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ASIA'S INDUSTRIAL TRANSFORMATION: THE ROLE OF MANUFACTURING AND GLOBAL VALUE CHAINS (PART 2)

Jesus Felipe

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Asia's Industrial Transformation: The Role of Manufacturing and Global Value Chains (Part 2)

Jesus Felipe

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ABSTRACT

This paper argues that the single most important factor that explains East Asia's development success was its fast structural transformation toward industrialization, manufacturing in particular. Workers moved out of agriculture into manufacturing, and the sector diversified and upgraded its structure. Manufacturing activities are subject to increasing returns to scale, and many manufacturing goods have high income elasticities of demand. As a consequence, the sector is referred to as the "engine of growth." It is in the context of industrialization that openness played an important role in East Asia's success, i.e., the connection between "export-led growth" (the relaxation of the balance-of-payments constraint on foreign exchange) and industrialization. Part 2 of the paper reviews the role of Asia's developmental states in consciously accelerating industrial development and learning, as well as the region's mixed experiences with industrial policies. Second, it provides a discussion of how Asian firms hooked up on to global value chains.

Keywords: capabilities, developmental states, latecomer model, global value chains, industrial policy

JEL codes: O10, O14, O25

This paper continues the discussion on the importance of manufacturing in Asia's development. It is structured as follows. Section I reviews the role of Asia's developmental states in consciously accelerating industrial development and learning, as well as the region's experience with industrial policies. Section II provides a discussion of how Asian firms hooked up on to global value chains.

I. ASIA'S LATECOMERS: THE ROLE OF DEVELOPMENTAL STATES FACILITATING AND PROMOTING LEARNING, ASSIMILATION, AND UPGRADING IN MANUFACTURING

How did some Asian economies achieve super-rapid growth rates that approached 10% per annum for long periods? This had to require more than 'simply' deciding to export and getting into manufactures. Our view is that this required active governments that directed and consciously accelerated industrial development. These governments are referred to in the literature as *developmental states* (Johnson 1982). India, for example, did not industrialize in the 19th century like the United Kingdom (UK) or the United States (US), because labor was so cheap that industrialization and the adoption of modern technologies did not pay off to save labor. Hence, the incentive was to continue using traditional techniques. This meant, in the words of Allen (2014, p.334), that "development of the Third World required policies that ignored comparative advantage" (p.338), and "...more draconian policies were necessary for successful industrialization" (p.339). What were these 'extreme' policies after World War II (WWII)? We think these came in the form of active governments. Also at the time, there was a widespread belief that the market alone, i.e., the allocation of resources according to the principle of comparative advantage, would not put poor countries on a high-growth path.

The intellectual underpinnings of government intervention in Asia go back to Gerschenkron's (1962) *latecomer model*, which is based on two tenets: (i) poor countries enjoy the advantages of backwardness, i.e., their development is based on learning and mastering products and processes invented by the more advanced countries; and (ii) the more backward a country is, the more important the role of the state as facilitator of this process. Without the government pushing to alter the structure of production of the economy toward advanced industries (from light manufacturing and agriculture into ships, steel, automobiles, industrial machinery, and electronics), growth and development would have happened much more slowly in these poor (latecomer) countries. What this means is that the ultimate purpose of industrial policy and targeting certain sectors was more than addressing market failures but to induce distortions in the short term in order to realize gains in the long term.

Amsden (1989) used this model to explain East Asia's success, and Hobday (1995a) to document how East Asian firms climbed the development ladder in electronics (see next section). The experience of East Asia's latecomers shows that they focused on industries that had dominant technologies. These are industries where competition turns on cost minimization and on the building of mass production capacities as fast as possible. The experience of Asia's late industrializers, starting with Japan after WWII, also shows that they all had effective developmental states that provided extensive support to their firms, not only by boosting the profits of those firms that were prepared to enter the competitive arena, through subsidies, tax breaks or low interest rates loans; but also through mechanisms designed to curb rent-seeking. Some of the most cited cases are those of Japan; the Republic of Korea; Singapore; and Taipei, China, where government provided support in terms of subsidies or tax breaks *in exchange* (i.e., reciprocity) for firms achieving certain export targets. Failure to meet these targets would lead to withdrawal of the support. This was very much a results-oriented performance mechanism. It proved to be a powerful means to discipline both government and firms,

and to control rent-seeking. All this assistance to their firms was complemented by a complex set of catch-up institutions, such as Singapore Economic Development Board, or Taipei, China's Industrial Technology Research Institute, whose goal was to capture technologies and raise the skills levels. The industrialization problem, namely whether development of a modern capitalist industry can be possible in a backward country, is as relevant for Asia today as it was at the turn of the 20th century (e.g., think of Bangladesh, Cambodia, India, the Lao People's Democratic Republic).

Comparing the old advanced economies (including Japan) with the newly industrialized economies (NIEs) and Indonesia, Malaysia, and Thailand, Amsden (1995) elaborated upon the latecomer industrialization model, and highlighted some important differences between the two groups of countries. First, on the question of why latecomers needed more government, she claimed that "industrial policy was invented to raise productivity levels" (Amsden 1995, p.792), given that the two other options to lower unit labor costs were to lower nominal wages, or to miss industrialization at all. The UK did not need much government support because it was the first one and it was the developer (through trial and error) of the steam engine and the other technologies that increased productivity, developed at the time. Something similar happened in Germany and the US about 100 years later in the context of the Second Industrial Revolution, i.e., they progressed on the basis of the new technologies developed at the time, chemicals and electricity, as well as a whole array of new organizational forms, with professional managers and much more formal research and development (R&D). Governments intervened more than in the case of the UK, mostly by protecting infant industries. Then came Japan and later the other East Asian economies (and a few more countries around the world). These countries "did *not* achieve their growth in productivity by new products and processes...[it involved]... 'pure' learning" (Amsden 1995, p.793; *italics original*), that is, by borrowing and becoming proficient in existing technologies. This process is very different from that of the UK, Germany or the US. While the first group focused on R&D, the new industrializers needed to make sure that the borrowed technologies could be adapted and improved to the specifics of their shop floors. Since these countries did not have the competitive advantage that new products and processes confer, the role of government had to be greater and go beyond protecting infant industries.

Second, she argued that the actual experience on the degree of government intervention in the economy did not squarely follow Gerschenkron's prediction, namely, more intervention the more backward the country. Rather, intervention was greater in countries with smaller *competitive assets* in relation to global competitive needs. A competitive asset is anything that contributes to the international competitiveness of raw labor power and raises labor productivity, e.g., having a port, being endowed with natural resources. Why did not the British government intervene heavily in Hong Kong, China—with the exception of providing mass-subsidized housing, which lowered labor costs? Because in the 1950s and 1960s, the colony was able to access the Commonwealth preferences, which provided it with a market shielded from Japanese competition in clothing and textiles. Hong Kong, China also had a significant inflow of experienced textile engineers and technicians who had moved after the Chinese revolution. Indonesia, Malaysia, and Thailand, also had a competitive asset, a natural resource base, hence government intervention was modest initially. It increased as time passed by as these countries sought to diversify their economies because all three lacked a key competitive asset, namely, entrepreneurial skills. Government intervened in Japan, but it was the first Asian country and it had developed an industrial base before WWII. Which were the governments that intervened most heavily and why? Those of the Republic of Korea; Singapore; and Taipei, China, and the reason was that they lacked competitive assets. Yes, Singapore was a port, but at the time of independence in 1965 its economy, with 2 million people and land area of only 581 square kilometer, was adrift. The other two, were in political disarray in the 1950s.

The Industrial Policy Debate

Industrial policy is the set of government interventions whose goal is to select sectors and to benefit them through a series of interventions, on the belief that this would trickle down throughout the economy. In the case of East Asia, the debate about whether or not it was successful, a most contentious point. It keeps the profession split between those who argue that indeed it was a key ingredient of the region's success; and those who argue it was not, i.e., that the East Asian economies used neutral incentives between domestic and foreign markets and limited government interventions, permitting the realization of static comparative advantage.

The debate became alive when the World Bank (1993) published a key study on East Asia's high-performing economies: Hong Kong, China; Indonesia; Japan; Malaysia; the Republic of Korea; Singapore; Taipei, China; and Thailand. The study was praised for being the first solid attempt by a development institution to document these economies' success. But the study also caused a lot of grievance among those who argued that the analysis was 'flawed, tendentious, and biased,' as a result of deep misunderstandings about how these economies developed, especially about the role of industrial policies and how firms in these economies accumulated the capabilities that allowed them to move up and upgrade, i.e., the latecomer firm (Lall 1994).

The experiences of Asia's successful economies suggest that the challenge that late industrializers face is much more complex than just thinking in terms of inward- or outward-looking strategies, e.g., the import substitution phase that all successful Asian economies went through could be important for later export success. The same applies to the coexistence of restrictions on imports for domestic markets and liberal imports for export manufacturing.

Likewise, "getting the prices right" is not a sufficient condition for growth. The ascendance of the Asian economies was hardly due to this fact: market forces did not determine the size and composition of their industrial sector. To become internationally competitive, many industries were actively fostered. To attribute their success exclusively to the workings of the market is misleading.

Having said the above, there is no doubt that maintaining a competitive market mechanism was/is indispensable and, therefore, it is true that these economies got their fundamentals right. This should not be debatable and cannot be what separates the three views of East Asia's miracle. The reason is that nobody would propose 'bad' macro policies or closing markets to international trade.

What we think should be uncontroversial is the fact that state initiatives were fundamental in achieving the East Asian economies' development objectives, and their interventions went beyond the roles entrusted to the state by *laissez-faire* economics. All these economies were good students of both the neoclassical and revisionist views, and subjecting the debate to a horse race is pointless. They had high savings and investment rates, invested in human capital, pursued macroeconomic stability (they followed prudent fiscal and monetary policies), had stable and secure financial systems, and were open to international trade, investment, and technology transfers. At the same time, however, they also *created* competitive advantage through selective industrial promotion and infrastructural development, and continuously aimed at upgrading their production and export structures. In some Asian economies, these were instrumental in making sure that the export-led industrialization strategy succeeded. Many governments intervened badly in the past while others intervened very efficiently. Yes, the quality of the interventions mattered and this is what distinguished these economies. This assertion does not mean that *all* interventions were successful. The East Asian success stories were indeed guided by markets, in

the sense that their goal was to catch up and become more like the advanced economies as fast as possible. The means to do so, however, were anything but orthodox.

Appendix Tables A.1-A.8 provide information on the industrial policies of Indonesia; Japan; Malaysia; the Republic of Korea; Singapore; Taipei, China; and Thailand, and how these evolved over time. Clearly, the implementation of the policies and the degree of success varied significantly across economies. Japan was the first Asian country to use industrial policies, especially after WWII, led by the Ministry of International Trade and Industry (MITI). To achieve the transformation of the economy, Japan created during the 1950s and 1960s an intricate institutional system that shaped the substance of its industrial policy. Postwar Japanese industrial policy was the result of the emergent developmental state during the Meiji period (e.g., relationship between bureaucrats and business), a public-private system of cooperation (based on a complex system of relationships, including attendance to the same university) and the reforms under the US occupation (e.g., broke down the old ruling coalition, dismantling the prewar *zaibatsu*). These reforms enhanced the autonomy of bureaucrats in directing economic development to the extent that the bureaucracy became politically insulated. Meanwhile, there was tremendous competition among firms but within the overall system of cooperation. This created a dynamic tension of intense competition within a framework of extensive coordination. For example, Japan created deliberation councils as far back as 1949. Two key supporting pillars that helped cement Japan's high growth system were forged during this period. The first one was the very high quality of the bureaucrats. The second pillar was the reform of the financial system.

Between the 1960s and the 1980s, the Republic of Korea's industrial policy followed Japan's steps, but in a much more intense way, for two reasons. First, the Republic of Korea was far behind Japan technologically. Catching up fast required significant government intervention. Second, the Republic of Korea had had a short history of capitalism. As a result, the Republic of Korea had a very weak private sector, with the consequence that the government could easily dictate what to do. Industrial policy making and implementation were very centralized. For example, as in Japan, there were deliberation councils but the private sector had much less influence than in the case of Japan. Except perhaps during 1953–1960 (during the Rhee regime), the Republic of Korea had never experienced an extensive free-market economy, certainly not during the agrarian Korean society that prevailed until the 19th century, and not during the Japanese colonial government, years of heavy interventionist policy. The Republic of Korea switched to an export-oriented development strategy in 1962. This was prompted by the realization that the Republic of Korea had a small domestic market and that it still had a large pool of low-wage labor. The first phase of the export program went from the mid-1960s to 1972. The initial focus was on the development of light industry. Starting in 1973, the Republic of Korea moved into the second phase of the export-orientation program. It made conscious and concerted efforts to move into higher value-added areas through complementary investments in human capital and infrastructure. This move followed in spirit that of Japan after WWII. Korean policy makers felt that the country should develop the heavy and chemical industries (HCI), i.e., more skill and capital-intensive manufactures (e.g., ships, machinery, steel, automobiles, computer electronics).

Singapore, unlike its Southeast Asian neighbors, has no natural resources, and at the time of the breakup with Malaysia, unemployment was above 10%, and population of just 2 million was very small to support any industry on its own. Moreover, it had a very low level of human capital, and its political climate was very unstable. Singapore's development program was conceived under the leadership of Lee Kuan Yew's friend and first Finance Minister (appointed in 1959), Goh Ken Swee, a very practical technocrat, who did not trust market forces, who thought that colonial-era *laissez-faire* practices had not benefited Singapore, and who was influenced by European socialism. Hence, he believed in the role of the state to direct development. During this period, Singapore's initial economic policy was based on

import substitution and during 1960–1965, the economy achieved a growth rate of 5.5% per annum. The country shifted to export orientation in the mid-1960s. The new government concluded early on that, given the country's initial conditions, it had to be bold and devise a unique approach to industrialization and job creation, the key to economic development; and to solve Singapore's social problems through a massive public housing program.

Taipei, China's Kuomintang and its bureaucrats also created a developmental state, but very much along the lines of a state-planned economy. The Kuomintang's policies led eventually to a three-sector firm structure that characterizes Taipei, China: state and party enterprises, large businesses, and small and medium enterprises (SMEs).¹ Unlike in the Republic of Korea, where the government relied on the *chaebol*, the government of Taipei, China relied on its public enterprises to push its development programs. And also unlike the Republic of Korea, SMEs were the pillars of export growth.² Likewise, the hands-on direction of the state was similar to that of the Republic of Korea, but in Taipei, China the state actually owned a significant share of the economy and about 70% of the island's land, and the ruling party exerted huge political and economic power. That Asia's developmental states helped create capitalist firms is very clear in the case of Taipei, China, whose economic structure reflects a combination of the Asian developmental state, with a large number of politically weak yet economically dynamic SMEs, alongside a powerful big business sector. This system has coexisted since the island shifted from import substitution into export orientation in the 1960s.

During the 1980s, Indonesia, Malaysia, and Thailand seemed to be following the footsteps of Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China. They represent the third group of Asian latecomers. Like NIEs, they also achieved very high growth rates, and some thought that for similar reasons (i.e., similar policies and “model”). Malaysia had achieved lower-middle income status in 1969, the same year as the Republic of Korea. Thailand did it in 1976, and Indonesia in 1986. Moreover, by the late 1980s and early 1990s, Indonesia had managed to diversify its economy and the share of manufactures in total exports had surpassed that of gas and oil. Malaysia, the world's number one exporter of palm oil, rubber and tin, became the world's leading exporter of computer chips and the third-largest manufacturer of semiconductor devices. And Thailand's growth was so rapid during the 1980s that its physical infrastructure could not cope with it and became saturated. This performance is remarkable, especially in the cases of Indonesia and Thailand because in 1961 both were very poor, with an income per capita of about \$100. Malaysia at \$368, was substantially richer. Their achievements became so well documented that these three countries became part of the World Bank's (1993) *The East Asian Miracle Report* and many economists became convinced that they were following the Japanese–Korean development model. As in the case of the NIEs, the World Bank (1993) attributed their success to “getting the prices right,” macroeconomic stability, export orientation, and the use of functional interventions or horizontal policies in the form of public goods such as infrastructure, education, and public health. Industrial policies were deemed incoherent and unsuccessful.

Our contention is that part of the World Bank's reasoning is correct. This is that stability and export orientation, combined with a basic set of skills, were certainly important for their success. However, another 25 years of analysis and data provide us with a better view of these three economies. All three indeed progressed since the mid-1960s until 1996. Yet, their achievements cannot be compared with those of Hong Kong, China; Japan; the Republic of Korea; Singapore; and Taipei, China.

¹ Hsiao (1994) provides a detailed analysis of the three sectors and the political economy underlying their role in the economy. The involvement of the state and party enterprises in the economy of the island is unique: petroleum, electric power, steel, gas, railways, shipbuilding, postal and telecommunications, tobacco and spirits, and banking and finance. It effectively created a “party-state private capital” bloc free from bureaucratic supervision.

² See Scitovsky (1985) for a comparison of the Republic of Korea and Taipei, China.

While Indonesia, Malaysia, and Thailand also diversified their economies significantly, they are much weaker in terms of technological and industrial upgrading. Their progression into upper-middle income was much slower.

In this context, three differences set the two groups of countries apart. First, the governments in the more advanced group radically reformed and restructured agriculture after WWII. This opened the window for a fast and deep process of structural transformation, i.e., diversification and upgrading of the economy. The Southeast Asian governments, however, did not redistribute and reorganize agriculture to the same extent, with the consequence that still today about 30% of all workers are still employed in this sector. Their agricultural extension and rural credit programs amounted to a small fraction of the redistribution programs undertaken by Japan; the Republic of Korea; and Taipei, China.

Second, it is true that the period of high growth of the Southeast Asian countries, the 1970s, and especially the 1980s and early 1990s, is largely associated with the development of the manufacturing sector. This was a significant source of growth and these countries registered significant diversification and upgrading. This is where industrial policies probably played a significantly positive role. The fact that these three economies went into manufacturing ‘big time’ could give the impression that they followed the model of the advanced Asian economies, and this is what a regression would pick up, i.e., a significant correlation between the growth of manufactures and the growth of gross domestic product (see, for example, the World Bank’s [1993] work in this area). The difference is that while the first group of countries created domestic companies with manufacturing and technological capabilities, the Southeast Asian countries failed to generate large indigenous manufacturing companies. Whatever manufacturing these countries generated was associated with (mostly) Japanese foreign direct investment (FDI). Indeed, these economies became overwhelmingly dependent on Japan and Japanese commercial R&D, especially after 1985, when Japan became the first foreign investor in these economies. Moreover, much manufacturing activity was concentrated on the electronics cluster and this was really a significant step in the transformation of these economies, agrarian and natural-resource based. However, much of it was assembly and processing operations within quite advanced manufacturing global value chains, something masked by the aggregate statistics and statistical work.³ While the Republic of Korea and Taipei, China manufactured and exported automobiles, ships, engine components, computers, machine tools, in the late 1980s, the Southeast Asian economies’ export basket complexity was significantly lower, and it is still today. Thailand, for example, exported canned food, jewelry, cement, textiles, maize, hardwood, lumber, paper and paper products. Thailand made it into the electronics cluster during the 1990s and even though it became a top exporter of disk drives, its export basket never reached a level of sophistication similar to those of its northern neighbors. Malaysia went into electronics in the 1970s. It fared better than Thailand, but one has to also understand that in the late 1980s, half of Malaysia’s manufactured exports were Japanese electrical appliances and parts, shipped either directly to third party markets or back to Japan. The remaining exports included food and beverages, clothing and footwear, wood and rubber products, and petroleum and chemicals. Indonesia has also made efforts to diversify out of oil and natural gas into manufactures and government policies have stressed incentives to produce manufactured goods for export. But again, Indonesia is still way down in the export complexity ranking. And moreover, with the exception of Malaysia, the share of employment in manufacturing was much lower than in the advanced countries (Felipe et al. 2018). As we documented in Table 5 of Felipe (2018), Malaysia ranks 38th, Thailand 59th, and Indonesia 76th out

³ This can be appreciated by comparing what these three economies exported with revealed comparative advantage in 1970 and in 1995. This can be done by accessing the product spaces of these countries in <http://atlas.cid.harvard.edu/>; and <http://atlas.media.mit.edu/en/>.

of 124 economies, in the complexity ranking. This was much lower than the Republic of Korea and Singapore.

Moreover, these economies did not (and still do not) have the People's Republic of China's (PRC) muscle to force foreign companies to transfer technology. Under these circumstances, Southeast Asian economies remain technologically dependent on multinationals and large segments of manufacturing operations continue to be based largely on assembly. While, as noted earlier, in 1978 Japanese manufacturers operating in the Republic of Korea estimated that Korean companies would catch up with Japan within 5 years, or were already at a comparable level, in many manufacturing sectors; Japanese manufacturers operating in Indonesia, Malaysia, and Thailand, estimated that it would take over 10 years for domestic companies to catch up with Japan, also in many manufacturing branches (Hayashi 1990, Table 2, pp.30–31). Once again, these economies did better than most other developing economies across the world in terms of growth and economic transformation between the mid-1960s and the mid-1990s. But their record does not match that of the northeast Asian economies.

And third, we mentioned above that these three countries, and especially Malaysia, implemented industrial policies that helped them diversify and upgrade their economies, and to achieve high growth rates. Nonetheless, their industrial policy models were not as effective as those of Japan; the Republic of Korea; Singapore; and Taipei, China. The reason is that the former were much more forceful in applying the reciprocity principle of providing subsidies in exchange for performance standards, often in the form of export targets. This system of reciprocity disciplined both firms and the government itself. Interventions in the first group were more effective because their bureaucracies were of higher quality. Their suboptimal performance became utterly clear after the 1997 Asian Financial Crisis, when it turned out to be obvious that their capacity to recover from the crisis was not the same as that of the Republic of Korea (e.g., they were much less diversified economies). In particular, the financial systems of the successful Asian economies were kept under close supervision, and capital controls were in effect until an advanced stage of development. The finance sector supported state policy development objectives (e.g., development of manufacturing and the acquisition of skills). This was done by keeping interests on bank deposits below market rates, which helped pay for the subsidies to agriculture and industry. By contrast, Southeast Asian countries (which also had high levels of savings in their banking systems) directed their investments to subsidize companies that were not focused on manufacturing, or that were on manufacturing but for the protected domestic market. And moreover, they liberalized their financial system probably too early.

Virtually all interventions and industrial policy instruments implemented by the successful East Asian economies have been also implemented by other countries but with much less success. The difference lies in the “constant attentiveness to the problems and opportunities of particular industries, within the framework of a long term perspective of the economy's overall evolution, and a ‘hard’ state which is strong not only to have significant effects on the economy, but also to control the effects, which is more demanding” (Tan 1999c, p.202). More specifically, the difference lies in the implementation and application of the policy instruments (Tan 1999c 2002, pp.202–203): (i) mere protection was not sufficient to generate rapid growth. That is why protection was coupled with competition; (ii) interventions were selective and selection was based on future competitiveness. This is unlike what happened in India, for example, where the assumption was that trade controls plus unselective support for all domestic-market-oriented industrial investment, was sufficient to promote industrialization; (iii) interventions were coherent and, as a consequence, they had a cumulative impact. This was because Asian economies had put in place the organizational requirements needed for the interventions to succeed, in particular, a credit-based financial system and a centralized decision-making structure that linked key players (e.g., planning agency, Ministry of Finance); and (iv) willingness and ability of the state

to discipline capital. Incentives were not giveaways but were granted in exchange for meeting specific performance targets, often with respect to exports, but not only (e.g., output, product quality, investment).

The result is that evaluating the degree of success of Southeast Asia's development is tricky. Yes, indeed these countries have obviously progressed significantly with respect to where they were in 1965, and certainly have done better than most other developing nations around the world, even better than most other Asian economies. On a closer scrutiny, however, these countries could have done much better (especially Malaysia, which started much richer) and, as a result, they still have a long way to go; and certainly their performance was much worse than that of the successful Asian economies because the model they followed was very different.

II. UPGRADING, CAPABILITIES, AND THE ROLE OF GLOBAL VALUE CHAINS

At the microeconomic level, the counterpart of the development model discussed in the previous section is the 'latecomer firm,' studied by Hobday (1995a) among others. East Asian firms did not have to reinvent the wheel. Instead, they had to learn technologies that already existed. An important aspect of the development of the East Asian economies as latecomers relates to the assimilation of advanced technologies and the accumulation of capabilities that allowed firms in these economies to shift from simple to more sophisticated production, and in many cases to become large, successful global multinationals.

While exporting, particularly manufactures, can play an important role at the macro level by easing the balance-of-payments constraint and by raising the supply potential of an economy, it is also of crucial importance at the micro level. At this level, exporting is associated with increased rates of technological learning as firms adjust to the different demands of trade partners, and as they develop producer-user relationships. Hobday (1995a) describes how foreign buyers in the electronics industry in East Asia provided producers with information on product designs and advice on quality and cost accounting procedures. In many cases foreign buyers visited factories, supervising the start-up of new operations and in some cases also buying some of the raw materials, capital goods, and components required for production. In the context of the Republic of Korea, Rhee, Ross-Larson, and Pursell (1984) describe some of the assistance offered by foreign buyers, which included providing local companies with blueprints and specifications; information on competing goods; production technologies; and feedback on design, quality, and performance. In addition to learning and the transfer of technology, exporting can also raise efficiency due to the competition for exports in world markets. While domestic markets were often protected from foreign competition through tariffs and other forms of protection, which provided opportunities and incentives for rent-seeking behavior by domestic firms, exposure on world markets forced firms to concentrate their efforts on seeking competitiveness and technological development. Competing on world markets further became a means for governments to test and benchmark manufacturing firms, allowing them to examine whether their efforts in developing a manufacturing base were successful.

A second advantage of exporting is that it provides firms with a much larger potential market. While entry into these markets was not without problems due to both the technological and geographical distance from the major markets, successful firms in the East Asian economies were able to take advantage of their large stocks of unskilled labor and their cost advantage to move into these markets and ultimately to benefit from economies of scale.

In the context of the successful East Asian economies, exporting played an additional signaling role for governments. Studwell (2013) argues that East Asian governments played a crucial role in the development of their economies by encouraging manufacturing firms to export goods, thereby subjecting them to foreign competition. This was often achieved by offering incentives to firms that engaged in exporting, such as direct subsidies and subsidized credit to exporting firms, privileges with regard to importing raw materials, as well as additional tax benefits and permission to seek financing from abroad. In more extreme cases firms were harassed and forced into entering export markets. Studwell argues further that differences in the extent to which these economies' governments were able to embed domestic firms in international markets sets these countries apart from other countries in Asia that did not enjoy such rapid development.

Overall, exporting provided a mechanism and a signal through which governments could learn whether their efforts and interventions in developing manufacturing sectors were fruitful or not, by allowing them to observe whether domestic firms can compete in the global marketplace. For this reason exporters were required to report on their exporting activities on a regular basis. One aspect of government policy in the East Asian economies emphasized by Studwell was their willingness to cast away firms not capable of competing in world markets, creating a policy of weeding out losers rather than picking winners. This was achieved through bankruptcy, forced mergers, the withdrawal of capital and withholding production licenses. This process was most clear with the Republic of Korea's *chaebols*, as many of those that existed in the 1960s disappeared by the mid-1970s, and then again in the 1980s. In a majority of these cases forced mergers and bankruptcy led to the death of the firm. A similar development also emerged during the Asian Financial Crisis of 1997–1998, with a number of companies including Daewoo, Hanbo, Halla, and Sambi, also culled through a process of state negotiation.

Exporting also played an important role in this process through the development of user–producer relationships, as did the importation of advanced technology through a number of channels. All the above amounts to a key point, namely that what East Asian governments did was to promote the development of the capitalist firm, the same the Western countries had done earlier, since the 16th century. Asian developmental governments nurtured competitive capitalist firms by leveraging the technologies on which they got their start, by protecting them initially from intense foreign competition and by exposing them to international competition as fast as possible.

Latecomer firms face a number of competitive disadvantages when compared with established firms and therefore a number of disadvantages when entering export markets (Hobday 1995a). An initial disadvantage relates to technology, with latecomer firms dislocated from the main sources of technology and R&D that are located in the developed world, with the local and regional industrial and technological infrastructure being poorly developed. A further disadvantage relates to the fact that latecomer firms are also dislocated from the main international markets that they intend to serve, which are again located in developed countries. Successful latecomer firms rose above these disadvantages by overcoming market barriers to entry and by developing producer–user linkages that enabled them to stimulate technological progress. Initially, this tended to be achieved through taking advantage of the substantial cost advantages that these firms possessed.

Hobday (1995a) discussed the process of industrial development, emphasizing that it involves deepening technological upgrading of products and processes, entry into more complex and demanding new activities, increasing local content, and mastering more complex tasks within industries. He goes on to argue that East Asian firms in the electronics sector followed a series of phases that allowed them to make these changes. In the initial start-up phase of an industry multinational corporations (MNCs) were often involved looking to take advantage of cheap labor. These firms often invested in wholly owned

subsidiaries or sought out contract manufacturers for simple components and products. In other cases, particularly for Japanese firms, joint ventures were used that provided benefits for domestic firms through technology transfer and for Japanese firms through low-cost labor, as well as developing long-term partnerships. During this start-up phase foreign companies often acted as examples for many local firms, helping to initiate initial ventures and the start-up of export industries. They also began training local technicians, transferring valuable foreign technical and managerial skills.

The next stage of development saw the take-off of relatively simple manufactured goods and components. The entry route into these activities often involved beginning as an assembler of simple products, purchasing the necessary inputs from the growing number of specialist suppliers worldwide. Once again developed country MNCs were an important channel in developing these activities, despite the fact that some local firms were able to master the production technology and reverse engineer products through limited in-house R&D.

According to Hobday's description of the electronics industry, the third phase involved the take-off of more sophisticated manufactured goods, with firms in NIEs consolidating their expertise in manufacturing and beginning to be involved in the design and development of low-end manufacturing goods. While foreign firms often remained an important component of this development, this stage also witnessed a movement away from reliance on foreign firms and toward the emergence of successful local firms. Foreign firms engaged in the NIEs also changed their behavior, producing products that were closer to the initial phase of the product life cycle.

In the final stage, latecomer firms approached the technology frontier and moved toward high-tech production. This step involves a movement away from traditional forms of technology transfer, such as licensing. The process also involves increased in-house R&D spending, the acquisition of overseas high-technology firms, and the development of technology partnerships with leading foreign companies.

Asian latecomer firms used various forms of foreign technology channels in the form of stages to learn skills and overcome barriers to entry in export markets. These different stages required the learning of foreign technology, a process that usually involved engaging foreign firms through some kind of relationship. FDI and joint ventures were often an important starting point allowing for the development of new export lines, which further led to subcontracting and Original Equipment Manufacturing (OEM), whereby a latecomer firm produces a finished product to the precise specification of a foreign MNC, and then it is marketed under the latter's own brand name using its own distribution channels. Licensing arrangements, in which latecomer firms pay for the right to manufacture products usually for the local market and foreign firms transfer the relevant technology also played an important role. Different from some other forms of foreign engagement, licensing requires more technical capacity and can also be a source of rapid learning. At later stages in the development of latecomer firms, Own Design and Manufacture (ODM) became an important tool. Here the latecomer firm carries out some or all of the product design and process tasks needed to produce a good according to a general design layout supplied by the foreign buyer, with the goods again being sold under the brand name of the foreign firm. This process requires the latecomer firm to possess more technological knowledge and design skills than OEM and so was a more important aspect at later stages in the development of latecomer firms, allowing capable firms to capture more of the value added of the product while still avoiding the risk of launching own-brand products. OEM and ODM allowed for the assimilation of technology and for the exploitation of economies of scale. In the latter stage, latecomer firms themselves purchased high-tech firms in order to acquire skilled engineers and equipment, while other strategic partnerships allowed latecomers to enhance their technological capabilities by developing a new product or process jointly with a foreign company.

A. Capabilities and Economic Development

Capabilities are a determinant of a country's speed of structural transformation. In the quest to become a modern industrial and service economy, the relevant aspect (of knowledge) for policy purposes in the context of the production of a good/service and structural transformation is the concept of capability. The products/services that a firm produces are a reflection of the set of capabilities that it possesses. Capabilities encompass all the tacit knowledge necessary to produce a good or deliver a service, specifically: (i) human abilities; (ii) technology to ensure sustained growth. Technology refers to knowledge/capabilities on raw materials, machines and equipment, engineers and skilled workers, technology management, and markets for technology; and (iii) firm level "know-how," as well as working and organizational practices held collectively by the group of individuals comprising the firm.⁴ These practices are particularly important for developing countries, as often they are in short supply, in most new sectors. The important point is that they are more relevant than low wages for competitiveness, and this is where successful and less successful policy strategies and experiences across countries differ. This know-how also encompasses the communication, organization, and coordination abilities that provide the capacity to form, manage, and operate activities that involve large numbers of people.

While these capabilities are too varied to be enumerated, let alone measured, they are presumed to be embedded in people and organizational structures. Capabilities are product specific, not just a set of amorphous factor inputs and authors such as Lall (1992, 2000) argue that the key to upgrading (i.e., the transition across sectors) lies in acquiring and mastering capabilities. This is not an effortless process. It is important to note that not all capabilities are equally valued and, moreover, their value changes over time. The most valued capabilities possess three characteristics: (a) they contribute to creating high value added; (b) they are rare; and (c) they are difficult to imitate and, therefore, not easily transferable.

Why capabilities? What role do they play? The competitiveness of a productive sector ultimately depends on its firms' ability to accumulate technological capabilities in a changing environment. In the case of high-tech industries (e.g., aerospace), long-run competitiveness depends on the capacity of the sector's innovation system to provide cost-cutting and productivity-increasing innovations and products with technological features, superior to those of its competitors (Vertesy and Szirmai 2010). While firms learn how to respond to demand (and hence how to produce), their capabilities coevolve with those of the scientific and technological frontier, as well as with the institutions that regulate access to, and appropriation of, knowledge. Moreover, the aim of any competitive industry is to continue increasing its innovative performance. This requires constantly upgrading production and innovation systems; which itself requires new combinations of resources and new institutions. The experience of developing countries is that this is a very costly, uncertain, and risky process, which may even fail. Upgrading incurs two types of costs: learning to narrow the distance to the frontier, and transition from one frontier to another one. These costs have to be borne by the entire innovation and productive system, and only if the industry is capable of selling competitive products/services will these costs be recovered.

Sutton (2005) has argued that capabilities manifest themselves as a quality-productivity combination reflected in the product/service itself. A given capability is embodied in the tacit knowledge of the individuals who comprise the firm's workforce. As such, it is not codified and hence cannot be easily transferred through either blueprints or instruction manuals. Moreover, the quality-productivity combinations are not a continuum from zero; rather, there is a narrow range of acceptable combinations

⁴ This idea is in line with the notions of tangible and intangible capital, and social capability (Ohkawa and Rosovsky 1973, Ohkawa and Kohama 1989, Abramovitz 1986).

that start at a “minimum threshold” such that, if the latter is not achieved, the firm would be excluded from the market. All this means that technology needs to be marshaled and managed and this does not happen automatically. This is especially relevant for developing countries, as most of them face a special problem in trying to manage sophisticated technological systems and capture major benefits of innovation.

Sutton (2005) has also argued that some economic activities are more lucrative than others, and that countries that specialize in such activities enjoy a higher level of real wages. These higher real wages are the result of the gradual build-up of firms’ capabilities. According to the capabilities approach, comparative advantage depends more on a nation’s ability to understand, master, and use technologies that help build capabilities than on factor endowments. This literature in effect implies that development is slow for countries with productive structures geared toward low-productivity and low-wage activities, producing mostly low-valued commodities or agricultural products. Development is fast, on the other hand, in countries with productive structures geared toward high-productivity and high-wage activities.

In the Asian context, Hobday (1995a), Lall (1996), Kim (1997) or Lee (2012), among others, have highlighted the importance of the development of local capabilities as the most important ingredient of the East Asia miracle. This is not to deny the importance of macroeconomic stabilization or trade liberalization. However, sustained growth for several decades can only be achieved by strengthening the capabilities of the country’s firms. All successful Asian economies share this feature. The first country to have done so was Japan.

In this same vein, Hidalgo and Hausmann (2009) explain economic development as a process of learning how to produce (and export) more *complex* products. What is this? Using network theory methods, they show that the development path of a country is determined by its capacity to accumulate the capabilities that are required to produce a more *diversified* and *sophisticated* basket of goods. They show that progress tends to occur in small steps, that is, new products in which countries gain revealed comparative advantage are those that require similar capabilities to those already mastered and embedded in the products exported with comparative advantage.

To represent this graphically, they have developed a visual tool called the “product space” (Hidalgo et al. 2007).⁵ These authors show that products are linked based on the similarity of their required capabilities—for example, the link between shirts and pants is stronger than that between shirts and iPods. The rationale is that if two goods need similar capabilities, a country should show a high probability of exporting both with comparative advantage. Thus, the barriers preventing entry into new products are less binding for products that use similar capabilities. They show that some products are close by to others (because they require similar capabilities), while some others are isolated. In the first case (close by products), it is easy to jump from one product into another one (and therefore export the new one with comparative advantage), while in the second case, it is difficult. Products in the first group (core products) are chemicals, machinery, and metal products. Products in the second group (i.e., isolated) are petroleum, raw materials, tropical agriculture, animal products, cereals, labor-intensive goods, and capital-intensive goods (excluding metal products). Core products also tend to be more sophisticated than those isolated.

⁵ See <http://atlas.cid.harvard.edu/>. It is worth seeing these graphs and understanding the useful amount of information that they provide about countries.

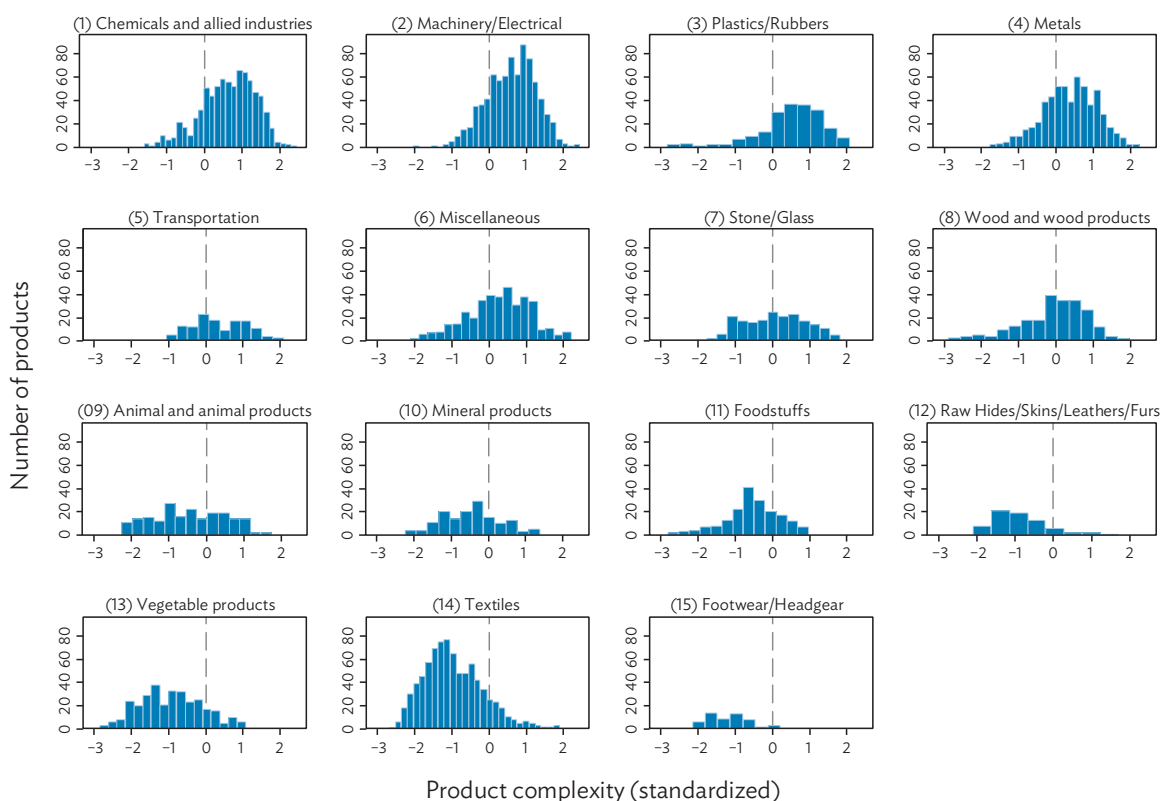
This heterogeneity has important implications for structural change. If a country exports the first group of goods, then expanding to other products is much easier because the set of already acquired capabilities can be easily redeployed for the production of other nearby products. This is likely to be the case of different types of machinery or of electronic goods. However, if a country specializes in the second type of products, this redeployment is more challenging as no other set of products requires similar capabilities. This is the case of natural resources such as oil.

One implication of this analysis is that the lack of connectedness between the products in the periphery (low-productivity products) and those in the core (high-productivity products) explains the difficulty of poor countries to converge to the income level of the rich countries. Hidalgo and Hausmann (2009) argue that countries change their export mix by jumping to products that are nearby, in the sense that these other products use similar capabilities to those used by the products in which they excel (i.e., those products in which they have revealed comparative advantage). Countries change their export mix by moving to products “nearby.” This is based on the idea that each product requires a specific set of capabilities, and if a country displays revealed comparative advantage in that product, then it follows that the country has accumulated the product-specific capabilities.

A country's ability to foray into new products depends on whether the set of existing capabilities can be easily redeployed for the production and export of new products. This idea implies that it is probably easier for a country that exports T-shirts, for example, to add shorts rather than smart phones to its export basket. On the other hand, it is very likely that a country that exports basic cell phones has the capabilities to add smart phones to its export basket. The implication is that it is easier to start producing a “nearby” product (in terms of required capabilities to export it successfully) than a product that is “far away” and one that requires capabilities that the country probably does not possess.

The distribution of products that a country exports with revealed comparative advantage therefore, signals its capacity to expand to more sophisticated products, thereby laying the groundwork for future growth. Countries that export products that have few linkages with other products (i.e., countries that have accumulated capabilities that are hard to redeploy) or countries that have not accumulated sufficient capabilities to jump to other products cannot generate sustained long-term growth.

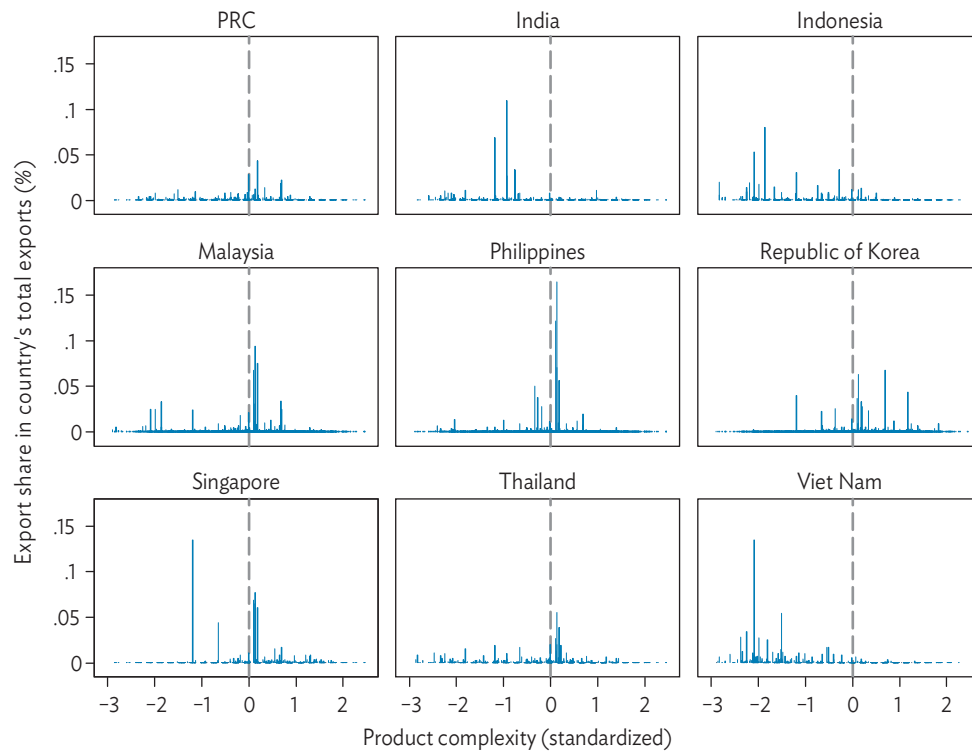
In the product space, the more sophisticated products such as metals, machinery, and chemicals are located in the densely connected core, whereas the less sophisticated products, such as agricultural and forest products, raw materials, and petroleum, can be found in the less connected periphery. In the complexity analysis, chemicals and allied industries, machinery/electrical, plastics/rubbers, metal products, and transportation are the most complex products. Figure 1 shows the distributions by aggregated harmonized system categories. The figure shows that the complexity of the majority of the products in these groups is above the average (i.e., to the right of the vertical bar). On the other hand, the least complex product groups are footwear/headgear, textiles, vegetable products, raw hides, skins, leathers and furs, foodstuffs, and animal and animal products. These are the same product groups found in the periphery of the product space. The complexity level of the majority of the products in these groups is below the average complexity (i.e., to the left of the vertical bar). Figure 2 shows the distribution of export complexity of a group of Asian countries. As can be seen, countries like India, Indonesia or Viet Nam export significant shares of products whose complexity is below (to the left) of the mean.

Figure 1: Distribution of Product Complexity by Harmonized System Groups

Note: Standardized product complexity (over all 5,107 products) with mean zero and standard deviation one.
Source: Author's estimates.

Therefore, under the capabilities approach, economic development is not only a process of continuously improving upon the production of the same set of goods, but more importantly, a path-dependent process that requires acquiring more complex sets of capabilities to move toward new activities associated with higher levels of productivity; and of finding paths that create incentives for those capabilities to be accumulated and used. The implication is that a growth miracle sustained for several decades must involve the continual introduction of new goods, not merely continual learning on a fixed set of goods.

Finally, when we regard catching-up growth as a capability-building process, we are considering the capacity of private corporations. The ability of latecomer economies to promote vibrant private companies is the most important and fundamental criterion that determines the success or failure of economic development (Lee 2012). If the risk for private capital is deemed too high, the process may be initially led by state-owned companies; but these should be made private companies as soon as possible (e.g., through public offerings). In an era of competitive markets, private companies cannot sustain momentum with strategies based on cheap products: they must move up to produce and sell products/services of higher value added (which will be reflected in higher wages) through continual upgrading. Firms in the Republic of Korea and Taipei, China are probably the best examples in Asia of this process (Lee and Mathews 2012).

Figure 2: Export Shares in Country's Total Exports across Product Complexity

Source: Felipe, Jesus, Utsav Kumar, Arnelyn Abdon, and Marife Bacate. 2012. "Product Complexity and Economic Development." *Structural Change and Economic Dynamics* 23 (1): 36–68.

B. Global Value Chains

Much of Asia's progress and upgrading as described above, the acquisition of capabilities and learning in general, took place in the context of global value chains (GVCs). These have played a fundamental role as an upgrading mechanism and models of accumulation of capabilities. GVC analysis is a way of looking at interfirm, buyer–supplier relations that cross international boundaries and allow developing countries to participate in producing goods and services that are then supplied to the more advanced countries.

Although GVCs have operated for a long time, the phenomenon took up on a global scale during the 1980s, when Western firms started moving work to other countries with significantly lower labor costs. This took two forms, "offshoring" (opening a plant abroad and moving jobs) and "outsourcing" (using subcontractors).

What do developing nations get out of GVCs? In theory, GVCs enable firms in developing nations shorten the physical distance with developed nations and engage in structural transformation by accessing advanced technologies that otherwise would be far from their reach, as well as international export markets for manufactured goods; and by increasing domestic economies of scale in production (Felipe 2010, Box 15.4). The Gerschenkronian tradition emphasizes the possibility of accelerated growth and catch up by follower economies by accessing technologies that are already in the public domain, without having to bear the cost and risks of developing this technology (Gerschenkron 1962). All

examples of accelerated growth in manufacturing in developing countries fit Gerschenkron's pattern. In recent decades, the best examples of successful catch-up by latecomers are provided by the East Asian economies, especially in the semiconductors and electronics clusters, as well as in some high-tech industries (Lee and Mathews 2012). Their progression in the development ladder has been explained in terms of accumulation of capabilities that have allowed firms to move progressively toward more stages of production (first *implement*, then *assimilate*, and finally *improve*), most often by taking advantage of the opportunities offered by GVCs (Hobday 1995a, 1995b).

Indeed, it is well known that the success of firms in economies like the Republic of Korea or Taipei, China, and more recently the PRC, is largely based on their capacity to hook up to GVCs and climb the technological ladder (Hobday 1995b). Felipe (2010, Box 15.5) documents the efforts made by Chinese companies in the electronics and information technology sectors to advance technologically by being part of large GVCs, and how they have moved up from original equipment manufacturing (OEM) to design (ODM) and brand (OBM) manufacturing. Indian firms in the textile and garments sectors have also succeeded as part of GVCs (Felipe 2010, Box 15.6). Some of these firms are large and enjoy the benefits of economies of scale, but today's globalization has created tremendous upgrading opportunities for highly specialized, nimble firms, regardless of their scale. This is a breaking difference with the past.

A key question is: what are the implications of GVCs for diversification, upgrading, and ultimately for development? Supply chains are evolving rapidly into new areas and new countries, underlining the spread of globalization. It is therefore unclear who benefits and who loses from it. The idea underlying the GVC model of development is that countries have to acquire a niche in the global economy as part of a GVC. According to this view, countries specialize in the different phases of production: low-skilled labor-intensive, high-skilled labor-intensive, capital-intensive, technology, marketing, and design, etc. Each of these steps yields a different contribution to the final product. Countries interested in belonging to a GVC should be able to attract those phases of the chain where their companies could succeed. For the developing countries, these tend to be the low-skilled labor-intensive phases. Often, developing countries find themselves competing for these phases by offering the multinational companies (the agents of development in this model) that own the chain, tax breaks and a variety of other perks. The bottom line is that, "development strategies should focus on creating a local institutional and infrastructural environment conducive to 'technological upgrading and integrated industrial production', e.g., increasing the level of labour's skills, providing adequate transportation and communications infrastructure, developing appropriate supporting industries, finding the right balance of government regulations, and so on" (Robinson 2002, p.1053). But it is important to stress that it matters less the specific segment of the industry in which firms (of a country) produce than how successful they are. Success will be determined by factors such as price, the ability to meet international quality standards, capacity to increase production volumes, and increasing market share.

It is difficult to estimate accurately the value addition that takes place in developing countries. Recent empirical work by Oikawa (2011) on the international distribution of value added using input-output tables for six industries in 10 economies (nine Asian) shows they retained significant shares of value added, although the distribution of gains among the economies and sectors is uneven. Using the information provided in the input-output tables allows proper accounting of all the indirect effects. Think, for example, of an iPad. If the iPad's hard drive is manufactured in the PRC (as it probably is, given that such components are likely to be made near the assembly point for logistics reasons), value added would be created not only in the countries that supply the components (as gross profit) but also in the PRC in the form of wages and other intermediate inputs such as metal parts, wires, electric power, and various inputs that are locally produced. Unless one uses the input-output tables, all these seem to be subsumed into the cost of inputs, and assigned to Korean and Japanese firms, for example.

Oikawa's results show that, in 2000, the PRC retained about 85% of the total value added generated by its local automobile industry; while almost 9% was retained by the overseas suppliers.⁶ His analysis also indicates that economies where industrialization has depended on MNCs do not capture much of the value added. These results have important lessons for countries following export-led, FDI-led strategies for their industrial development. Local firms play a key role in capturing the gains of integration through GVCs, and the rise of these firms' capabilities matters for economic development. Examples are the Republic of Korea and Taipei, China, where FDI was assigned a secondary role in obtaining advanced technologies. In contrast, Malaysia, Singapore, Thailand, and Viet Nam have largely depended on MNCs. Their dominance of the high-tech sectors of these Southeast Asia's economies is explained by the absence of competitive local firms. Oikawa's results support the view that different industrial strategies have resulted in different economic results.

Successfully catching up with and developing an advanced manufacturing base is not easy. How can countries use GVCs to develop a high-tech manufacturing base? For low-income countries, the initial niche ought to be the low-skilled, labor-intensive phases in traditional industries such as textiles and garments, toys, or perhaps the assembly of simple electronic products (See Box 1 on Chinese exports of electrical and optical equipment). To upgrade from such industries, opportunities have to be seized and learning has to be fast. This has to be supported by policies that facilitate learning and assimilation, education, and the development of a domestic manufacturing base.

Box 1: Chinese Exports of Electrical and Optical Equipment

Using 1995 and 2011 input-output tables, Ye, Meng, and Wei (2015) have studied Chinese exports of electrical and optical equipment, in particular the roles played by different countries and industries in global value chains. Their main findings are as follows: (i) in both 1995 and 2011, the People's Republic of China's (PRC) electrical and optical equipment industry was the largest beneficiary in terms of value-added gain in this value chain; (ii) many other Chinese domestic industries also benefited by participating in the prefabrication stages of this value chain. This follows from the fact that most of intermediate inputs needed to produce electrical and optical equipment in the PRC are presumed to come from the Chinese domestic market; (iii) the electrical and optical equipment industries in other countries located in the upstream portion of this value chain also get a relatively large portion of the value-added gain; (iv) after-service industries such as wholesale and inland transportation in the United States (US), Japan, and the European Union (EU) are the main beneficiaries in the postfabrication stage of this value chain. This is easy to understand since Chinese electrical and optical equipment exported to the US, Japan, and the EU need to be delivered to their domestic consumers, mainly through the use of their domestic wholesale and transportation service industries; and (v) value-added rate (value added gained by producing one unit US dollar output) for most participants (industries in different countries) in this value chain decreased between 1995 and 2011. In other words, producing one unit of output requires more intermediate inputs, including intermediate imports for most participants in this value chain.

Source: Author based on Ye, Ming, Bo Meng, and Shang-Jin Wei. 2015. "Measuring Smile Curves in Global Value Chains." IDE Discussion Paper No. 530. Japan: IDE-JETRO.

⁶ Sectors with over 50% of value added retained by each country: PRC: automobiles, household electrical equipment, semiconductors, other electronics products, TVs and audios, computing equipment; Indonesia: other electronic products, semiconductors, automobiles, TVs and audios, computing equipment, household electrical equipment; Japan: automobiles, semiconductors, other electronic products, household electrical equipment, TVs and audios, computing equipment; Republic of Korea: automobiles, household electrical equipment, other electronic products, TVs and audios, semiconductors, computing equipment; Malaysia: automobiles, household electrical equipment; Taipei, China: automobiles, household electrical equipment, other electronics products, semiconductors; Philippines: automobiles, household electrical equipment; Singapore: automobiles, other electronics products, household electrical equipment; Thailand: computing equipment, other electronics products, automobiles.

After entering a GVC (at a low-tech stage), the goal should be to move up and, ultimately, to be able to innovate. To do this, countries need to create a local institutional and infrastructural environment conducive to technological upgrading and to integrated industrial production. For example, countries need to support the accumulation of labor skills, provide adequate transport and communications infrastructure, develop appropriate supporting industries, find the right balance of government regulations, and so on. This requires both continued upgrading within the same industry and successive entries into other industries (Lee and Mathews 2012).

GVCs today are very different from those in the 1980s and 1990s, when they probably searched primarily for low-wage locations. Today, wage costs are not the primary driver of firms' strategies in many GVCs. Their requirements are much more complex due to a shift from mass production to mass customization. In this environment, firms search for locations that allow them to meet demand volatility (to handle large swings in production demand), to respond very quickly to their customers ("deliver the products yesterday") and in an unpredictable environment, and to have flexible production methods based on multiskilled workers and flexible equipment.

The rise of firms' capabilities in GVCs is determined by the interaction between two sets of strategies: (i) learning strategies of latecomer firms in developing economies, and (ii) outsourcing strategies of lead firms from developed economies (Kawakami and Sturgeon 2011). In-depth research summarized by Sturgeon and Linden (2011) indicates that moving up in GVCs is possible, but very costly. Some supply chains allow learning (e.g., a captive supply relationship with the local affiliate of an MNC). However, if information, knowledge, and value capture are geographically partitioned and tacit knowledge matters a lot, learning will not occur. Also, suppliers in latecomer economies operate within constraints. After all, knowledge lies with the managers of lead firms elsewhere. Likewise, the oligopolistic market power in some industries matters (such as for cellular phone firms such as Nokia, Motorola, and Samsung), as it allows powerful firms to negotiate on their own terms. Standards also play an important role in determining the structure and trajectory of GVCs. Finally, GVC strategies vary according to the nationality of the lead firms.

The common factor among all successful firms that hooked onto this type of GVCs is that they made tremendous efforts at mastering capabilities by progressive and slow learning. If this is not consciously pursued, there is a risk of being stuck at the low end of the chain (i.e., the so-called "low-value" products) and being forced to compete exclusively on price. This strategy will not allow upgrading of the production structure and hence wages will not increase. This is unfortunately the experience of many firms across the world, including firms in Asia. For example, Malaysia's well-documented success in electronics since the early 1970s seems to have reached a plateau (Henderson and Phillips 2007, Samel 2012). These are firms that, for many reasons, find it extremely difficult to accumulate capabilities and move up. In a dynamic setting, being successful refers, as is the premise of this paper, to increasing wages rates; diversifying into more complex activities; and increasing technological and organizational capabilities. The experience of the successful companies shows, first, that upgrading is difficult but possible; and second, that while there were cases of stage-skipping, their experience defies the simplistic version of leapfrogging, that is, that these firms jumped to more complex products and skipped previous stages. Taipei, China's Tatung started in the mid-1960s by assembling black and white TVs and moved up to 14-inch color monitors in the early 1990s (Lee and Mathews 2012, Table 6.1). The Republic of Korea's Samsung started over 60 years ago with involvement in light manufacturing industries (e.g., textiles) and then entered consumer electronics, semiconductors, telecommunications and, finally, flat panel displays. In the words of Hobday (1995b, p.1188):

“East Asian latecomers did not leapfrog from one vintage of technology to another. On the contrary, the evidence shows that firms engaged in a painstaking and cumulative process of technological learning: a hard slog rather than a leapfrog. The route to advanced electronics and information technology was through a long difficult learning process, driven by the manufacture of goods for export.”

Therefore, whether integration into a GVC offers realistic prospects for development, or simply perpetuates a hierarchy under which it is very difficult for developing country companies to move up, poses a dilemma and the evidence points in both directions. Bahar, Hausmann, and Hidalgo (2012) show that the technological diffusion of complex, knowledge-intensive products is weak; and Ferrarini's (2013) analysis of GVCs shows that only a few developing countries are truly integrated in GVCs. Ultimately, GVCs lead firms to specialize based on their comparative advantage. This means that if GVCs are a tool for upgrading and ultimately for development, policy makers have to monitor where their countries (firms) are in the chain and induce, facilitate, and support the shift higher up in the global chain. Moreover, each value chain has its own specificities and, therefore, its own challenges and constraints. It is also important to note, as Lee and Mathews (2012) indicate, that successful catch-up requires both continuous upgrading within the same industry and successive entries into other industries. Japan first, and the Republic of Korea, and Taipei, China later, probably offer the best examples of both strategies.

APPENDIX: INDUSTRIAL POLICIES ACROSS ASIA

Table A.1: Japan's Industrial Policies during the 1940s and 1950s

Period	Characteristics
1946–1950	<p>Normalization of the market economy</p> <p>Strengthen the supply side of the economy (1946–1948): Under government control; focused on coal and steel; financing from the Reconstruction Finance Bank; provided price-gap subsidies through multiple exchange rates</p> <p>Private sector development (1946–1947): Dissolution of the big business groups (<i>zaibatsu</i>): some were terminated and others were broken down into smaller companies; competition was promoted by the enactment of the Antimonopoly Law</p> <p>Macroeconomic stabilization (1948): “Dodge Line” reformed the taxation system, reduced subsidies greatly, attained a balanced budget and began a return to market principles. Hyperinflation was controlled</p> <p>Created the Industrial Rationalization Council in 1949, the first formal institution to conduct deliberation councils</p> <p>Foreign Exchange and Foreign Trade Control Law (1949). A single exchange rate of ¥360/\$ was introduced in 1949</p> <p>The Foreign Capital Law (1950)</p> <p>Structural Adjustment (1949–1951): Lift price controls on about 63,000 items. Multiple exchange rates that existed for price-gap subsidies were unified.</p>
1951–1960	<p>Strong Industrial Policy</p> <p>Japan did not give much outright subsidies</p> <p>Key tools included: (i) preferential taxation; (ii) long-term finance (allocation of credit) to supply funds to basic industries through the Japan Development Bank (JDB), set up in 1951 to replace the Reconstruction Finance Corporation, and through the Industrial Bank of Japan; (iii) special depreciation; (iv) import tax exemptions for special machinery; (v) export income-tax deduction; (vi) tariffs and quantitative restrictions; and (viii) regulations on foreign direct investment (FDI) and technology imports to make sure that these helped the country</p> <p>Government targeted priority industries and designated priority enterprises. This process was controlled by the government to some extent but it was not under its direct management. Targeted industries were often provided with subsidies for export, investment, research and development (R&D), utility bills, and were given preferential tax breaks</p> <p>Government used indicative planning and foreign exchange rationing</p> <p>Laws to prevent large firms from abusing their monopsony or oligopolistic power. This led large firms to work with their suppliers and invest in enhancing their capabilities</p> <p>Ministry of International Trade and Industry (MITI) set up in 1951</p> <p>In 1952: The Enterprise Rationalization Promotion Law; The Special Measures Law for the Stabilization of Designated Medium and Smaller Enterprises; The Exports Transaction Law</p> <p>Fiscal Investment and Loan Program (1953) to consolidate the postal system</p>

Sources: Author based on Tan, Kock Wah. 1999a. “Japan.” In *Industrial Policy in East Asia: Lessons for Malaysia*, edited by Jomo Kwame Sundaram and Tan Kock Wah, 41–74. Kuala Lumpur: University of Malaya Press; Kuchiki, Akifumi. 2007. “Industrial Policy in Asia.” IDE Discussion Paper No. 128. Institute of Developing Economies–Japan External Trade Organization (IDE–JETRO); and Chang, Ha-Joon, Antonio Andreoni, and Ming Leong Kuan. 2013. “International Industrial Policy Experiences and the Lessons for the UK.” Future of Manufacturing Project Evidence Paper 4. UK: Foresight/Government Office for Science.

Table A.2: Japan's Industrial and Trade Policies after 1960

Period	Characteristics
1960–1970	<p>Cooperation Government-Business to make enterprises more competitive in the face of liberalization, e.g., establishment of “deliberation councils” for policy making in key industries (Industrial Structure Council in 1964). These councils comprised government officials, industry representatives, journalists, and academics. They helped improve the information flow between government and the private sector</p> <p>Liberalization of trade and foreign exchange announced in 1960</p> <p>Japan joined the Organisation for Economic Co-operation and Development (OECD) in 1964</p> <p>Liberalization of capital accomplished between 1967 and 1973</p> <p>Promotion of heavy and chemical industries</p>
1970s	<p>Industrial policies take a new direction. Principles; (i) Free-trade –government stopped extending assistance (import protection) to sectors that lost competitiveness, e.g., textiles and rubber footwear; (ii) Use of indirect industrial policy measures to encourage competitive firms to excel; (iii) Government to acknowledge and address market imperfections (mobility of capital, labor, information) and external economies</p> <p>Japan started breaking into markets such as automobiles, steel, shipbuilding, electronics, until then the domains of Europe and the United States –Significant increase in quality</p> <p>Measures to restrict imports and promote exports were gradually lifted and protectionist policies ended. Tariffs were reduced</p> <p>Macroeconomic management Keynesian style (i.e., investment to produce savings); and growth understood under a Harrod–Domar lens (i.e., private investment in plant and equipment to create effective demand with a multiplier effect, while also increasing supply capacity)</p>
1980s	<p>Emphasis on knowledge-based industrial policy</p> <p>Shift the focus of the Japanese External Trade Organization (JETRO) from the promotion of Japanese exports to the promotion of foreign imports</p> <p>Set up Visions (e.g., Technopolis), together with other agents</p>
1990s	<p>Japan's lost decade. The crisis triggered important change in Japan's industrial policy agenda</p> <p>Deregulation agenda – Industrial Policy less targeted at the sectoral level and more decentralized to the regional level</p> <p>MITI becomes the Ministry of Economy, Trade and Industry (METI), with a role as advisor and consultant. Industrial policy focused on two areas: (i) small and medium enterprises (SMEs); and (ii) innovation</p>
After 2000	<p>Science and Technology Plan (budget of ¥50 trillion) targeting: life science, information and communication technology (ICT), environment, nanotech materials, robots, fuel cells, digital content, digital consumer electronics</p> <p>“Regional consortium clusters”: networks of regional industries, universities and research centers</p> <p>“Innovation Super-Highway”: to strengthen the linkages between science, technology, and industry</p>

Sources: Author based on Tan, Kock Wah. 1999a. “Japan.” In *Industrial Policy in East Asia: Lessons for Malaysia*, edited by Jomo Kwame Sundaram and Tan Kock Wah, 41–74. Kuala Lumpur: University of Malaya Press; Chang, Ha-Joon, Antonio Andreoni, and Ming Leong Kuan. 2013. “International Industrial Policy Experiences and the Lessons for the UK.” Future of Manufacturing Project Evidence Paper 4. UK: Foresight/Government Office for Science; and Akkemik, K. Ali. 2015. “Recent Industrial Policies in Japan.” In *Economic Planning and Industrial Policy in the Globalizing Economy*, edited by Murat Yülek. Switzerland: Springer International Publishing.

Table A.3: The Republic of Korea's Industrial and Trade Policies since the 1960s

Period	Characteristics
Until 1961	Import substitution, mostly for consumer goods. The priority industries were sugar, fertilizer, spun yarn, cement, and glass
1962–1980	<p>Shift to an export orientation strategy, to be implemented according to the following 5-year plans (up to the mid-1970s, focused on light industry; and thereafter, on capital-intensive industries):</p> <ul style="list-style-type: none"> (i) 1962–1966: manmade fiber yarn, fertilizer, cement, and refined oil products; (ii) 1967–1971: consumer goods. Also focused on replacing intermediate-goods imports with domestic products, with an emphasis on petrochemicals, medicines, and machinery. The Massan export processing zone was established in 1971; (iii) 1972–1976: industrialization centered on the Heavy and Chemical Industries (HCI Program); (iv) 1977–1981: industrial machinery, steel, and electric equipment parts. It also focused on the development of knowledge and information-intensive industries <p>Nationalization of the banking sector in 1961 (ended in 1983). Heavy banking regulation until the early 1990s</p> <p>Rationing of credit and of foreign exchange. This gave the government a huge leverage over the private sector: without access to foreign exchange, companies could not acquire raw materials, intermediate goods, and capital goods. Credit rationing accorded manufacturers of consumer goods some protection as these goods could not be imported because they were down in the government's foreign exchange priority list, i.e., there was no need to impose import controls and tariffs. Luxury consumption taxes were used but they were not overly prohibitive</p> <p>Infant industries were heavily protected from imports (average manufacturing tariff rates were 30%-40% until the 1970s) and there were import quotas (until the late 1980s)</p> <p>With the purpose of developing local producers with world-class productive capabilities: (i) Domestic producers in strategic sectors were also protected from competition from multinational corporations (MNCs) producing in the Republic of Korea; (ii) There were also strict regulations on FDI; and (iii) There were regulations on technology licensing (both quality and price of imported technologies)</p> <p>The Korean Development Bank (KDB) facilitated merger and acquisition (M&A) and production rationalization in periods of business downturns. KDB provided subsidized loans on extended maturity to firms under restructuring, and even took majority stakes in some firms</p>
1980–1989	<p>1980–1984: Toward maturity</p> <p>In 1980, the Korean economy registered negative growth as a result of the 1979 oil shock, a bad rice harvest that significantly increased foreign debt, and the assassination of President Park. To improve the current account balance, the government implemented measures to cool down consumption</p> <p>Industrial Development Law of 1986</p> <p>1985–1989: the Republic of Korea enjoyed very high growth since the mid-1980s as a result of: (i) a competitive currency that helped exports; (ii) low crude oil prices that reduced the import bill; and (iii) low international interest rates that lowered the burden of interest payments on foreign debt, which in 1985 reached almost \$50 billion. The current account balance jumped from a significant deficit in the middle of the decade into surplus</p> <p>There was relatively little foreign investment because the large <i>chaebols</i> provided the necessary entrepreneurship. The country used foreign loans only to fund industrial development</p>

continued on next page

Table A.3 *continued*

Period	Characteristics
1990–2012	<p>1990–1996: Maturity and decline in the role of traditional industrial policy</p> <p>In the early 1990s, growth started decelerating as a result of: (i) the currency appreciated; (ii) wages increased; and (iii) international trade friction with industrialized nations in consumer electronics and automobiles</p> <p>Significant lobbying by the <i>chaebols</i> to break away from state control. As a result, the Korean government started scaling down industrial policy in 1993. For example, the last 5-Year Plan ended in 1993 and the Economic Planning Board (EPB) was merged within the Ministry of Finance</p> <p>Significant deregulation process started in 1993: the government devised a plan to open up corporate stock ownership of the <i>chaebols</i>, as well as limit inheritance and gift-giving</p> <p>Further cutbacks of industrial policies following the Asian Financial Crisis of 1997–1998</p> <p>Despite the cutback in industrial policy, the Republic of Korea still continued designating certain industries as strategic. These are the cases of biotechnology, nanotechnology, and green technology. These industries have been provided R&D funding, credit guarantees, and public funding for training</p>
Since 2013	Renewed interest in industrial policy

Sources: Author based on Jung, Ku-Hyun. 1994. “Changing Business–Government Relations in Korea.” In *The State and Economic Development: Lessons from the Far East*, edited by Robert Fitzgerald, 76–97. Singapore: Toppan Company; Tan, Kock Wah. 1999b. Chapter 4 in *Industrial Policy in East Asia: Lessons for Malaysia*, edited by Jomo Kwame Sundaram and Tan Kock Wah, 139–94. Kuala Lumpur: University of Malaya Press; Kuchiki, Akifumi. 2007. “Industrial Policy in Asia.” IDE Discussion Paper No. 128. Institute of Developing Economies–Japan External Trade Organization (IDE-JETRO); Lim, Wonhyuk, ed. 2012. *Expert Workshop on KDI-MIT-WBI Collaborative Research: Leadership in Industrial Policy in Late-Industrializing Countries*. Korea: Korea Development Institute; and Chang, Ha-Joon, Antonio Andreoni, and Ming Leong Kuan. 2013. “International Industrial Policy Experiences and the Lessons for the UK.” Future of Manufacturing Project Evidence Paper 4. UK: Foresight/Government Office for Science.

Table A.4: Singapore's Industrial and Trade Policies

Period	Characteristics
Until 1965	Import substitution. Before becoming an independent nation in 1965, the government passed laws in 1959 to promote import substitution, formulated a national economic development plan (1961–1964), and created the Economic Development Board in 1961. The separation from Malaysia was a blow to the expansion of trade. This event forced Singapore to shift policy
1966 to early 1970s	<p>Export orientation. Singapore based its export orientation strategy on attracting FDI through advantageous laws to foreign investors (the 1959 laws were replaced)</p> <p>Government passed a 1967 law that offered preferential tax treatment to key industries</p> <p>Government passed a 1968 employment law that simplified labor conditions; and an amended 1968 labor–management law gave labor unions bargaining rights</p> <p>To enhance the competitiveness of the labor-intensive industries, the government introduced a centralized wage system that repressed wage increases between 1972 and 1979</p> <p>Four organizations were created to stimulate exports: (i) the Jurong Town corporation to manage the Jurong Industrial Park; (ii) the Development Bank of Singapore to finance development; (iii) the International Trading Company to promote exports and imports; and (iv) several state-owned enterprises in shipbuilding, basic metals, chemicals, textiles, food, and other industries. Many of these companies became local partners in joint ventures with foreign investors</p>
1970s to early 1980s	<p>Capital- and technology-intensive development</p> <p>Export promotion policies were successful and created lots of jobs, with the consequence that unemployment declined significantly, to the point that the country started approaching full employment. The labor supply became very tight and the government decided to move up the development ladder by developing capital and technology-intensive industries. This was done through the following: (i) the creation of the National Production Board and the Skill Development Fund, to promote the development and training of human resources; (ii) the establishment of the National Wage Committee (NWC), which had authority to issue recommendations on wage increases. In 1979, the NWC announced a high-wage policy by which average annual wage increases could be as high as 20% within a 3-year period. There is agreement that this measure had a negative effect on the economy</p> <p>Take off as a financial center</p>
1986–1996	Increasingly complex industrial structure. The government decided to shift to services. Two sectors were designated for investment promotion: (i) service industries dependent on FDI, e.g., business/professional, medical, agritechology, computer and experiment/testing services; and (ii) high-tech industries related to these services, e.g., electronics, telecommunications, information technology, bioengineering, pharmaceuticals, optical
2000s	<p>Set up the biomedical manufacturing cluster in the early 2000s. Its target was to attract 15 world-class biomedical science companies by 2010. The goal was surpassed (over 30 companies by 2012)</p> <p>A high-level committee recommended in 2010 the retention of a globally competitive manufacturing sector of between 20%–25% of gross domestic product (GDP)</p> <p>Government announced in 2013 ambitious plans to build manufacturing capabilities in satellites to serve the space industry</p>

Sources: Author based on Tan, Kong Yam. 1994. "Economic Development and the State: Lessons from Singapore." In *The State and Economic Development: Lessons from the Far East*, edited by Robert Fitzgerald, 55–75. Singapore: Toppan Company; Kuchiki, Akifumi. 2007. "Industrial Policy in Asia." IDE Discussion Paper No. 128. Institute of Developing Economies–Japan External Trade Organization (IDE–JETRO); and Chang, Ha-Joon, Antonio Andreoni, and Ming Leong Kuan. 2013. "International Industrial Policy Experiences and the Lessons for the UK." Future of Manufacturing Project Evidence Paper 4. UK: Foresight/Government Office for Science.

Table A.5: Taipei,China's Industrial and Trade Policies

Period	Characteristics
1950s	<p>Import substitution based on high import tariffs and trade regulation. The main targets of protection were state-owned industries (cement, tea, and pulp and paper companies) and spinning (10 companies fled Shanghai and set up operations in the island between 1949 and 1952). The government enacted a law to promote the spinning industry in 1949 and preferential treatment of the sector included rationing of raw materials for spun cotton, advantageous exchange rates, an outsourcing system, and assistance with the procurement of operating funds and foreign exchange</p> <p>Significant US assistance</p>
1960s	<p>Export orientation began in 1960 through an ordinance that gave exporters preferential treatment, including: (i) tariff and tax rebate system; (ii) income tax exemptions for 5 years; (iii) permission to remit unlimited overseas profits to Taipei,China; (iv) expansion of the scope of investment from manufacturing into other areas, e.g., gas and water; and (v) acquisition of public and farming lands</p> <p>US foreign aid to Taipei,China was discontinued in 1965. This created great needs to promote exports and balance the economy's external current account. To achieve these goals, Taipei,China started setting up export processing zones (EPZs) in 1965 (Kaoshiung, Taichung, and Nanzhi). Foreign investors (mainly Japanese and American) established in EPZs manufactured mainly electronic equipment, primary metal, and chemical products. These firms: (i) were exempted from tariffs and other charges on the condition that they would export their products, (ii) were allowed to possess foreign currency in proportion to the value of their exports, and (iii) foreign investors were allowed to import capital and intermediate goods to manufacture products for export</p>
1970s	<p>Export-oriented import substitution. As a result of the 1973–1974 worldwide recession, Taipei,China registered its first year of no growth in the post-WWII period. The government introduced a 6-year plan to put the economy back on track. The plan introduced heavy industrialization as an import substitution policy in 1976. The government: (i) reduced the preferential measures for excessive labor-intensive industries; (ii) emphasized the heavy and chemical sectors, including basic industries that required large amounts of capital; industries that required high technology; and industries that were able to boost exports or develop new domestic markets</p> <p>The government also introduced other preferential measures in 1977: (i) the starting date for 5-year income tax exemptions for capital- and technology-intensive industries was extended from 2–3 years, regardless of product launch date; (ii) companies that went public received a 10% income tax deduction for 3 years from the date of public offering; (iii) the limit on the ratio of internal reserves to unpaid dividends was raised from 50% to 100%; (iv) import tariffs on machines and equipment for research and testing were eliminated; (v) research and testing expenses were treated as deductions; and (vi) income from inventions and patent rights became tax exempt</p>
1980s and beyond	<p>Increasingly complex industrial structure. The government selected capital- and technology-intensive industries through foreign investment. This helped Taipei,China to emerge as an Asian economy with a high-tech industrial base</p> <p>Taipei,China's investment in Southeast Asia and in the PRC soared as a result of the significant increase in domestic wages</p> <p>The government began establishing free-trade processing zones (e.g., Tainan Science Park City Special Zone) with centralized facilities for research and development and financing and transportation</p> <p>Enhanced relationships with the PRC</p>

Sources: Author based on Hsiao, Hsin-Huang Michael. 1994. A chapter in *The State and Economic Development: Lessons from the Far East*, edited by Robert Fitzgerald, 76–97. Singapore: Toppan Company; Tan, Kock Wah. 1999b. Chapter 4 in *Industrial Policy in East Asia: Lessons for Malaysia*, edited by Jomo Kwame Sundaram and Tan Kock Wah, 139–94. Kuala Lumpur: University of Malaya Press; Kuchiki, Akifumi. 2007. "Industrial Policy in Asia." IDE Discussion Paper No. 128. Institute of Developing Economies–Japan External Trade Organization (IDE–JETRO); and Studwell, Joe. 2013. *How Asia Works: Success and Failure in the World's Most Dynamic Region*. New York: Grove Press.

Table A.6: Indonesia's Industrial Policies

Period	Characteristics
Mid-1960s to Mid-1970s	First phase of import substitution (1966–1973). It involved policies encouraging selective FDI, with the policy becoming increasingly selective, such that by the early 1970s preferential treatment was given to foreign investors in priority industries only, with more than 40 industries ineligible to receive foreign investment.
Mid-1970s to Late 1970s	Second phase of import substitution (1974–1979). The oil price rise of 1973 had important implications for Indonesia. It engaged in intensive protection of domestic industries, with the government expanding the scope of foreign investment regulations and nationalizing foreign-affiliated firms.
Late 1970s to Early 1980s	A further import substitution phase (1979–1983) saw the government attempt to nationalize 52 basic industries, including petrochemicals, basic chemicals, steel, shipbuilding, aerospace, and automobiles, but the plan was discontinued in 1981.
Mid-1980s and beyond	<p>Devaluations of the rupiah in 1979, 1983, and 1986 led to the adoption of an export promotion policy, driven in part by structural adjustments recommended by the IMF and World Bank. Deregulation was undertaken in all sectors of the Indonesian economy.</p> <p><i>Repelita IV</i> (Fourth 5-Year Plan, 1984–1989) of state-led industrialization financed by oil. Discontinued in 1986.</p> <p>Export processing zones were established in 1986 and 1992, with the government further allowing the establishment of foreign-owned companies in some limited areas, albeit without financial inducements. Wholly owned foreign enterprises were allowed from 1994 onward.</p>

Sources: Author based on Hill, Hal. 1995. "Indonesia: From 'Chronic Dropout' to 'Miracle?'" *Journal of International Development* 7 (5): 775–89; and Kuchiki, Akifumi. 2007. "Industrial Policy in Asia." IDE Discussion Paper No. 128. Institute of Developing Economies–Japan External Trade Organization (IDE–JETRO).

Table A.7: Malaysia's Industrial Policies

Period	Characteristics
1957–1967	Following World Bank recommendations, Malaysia implemented a mild form of import substitution after independence in 1957. The approach involved no exchange controls, few limits on import volumes, and relatively low import tariffs however.
1968–1979	<p>An export promotion policy was adopted in 1968 with the enactment of the investment incentive law. This law provided preferential treatment for exports of finished and semifinished goods, including exemption from corporate taxes for 5–8 years, as well as exemption from development tax, excess-profits tax and corporate tax.</p> <p>Establishment of the Malaysia Industrial Development Authority (MIDA)</p> <p>Investment Incentives Act</p> <p>New Economic Policy (NEP) enacted</p> <p>The export promotion policy was extended through the introduction of free trade zones that acted like export processing zones.</p> <p>Beginning in the early 1970s there was a further shift in the Malaysian economy from a dependence on rubber and tin to palm and crude oil.</p>
1980–1985	<p>In 1980 the government implemented a second phase of its import substitution policy. The Heavy Industries Corporation of Malaysia (HICOM) was established, with the aim of shifting production toward heavy industries, most notably toward steel, cement, automobiles, and chemicals.</p> <p>Macro stability diminished in the 1980s, with large fiscal (20% of gross national product [GNP]) and current account (10% of GNP) deficits. Foreign debt exceeded 40% of GNP in 1986, while the debt–service ratio rose to 15%. Negative growth was recorded in 1985 for the first year since 1961.</p>
1985–1997	<p>These negative developments led to further export promotion efforts through FDI. Investments Act (1986) policy allowed wholly owned foreign subsidiaries and launched a period of deregulation, privatization, and economic liberalization.</p> <p>The liberalization of FDI was particularly successful, encouraging inward FDI flows from the Republic of Korea, Taipei, China, and most notably Japan. Following these developments Malaysia entered a high growth phase after 1988.</p> <p>New Development Policy (NDP) in 1991: Target to become a high-income economy by 2020–<i>Wawasan 2020</i></p> <p>First Industrial Master Plan (1986–1995)</p>

Sources: Author based on Lall, Sanjaya. 1995. “Malaysia: Industrial Success and the Role of the Government.” *Journal of International Development* 7 (5): 759–73; and Kuchiki, Akifumi. 2007. “Industrial Policy in Asia.” IDE Discussion Paper No. 128. Institute of Developing Economies–Japan External Trade Organization (IDE–JETRO).

Table A.8: Thailand's Industrial Policies

Period	Characteristics
1950s	Thailand took a number of steps toward liberalization in the 1950s including abolishing a multiple exchange rate system and eliminating large national corporations.
1960–1971	<p>In 1960 Thailand implemented a policy of import substitution through the implementation of laws for new tariffs and industrial investment promotion. Tariffs were raised to protect domestic industries and preferential tax treatment was given to importers of machinery, raw materials, and other intermediates for industrial use. Other preferential conditions, such as exemption from corporate income tax, import tariffs on machinery and parts and raw materials, and import tariffs on other investment assets, were given to priority industries. The increase in intermediate and capital goods imports as industrialization progressed led to an increased trade deficit, and ultimately to a change in economic policy.</p> <p>First Development Plan in 1961</p>
1972–1976	A policy of export promotion was adopted in 1972, which reduced import tariffs and operating taxes for export-oriented firms. This export promotion policy increased the deduction of export sales from taxable income, offered reimbursements for tariffs on imports of raw materials used in exports, tax credits for tariff payments, and operating taxes on raw materials used for exports.
1977–1982	<p>In 1976, government enacted policies aimed at protecting heavy industries producing intermediate and capital goods.</p> <p>The administration further placed priority on the development of exports, agro-industry, regional industries and small businesses.</p>
1983–1996	<p>Export promotion through FDI. Following a 5-year plan implemented in 1983, FDI was deregulated and export companies were allowed to be wholly foreign owned. The development of export processing zones that began in the 1970s continued throughout the 1980s. Further deregulation occurred through the 1980s in the automobile and textiles industries.</p> <p>Rapid rates of economic growth were recorded in the late 1980s, but exposed deficiencies in infrastructure and human resources.</p>

Sources: Author based on Rock, Michael T. 1995. "Thai Industrial Policy: How Irrelevant was It to Export Success?" *Journal of International Development* 7 (5): 745–57; and Kuchiki, Akifumi. 2007. "Industrial Policy in Asia." IDE Discussion Paper No. 128. Institute of Developing Economies–Japan External Trade Organization (IDE–JETRO).

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Asia's Industrial Transformation: The Role of Manufacturing and Global Value Chains (Part 2)

Growth rates approaching 10% per annum in East Asia required active governments that directed and consciously accelerated industrial development through the use of industrial policies. The design and implementation of these policies was not, however, equally successful everywhere. The paper also discusses upgrading in the manufacturing sector and the role of global value chains in Asia.

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