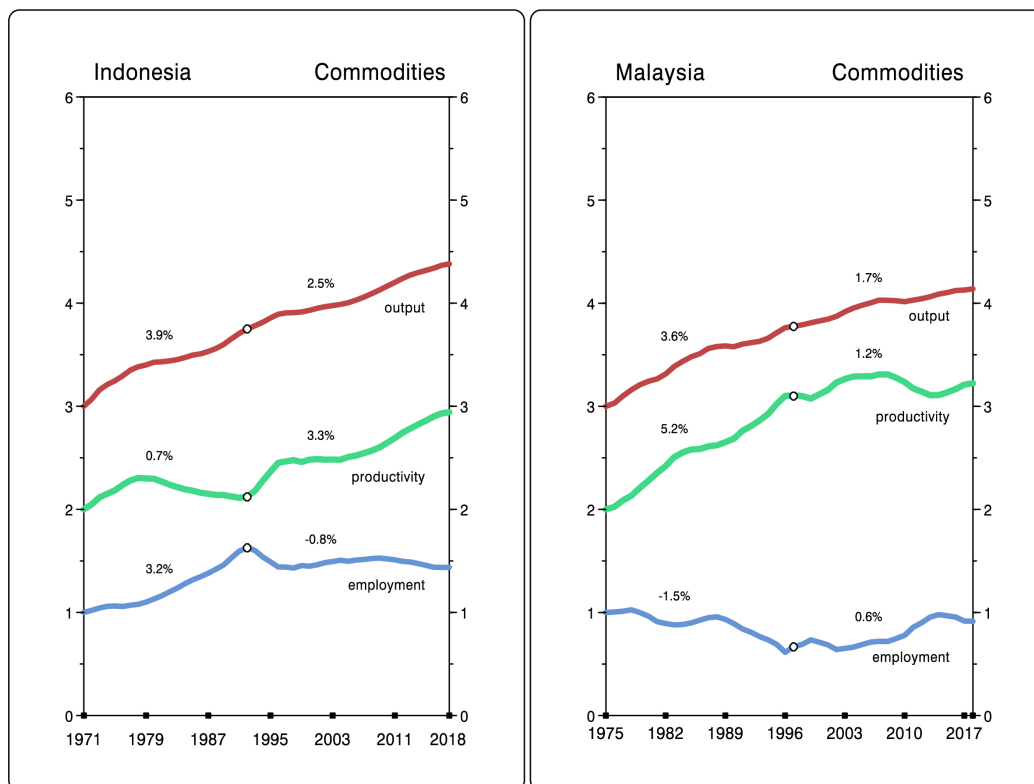
● Source: ETD (2022).

Productivity growth dipped during the Global Financial Crisis as the government subsidised employment through a soft loan scheme for employers. After a few years of slower growth, Viet Nam's low wages and improving infrastructure encouraged massive foreign investment in electronics assembly (especially telephone handsets), which now comprises 35% of total exports. Garments and footwear still make up one-fourth of exports but are growing more slowly (Figure 21).

The rapid shift in labour from low productivity agriculture and traditional services to manufacturing, especially since 2014, has increased employment and output as well as the overall productivity growth (in the traditional Lewis-type process), but there are signs that productivity growth *within* assembly operation is slow (Ohno et al., 2020).

Commodity production in Indonesia (Figure 21, left-hand panel) is dominated by three products: palm oil, coal and natural gas. Indonesian palm oil production rose from seven million tons in 2000 to 49 million in 2020, with planted area rising from four to 13 million hectares. Coal production also soared after the East Asian financial crisis, from 27 MT in 2000 to 529 MT in 2020. Gas production has remained stable at three million MMcf over this period. Indonesia's palm oil expansion is extensive (land-using), with yields below those of its competitors but area expanding rapidly. Productivity growth in commodities is therefore driven by the mining sector, including coal, gold, copper and nickel. The story is similar in Malaysia (Figure 21, right-hand panel), where the commodity sector is dominated by oil, gas and palm oil. Palm oil area expanded over the last two decades from 3.3 to six million hectares, but Malaysian production is more intensive (higher yields per hectare) than Indonesian.

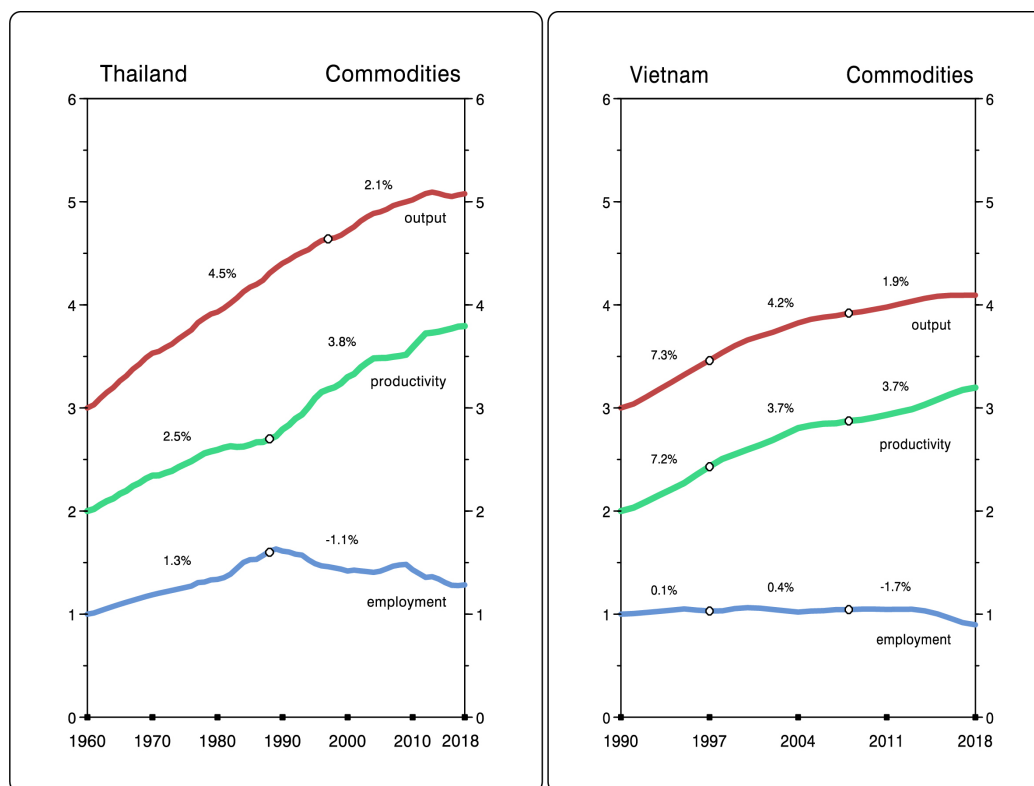
Figure 21. Indonesia and Malaysia: output, employment and productivity in commodities, 1971-2018



● Source: ETD (2022).

The commodity sectors in Thailand and Viet Nam (Figure 22) are diverse and in contrast to Malaysia and Indonesia agricultural exports are generated mostly by small farmers. They are market leaders in rice, sugar, cassava, shellfish (Thailand) and rice, coffee, pepper, fish and shellfish (Viet Nam), among other products. Rapid growth of manufacturing and services has drawn underemployed labour from small-scale agriculture, a process that has contributed to stabilise overall productivity growth as output growth declines.

Figure 22. Thailand and Vietnam: output, employment and productivity in commodities, 1960-2018



● Source: ETD (2022).

8. - LA and NICs-2 and ‘Kaldor’s laws’

Decades before “endogenous” growth theory rediscovered increasing returns to scale for a neoclassical audience, Nicholas Kaldor had written extensively on their profound implications for economic growth trajectories both in the advanced and developing countries. Kaldor’s approach has several advantages over the neoclassical variant. Because he did not confine himself to single-sector optimisation models, Kaldor was free to explore intersectoral dynamics and the specific characteristics of the manufacturing sector that create opportunities to realise static and dynamic returns to scale. These factors, which figure prominently in Kaldor’s growth laws, do not fit in standard neoclassical growth models as they are excluded by assumption (as they cannot be handled in their narrow optimisation methods). The Keynesian origins of Kaldor’s approach to growth are also apparent in the importance attached to demand-side factors, leading to his emphasis on export growth (both quantity and sectoral origin of exports) and domestic investment.

Another important distinction between Kaldorian and neoclassical growth theory is that Kaldor’s approach is inductive, starting from a simple empirical observation: there are significant variations in the rate of economic growth across countries. Then he analyses, from theory and examination of the evidence, the subsequent “stylised facts” relevant to variations in growth and identifies manufacturing as the leading factor. The manufacturing sector is the best engine of growth because it is able to trigger processes of cumulative causation, characterised by positive feedback ‘loops’ into the system, capable of generating self-perpetuating growth (Kaldor, 1961).

Kaldor contrasts his method with the neoclassical approach, which inevitably starts with an abstract model that assumes away most of the relevant factors — so that they can concentrate the analysis on those that they think *a priori* to be the most relevant (like factor shares and human capital). Then, not surprisingly, the missing factors reappear in the “residual” as the model generates

unexpected results (Kaldor, 1961, p. 177). At least Solow had the wisdom to call this residual “the measure of our ignorance about the causes of economic growth” — a residual that also has ample scope for measurement error.³⁶

Endogenous growth theory attempts to contribute to the Solowian tradition by adding increasing returns. Its models normally begin with a single sector with constant returns to scale and then interject increasing returns, counterintuitively, as a positive externality related to investment in innovation. However, and oddly enough, this is supposed to be unrelated to capital accumulation, and it is assumed explicitly that innovation is not “sector specific” — that is, to the amount or type of manufacturing activity being carried out in the economy (Palma, 2005a, 2019c).

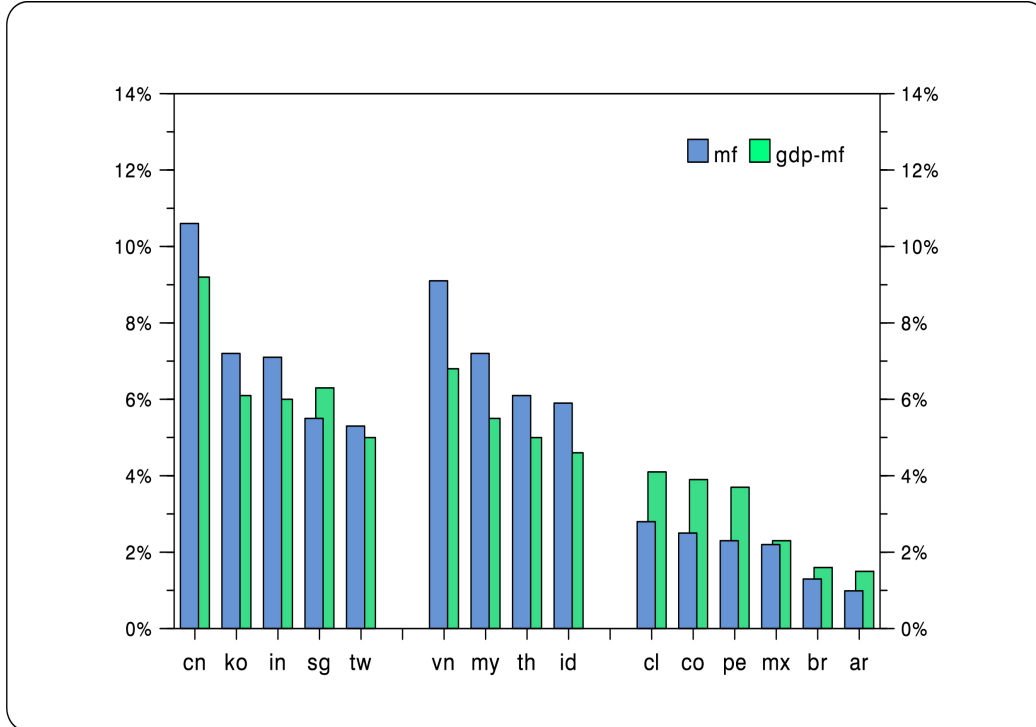
For Kaldor, instead, manufacturing is the engine of economic growth because the potential for labour productivity to increase is greater in this sector than in agriculture, construction and services due to static and dynamic returns to scale. From the point of view of the overall economy, average output per person increases when labour moves from low-productivity activities like small-scale agriculture and traditional services into manufacturing. This is the same process described by W. Arthur Lewis in his classic article (Lewis, 1954), which unfolds more quickly as the rate of growth of manufacturing accelerates. But in addition to these between-sector effects, growth is also more rapid within manufacturing because of opportunities to realise increasing returns to scale as there are more opportunities for innovation.

Kaldor maintained as well that the rate of within-sector productivity growth in manufacturing is related to the rate of growth of manufacturing output, which he referred to as Verdoorn’s Law after the Dutch economist who provided the first statistical tests of the relationship. Verdoorn’s Law is evidence of static returns to scale, or declining fixed costs, and dynamic returns to scale derived from learning by doing and technological innovation. The absorption of labour from agriculture and services into the manufacturing sector also drives growth in these sectors, due to both demand and supply side factors. Higher incomes and more complex manufacturing process increase demand for services, especially higher value-added services. Agriculture adopts labour-saving technologies as workers move from agriculture to manufacturing and services, some of which — fertilisers, herbicides, tractors — are produced by a growing manufacturing sector.

These ideas are summarised in Kaldor’s three laws of growth. The first states simply that a faster rate of growth of the manufacturing sector is associated with faster overall growth of non-manufacturing GDP. Using data from the OECD countries, he provided two tests of this proposition: an estimate of the relationship between output growth and the rate of growth of manufacturing; and a second equation regressing the growth of manufacturing against the excess of manufacturing sector growth over total output growth. Both relationships are positive and significant (Kaldor, 1966). Here we replicate these relationships using data from LA and Southeast Asia for the period 1980-2018.

³⁶ See (Hulten, 2000).

Figure 23. Kaldor’s “first law” of growth: rate of growth of manufacturing and of non-manufacturing-GDP, 1980-2018

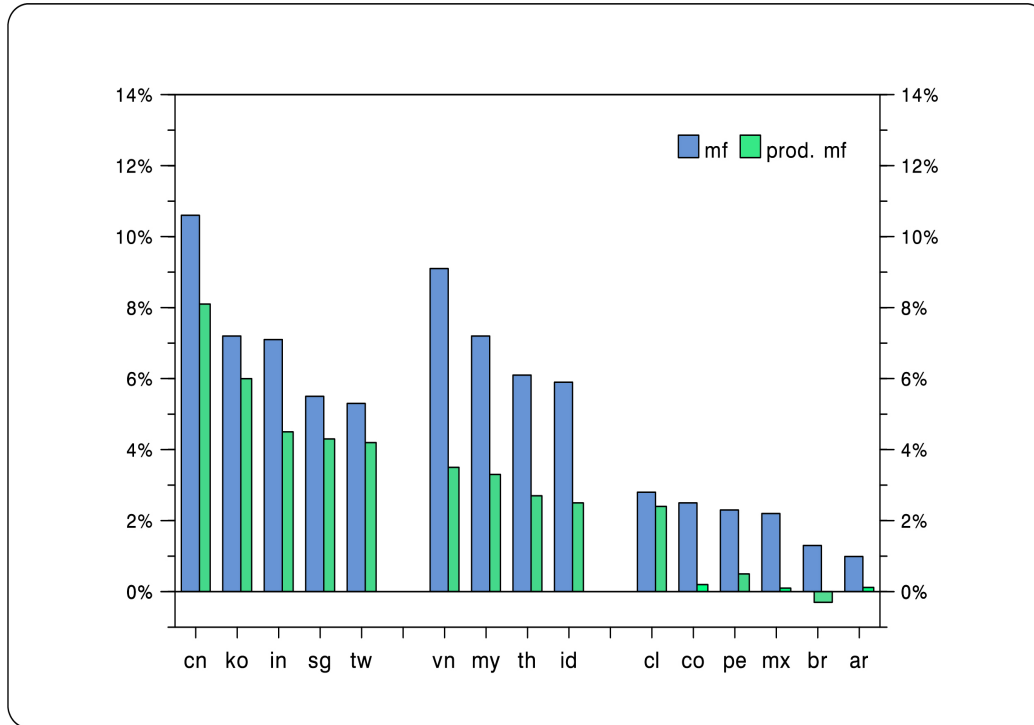


- **mf** = manufacturing; and **gdp-mf** = rate of growth of non-manufacturing GDP.
- Source: ETD (2022).

As shown in Figure 23, countries with fast-growing manufacturing sectors record higher growth rates in non-manufacturing as well. No relationship of this kind exists between growth in the commodity sectors (agriculture and mining) and in the rest of the economy (see below). Although service sector growth normally correlates with non-service GDP growth, Kaldor suggests that the causation is reversed: rising income and the growth of manufacturing increase demand for higher value-added services. In Brazil, for example, productivity growth in services was “catching-up” with the frontier during the period of rapid growth of manufacturing in the import-substitution period but collapsed together with that of manufacturing productivity after 1980 (Palma 2012b and 2019a). As manufacturing stagnates services tends to become a reservoir of underemployed labour in petty trade, domestic services and other low-productivity activities.

Verdoorn’s Law, the second of Kaldor’s growth laws, also holds in LA and Southeast Asia (Figure 24). The usual objection to Verdoorn’s Law is that correlation is not causality: it could be that productivity growth is what is driving growth in manufacturing, not the other way round. As overall productivity accelerates, demand for manufactured goods also rises. But this would suggest that productivity growth is autonomous, or unrelated to the rate of investment and effective demand. This is clearly not the case: for example, countries where the automotive or electronics industry is growing faster achieve higher rates of productivity growth within these industries.

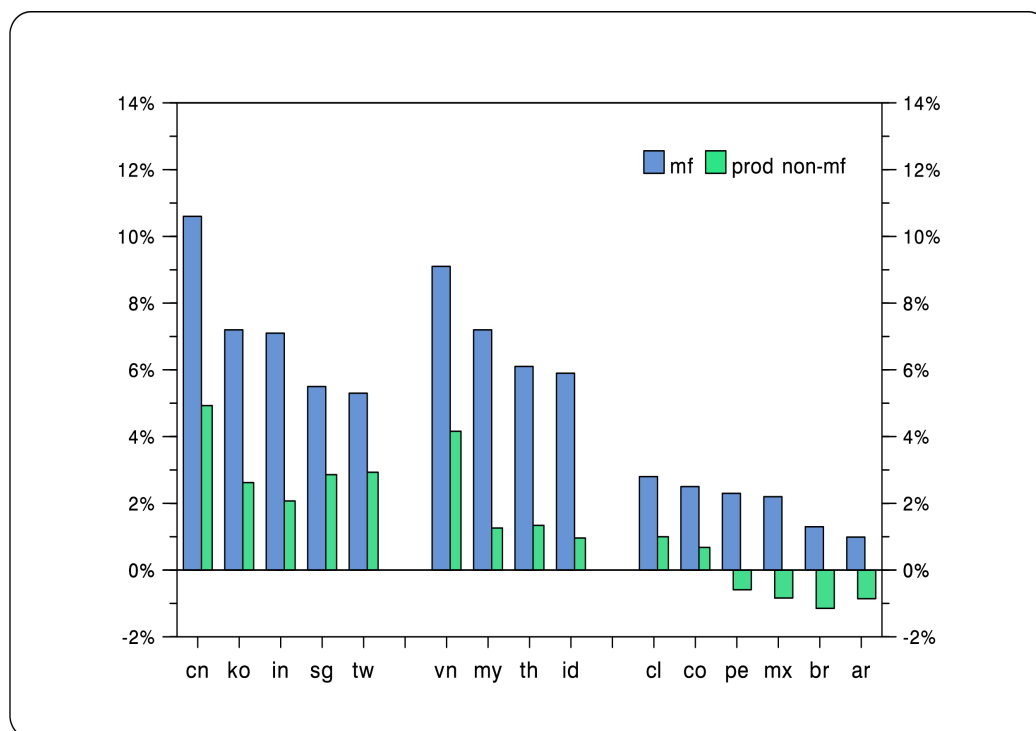
Figure 24. Kaldor's "second law" of growth: rate of growth of manufacturing and productivity growth in manufacturing, 1980-2018



- **prod. mf** = rate of growth of productivity in manufacturing.
- Source: ETD (2022).

The third and final law posits a positive relationship between growth of manufacturing and that of productivity in non-manufacturing, including that of the labour-sending sectors like agriculture and traditional services (Figure 25).

Figure 25. Kaldor's "third law" of growth: rate of growth of manufacturing and productivity in non-manufacturing GDP, 1980-2018



- **prod. non-mf** = rate of growth of productivity in non-manufacturing GDP.

- Source: ETD (2022).

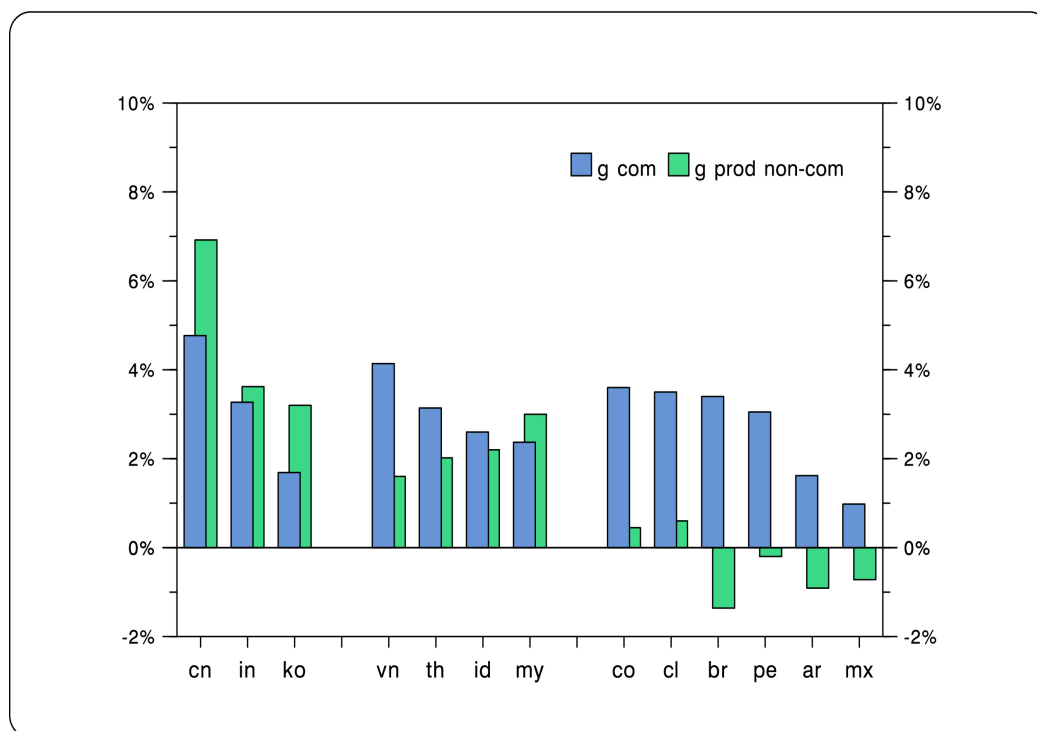
There is nothing automatic about this relationship, which depends on enlightened government policy to provide the physical infrastructure and maintain it (for example, irrigation, drainage, roads and electricity) and to promote technological change (through support for research and financing for capital equipment). However, the movement of labour from agriculture to industry, if sufficiently rapid, is likely to raise rural wages and stimulate investment in labour-saving technologies, if the requisite preconditions are in place. This third law also applies to the capacity of manufacturing to pull productivity growth in services and construction, which as non-tradables depends crucially on domestic demand factors.

Kaldor amended his explanation for the observed relationship between manufacturing and growth over the years, at first assigning more importance to labour supply, at least in the British case, an argument which he later discarded (Thirlwall, 2015). However, the role of demand in accelerating the growth of manufactures was always paramount. Import substitution can develop the domestic market for consumer goods, but countries must quickly learn to export these goods because the domestic market in most cases is too small to accommodate the rapid expansion of industrial output. At the same time, the pressure to compete internationally forces domestic manufacturing to improve quality and efficiency, spurring further productivity growth.

Demand also comes from domestic expenditure on capital goods. However, these backward linkages will not arise if production is limited to the size of the domestic market. In this sense, the growth of industrial output is determined in the end by the growth of exports, and the sustainability of GDP growth by the differential between the income elasticity of demand for exports and imports (Thirlwall, 2015, p. 337).

Finally, Figure 26 investigates whether Kaldor's "third law", built having manufacturing in mind, also applies to commodities.

Figure 26. Kaldor’s “third law” if applied to commodities: rate of growth of commodity production and rate of growth of productivity in non-commodity GDP, 1980-2018



• **g com** = rate of growth of commodities (agriculture and mining); and **g prod non-com** = rate of growth of productivity in non-commodities.

• Source: ETD (2022).

Figure 26 indicates that the answer to that question is no: Kaldor’s “third law” does not apply to commodities. As the figure indicates, in LA growth in the commodity sector does not induce (or being associated with) much productivity growth in the rest of the economy — if at all! The fact that LA, as opposed to emerging Asia, makes little or no attempt to add manufacturing value added to those commodities, or to the inputs for the industry, is obviously the crucial factor in this.

10. - Conclusions and policy recommendations

The middle-income trap has attracted considerable attention in recent years, and for good reason: very few countries have successfully broken free from the pack to close the productivity-gap with advanced countries. Using income per capita as a metric, only eight countries — the first generation of NICs and a few countries from the European periphery — have managed to do so. More worrying still, productivity levels in many middle-income countries in LA and Southeast Asia has hit a glass ceiling relative to the technological leader as they appear to have plateaued at half or even less of average labour productivity of the US. This finding casts doubt on the original formulation of the middle-income trap, which hypothesised that growth would slow down in these countries as they approached the productivity frontier. Since they are nowhere near the frontier, we need to find other explanations for their productivity slowdown.

This paper has presented an alternative explanation of the middle-income trap that focuses on the inability of both regions to “upgrade” their growth strategies as their current ones have run their course. The capacity to do so was what helped the NICs-1 avoid this trap and break their respective glass ceilings.

The situation is more dire in LA, which has performed poorly not only in comparison to the advanced countries and the new industrialised countries of Asia (the NICs-1), but also relative to the second tier NICs in Southeast Asia. Latin American countries have pursued a “dual-extractive model”, relying on a combination of commodity extraction for exports delivering productivity growth and low productivity, low productivity growth potential, services delivering employment creation. With productivity growth grinding to a halt in commodity extraction in most countries as these activities near the technological frontier (except for Brazil, at the cost of the devastation of the Amazon), output growth has become restricted to the rate of growth of low wage employment in services and construction (in NAFTA’s Mexico, also in assembly manufacturing).

The situation in Southeast Asia is different because these countries, which are further from the productivity frontier, are still registering both productivity and employment growth from their manufacturing-based development strategies. However, there are early signs that the prevailing growth strategy based on FDI and manufactured exports is losing steam. Competition from China has reduced investment in labour-intensive manufacturing for export and in the home market. Thailand, and to some extent Indonesia, have benefited from capacity developed under local content rules before 1997 to penetrate export markets for vehicles and automotive parts. However, assembly-style manufacturing in electronics, footwear and garments has not delivered opportunities to upgrade — i.e., to deepen productive structures in the domestic economy; or using Hirschman’s terminology, to develop the required backward linkages that would set in motion a more self-propelling growth.

The main policy implication of this analysis is that both regions — LA and Southeast Asia — must urgently revisit their dominant growth strategies to reignite productivity growth. The former by start adding manufacturing value added to their commodity exports at the same time as improving backward linkages to their extractive activities; the latter by “deepening” their assembly operations in manufacturing. In the 1960s, decades before neoclassical economics rediscovered increasing returns to scale, Nicholas Kaldor provided a theoretical account of the unique role of manufacturing as the engine of economic growth. Because manufacturing has demonstrated greater scope to realise increasing returns to scale and therefore more rapid productivity growth, the overall rate of growth of the economy and of productivity growth both within and outside of manufacturing depends on the rate of growth of output in the manufacturing sector. However, because increasing returns are the source of productivity growth, demand emerges is a key constraint on growth. Therefore, Kaldor emphasised the rate of growth of manufactured exports and domestic investment as essential to the achievement of rapid economic growth. We provided support for this relationship in LA and Southeast Asia, demonstrating the continuing relevance of Kaldor’s analysis to the situation of middle-income countries in their quest to break the middle-income trap.

Our analysis differs fundamentally from conventional ideas about the problems of economic growth in middle-income countries. As productivity growth has slowed far from the productive frontier, conventional policy recommendations favour a “more of the same but better” strategy of cultivating competitive advantage in more technologically sophisticated subsectors of their current development strategies through investment liberalisation, training and education and “investment protection” such as strict intellectual property rights regulations. Current trade agreements, such as the Trans-Pacific Treaty (commonly known as the TPP-11) clearly points in this “more of the same but better” direction. The goal is to become more attractive in a highly competitive international environment for FDI. In our view, this is a misdiagnosis because what is actually required in both regions is a reengineering of existing development strategies, something that is surely not going to be led by FDI. Expecting these countries to leap from mid-table to world leader through “more of the same but hopefully better” — based on the same policies that landed them in mid-table — is not a realistic solution.

The conventional account, like endogenous growth theory, approaches the problem strictly from the supply side. Raising productivity is a problem of deepening technological sophistication of inputs, not markets blocking the upgrade of the development strategy. Therefore, slow productivity growth must either be an indication of supply constraints (human capital or finance) or market imperfections (government intervention, corruption, trade barriers) that can only be overcome through more market liberalisation. The supply side blinkers worn by mainstream economists prevents them

from recognising the important role of penetrating export markets for manufactured goods, and as the manufacturing sector expands, the role of domestic investment in generating demand for domestically produced and more technologically sophisticated goods.

Middle-income countries need to recognise that the dominant growth strategy is the cause of the income trap, not the escape route — as those strategies (commodity extraction and mere assembly operations in manufacturing) have run their course. They may have had something important to contribute, but that has long been exhausted. These countries need to deploy every available instrument to deepen manufacturing across the full range of subsectors, both in terms of backward and forward linkages. Of course, many of the traditional policies to achieve this objective are no longer available: selective tariff protection, local content rules, domestic preference in government procurement, investment restrictions and backward engineering of imported goods are explicitly ruled out under multilateral and bilateral trade and investment agreements. However, even in these issues there are still some degrees of freedom, and these countries are not without choice.

The middle-income countries of LA and Southeast Asia are competitive commodity producers. However, without exception they have failed to nurture processing industries to create forward linkages between manufacturing and commodity production. Chile, which at one point (early 2000s) accounted for 40% of world copper exports, except for its state-owned copper corporation now only exports copper in its minimum degree of processing, such as ‘concentrates’ to the near exclusion of even smelted copper, let alone refined and processed copper products like wire, electrical components, construction materials and automotive parts. Brazil has similarly not capitalised on iron ore or soybean production. While Indonesia and Malaysia produce commodities like palm oil and natural gas that are less amenable to forward linkages, the commodity sectors in Thailand and Viet Nam are diverse and dynamic, offering numerous opportunities for natural resource-based industrialisation.

China, now the largest importer of raw materials, provided an example of forward linkages with its policy of imposing an export quota on rare earth elements (REE). Until recently, China was the main source of REE ores and concentrates, but by 2012 the country was the largest manufacturer of high-tech magnets, which is one of the main uses of REE (Medeiros & Trebat, 2017, p. 504). This is a transferable lesson, and one that will find applications in LA and in Southeast Asia. Another one for LA is the already mentioned Indonesian policy of banning the export of raw nickel — which is used in the production of stainless steel; as a result, steel multinationals moved in, especially Chinese, and in 2021 Indonesia surpassed India as the world’s second largest producer of stainless steel.

Fiscal linkages are also important in countries where natural resource rents account for a large percentage of GDP like Chile and Malaysia.³⁷ Every country has its own version of “the New Green Deal,” but these plans will remain on drawing boards until governments have the capacity to “discipline” the capitalist elite — as well as *coordinate* the investment drive in this direction, as in Keynes’ *General theory*, Chapter 12— to follow them. Public investment will need to increase significantly to realize a transition from fossil fuels to renewable energy, to build the infrastructure needed for new industries, and to protect vulnerable regions and communities from the effects of climate change. Rising commodity prices in the post-pandemic period are an invitation to rethink the distribution of natural resource rents between private and state companies and governments.

An argument often heard these days is that while manufacturing used to be the engine of growth, as demonstrated by countries like Japan, Korea, Taiwan, China and Singapore, it isn’t anymore. New technologies have blurred the distinction between manufacturing and services: Apple sells you an iPhone so it can sell you software and services; GE sells jet engines at a loss so it can earn high profits servicing them. Automation will destroy labour intensive jobs and redirect productivity growth from factories in the developing world to office buildings the advanced countries where clever engineers build robots to make our shirts and telephones — even food! Now even the

³⁷ According to the WDI (2022), in Chile natural resource rents reached over 20% of GDP in the previous “super-cycle” of commodity-prices, and the same happened in 2021.

World Bank, long a champion of export-led growth, has one foot on the bandwagon, if not yet ready to climb on board fully (Hallward-Driemeier & Nayyar, 2018).³⁸

It is true that products and services are changing, but it was always thus. And the use of machines to replace human power is not a new phenomenon — in fact, it has been at the core of each technological revolution since Cartwright patented the first power loom in 1786. The evidence presented in this paper shows that manufacturing is still crucial for middle-income countries of the type that we examine. Countries that have achieved more rapid growth of manufacturing have grown more quickly. And we believe that they will continue to do so — provided they rise to the challenge of a continuous “upgrade” of their development strategy. Moreover, since they are still far from the technological frontier, middle-income countries must seek to exploit every opportunity to accelerate productivity growth across the full range of sectors. Insisting on the “more of the same, hopefully better” is a tacit acceptance of permanent mid-table status.

³⁸ Unsurprisingly, the solution proposed by the World Bank is just better governance, human capital and connectivity.

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