

discussed as another key condition that has pushed countries to pursue industrial policies and promote institutions necessary to build the automobile industry. Yet these structural factors present a rather deterministic analysis of development. If a country is faced with few or no security threats, is it doomed to failure? If a country is resource-rich, is the likelihood of intensive growth limited? How do we think about the prospects of regions such as the resource-rich sub-Saharan African nations in their ability to move successfully with “intensive” development?

If these structural factors have strong causal effect, we are left with a quandary about whether future late-late-late industrializing countries can learn from these East Asian cases. What institutions are needed, but more importantly, how can the state move forward with the right institutional and industrial policy mix when the circumstances appear on the surface to be more favorable—in relatively peaceful neighborhoods and/or in a resource-rich context—but which in fact are portrayed here as *disadvantages*?

Another related but separate question lies in the choice of sector. The auto industry was crucial to the industrial revolutions of the twentieth century. But what industries will be key for the Fourth Industrial Revolution or digital transformation of this century? If it is not the automobile industry, which had critical backward- and forward-linkages to the nation’s development, what is the linchpin industry of the future? Although this may be outside the book’s focus, it is a relevant question to ask for future late-comers. If, for example, it is artificial intelligence (AI), the empirical evidence from the Global North vs. Global South suggests an even more daunting task for late-late-late industrializers of today. The question, then, is what are the key factors that would enable the AI industry to be developed in the Global South? Are they necessarily the same as those that permitted intensive development in autos?

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Robert Wade

London School of Economics, UK

Automobiles and parts have long constituted the second biggest sector in global manufacturing after electronics. The region producing the largest and fastest growing share of global automotive value-added is East Asia. East Asian governments have sought to promote the industry not only for the economy but also for national identity, as a symbol of industrial ingenuity and excellence.

Richard Doner, Gregory Noble, and John Ravenhill (DNR) show in impressive detail that all seven of the East Asian countries in the study began their automotive industrialization at roughly the same time—in the 1950s and 1960s—with roughly similar “import substituting industrialization” (ISI) policies, relying on foreign companies producing locally for the protected national market. Subsequently, with the global revolution in transportation and communication and the “great dispersal” of



efficiency-driven cross-border supply chains, the trajectories of the seven industries diverged sharply.

The three in northeast Asia—South Korea, Taiwan, and China—have managed to achieve “*intensive*” development, meaning fairly continuous upgrading in value-added made by local or joint-venture firms innovating *within* firms and in research institutions closely linked to firms, and able to compete with leading automotive firms of the North Atlantic region. (Japan would be leading this northeast Asian group had it been included.)

None of the Southeast Asian four—Thailand, Malaysia, Philippines, Indonesia—have succeeded at intensive development in automobiles. Malaysia tried for 30 years to follow this model as part of its “look East” national development strategy without becoming internationally competitive in either automobiles or parts. Thailand, Indonesia, and Philippines relied almost entirely on subsidiaries of foreign multinationals, producing a “shallow” pattern of “*extensive*” industrialization, not generating much growth in local value-added along the national input-output production structure. Within the constraints of extensive development, Thailand has succeeded more than the other two, becoming a major assembler and exporter of light vehicles. The Philippines “has proved an abject failure at automotive industrialization” (298).

How can we explain these different trajectories, and especially the pronounced two-tier difference in value-added performance between Northeast Asia and Southeast Asia? Devoting a chapter to each of the seven cases the authors present rich tapestries of the policies and especially the institutions that supported—or not—growth along intensive and extensive margins, some specific to the auto industries, others much broader (such as state support for engineering and science education ahead of arts and humanities in Northeast Asia).

### **Northeast Asia’s exceptional growth performance**

The differential success in automotive industrialization mirrors the differential success in growth of average income. Starting long ago in the post-war decades the countries of northeast Asia (including Singapore as honorary member, and China since the early 1980s) have grown faster and more sustained than any other non-western region of the world. In the half-century from 1960 to 2010 the northeast Asian tier of Japan, Hong Kong, Singapore, Taiwan and South Korea rose from between 30 percent and 10 percent of the US’s average income (per capita real income in purchasing power parity dollars), to between 95 percent and 65 percent; while the Southeast Asian countries plus China rose from less than 10 percent to at most 30 percent.

Nevertheless, Southeast Asia’s plus China’s income catch-up performance was a lot more impressive than just about all other non-western countries (some Middle East oil exporters excluded), where average income as a proportion of the US’s remained basically flat over this half century. We can conclude that in terms of income catch-up of the non-western world to the western world, the global economic development project since the post-war decades has largely failed outside of northeast Asia (but more successful in terms of life expectancy and proportion of the

population in extreme poverty). Differential automotive success as between Northeast Asia and Southeast Asia fits this larger pattern of substantial income catch up in Northeast Asia but much less elsewhere in the non-western world (Wade 2020, Nayyar 2013).

This is what I mean by “fractal” success and less success. Broadly speaking, the northeast Asian economies have been successful from “macro” national level down to “micro” industry level, including automotive. DNR’s “what, how, and why” questions about relative national automotive performance apply equally at the macro level. Here I discuss Taiwan, to suggest how northeast Asia’s dramatic income catch-up, compared to other regions, is related to *state incumbents’ high investments in state capacity*.

### Taiwan’s across-the-board pressure to diversify, innovate, export, and replace imports

Taiwan switched from a failing attempt to follow Korea and Japan into automobile assembly and exports in the mid-1980s to focus on automotive parts, becoming a world leader. This was just one case among many of successful “intensive” industrialization in Taiwan.

What were some of the mechanisms by which the state in Taiwan generated innovation pressure at firm level in many sectors? I base the following discussion largely on my “soaking and poking” fieldwork in the 1980s (1983 and 1988).

Taiwan’s Industrial Development Bureau (IDB) seemed to me—I have come across no quantitative “evidence”—to have played a significant but “below the radar” role in pushing Taiwan up the “intensive” margin, complementing the world-famous Industrial Technology Research Institute (with a staff of some 6,000 in the first decades of the twenty-first century). The IDB was a small agency of about 180 staff in the mid-1980s, most of them engineers, one of several agencies within the gigantic Ministry of Economic Affairs (Wade 1990 [2003]).

Its central role was to work out and implement the nuts and bolts of industrial policy as it evolved across time. Formally, the grand strategy was devised by the Council for Economic Planning and Development (CEPD) and the IDB filled in details. But IDB people liked to boast that they were more connected to the world of industry than the CEPD people, so they put the CEPD plans in the show window and devised their own better informed ones. The staff was organized into vertical sector teams, including the steel system, electronics and information, petrochemicals and chemicals, and consumer goods; and horizontal ones including land use, planning and coordination with banks, customs and taxation, and a third for industrial organization, industrial law and pollution.

IDB had a key role in Taiwan’s import control system, especially the operation of a secret list of officially “permissible” items which were in reality controlled, items to be promoted with the help of *domestic demand* as part of the larger promotion strategy. When a would-be importer applied to a bank for a license to import an officially permissible item on the secret control list, the bank had to refer it to (in the usual case) the IDB. The relevant IDB officials would make a judgement on whether domestic supplier(s) could meet the terms of price, quality, and delivery; or ask the supplier or the producers’ association for relevant evidence.

IDB staff also operated as a kind of equivalent to an agricultural extension agency. Most were required to spend several days a month, minimum, visiting factories up and down the country, engaging in two-way communication. They “trouble-shot” at factory floor, suggesting better ways to handle waste or a new kind of machine tool or new export markets; and they brought knowledge of problems and potentials back to the center. In 1982 IDB was allocated a small innovation fund. If an IDB engineer or consultant recommended that a factory install a certain type of machine tool which was already in operation somewhere in Taiwan, the fund would pay for the entrepreneur to go see the machine in action. If not available in Taiwan, the fund financed the import and the entrepreneur paid only if after six months he or she decided to keep the machine (Wade, 1990 [2003], 206).

Here is an example of an IDB team in action in 1983, concerning Philips (long established in Taiwan) and its imports of specialized glass for TVs. The relevant IDB team, always alert for potential to deepen the input–output structure (and able to know what had been imported to the country within the previous 48 hours), decided, after study, that Taiwan had a couple of glassmakers who, if Philips gave them some technical help and a long-term supply contract, would be able to meet the price and quality of Philips’ imports. The head of IDB visited the Philips procurement manager, suggested Philips investigated the possibility of switching, the procurement manager said “Thank you but no thank you, we are happy with our existing ISO-certified supplier.” But then Philips found that its application to import the glass, previously quickly approved, began to be delayed, and delayed. Philips sent a top manager to protest to the trade minister, who apologized and said he would investigate; the delays continued. To cut the story short, eventually Philips did switch its suppliers to the local glass makers. The point of the story is that the IDB teams (or counterparts by an earlier name) were doing this kind of “nudging,” as distinct from “picking” or “making” winners, for week after week, decade after decade across the sectors.

For some “missions,” the relevant people saw that IDB lacked enough people with up-to-date expertise, and their standard solution was the “task force.” A task force of newly recruited experts could be assembled to work alongside (and semi-compete with) the IDB, without them having to pass the standard civil service exam and on higher than standard civil service salaries. This was a way to recruit back Taiwanese with advanced engineering degrees from the US or Europe. I spoke to a couple of members of the newly formed Automation Task Force in 1983, with recent degrees from MIT, who told me that they were shocked at the poor quality of the production systems and waste disposal systems at factories they visited. They realized that the task force had preliminary work to do before pressing ahead with advanced automation. Which suggests that perhaps the relevant IDB staff had lost nudging momentum in those factories. At about the same time, another task force with high-powered returnees was pushing Taiwan’s drive into auto parts.

I met Japanese quality-control experts employed by major Japanese companies, who flew down from Japan on Friday night, worked with client companies to improve their quality control systems over the weekend, and flew back on Sunday night. I met a Korean team of several civil servants from Korea’s trade ministry camping out in Taiwan’s Bureau of Foreign Trade to make a detailed study of Taiwan’s “duty drawback” system, by which a Taiwan producer who imported some inputs which entered

production sold abroad (e.g. buttons for shirts) could claim back the tariff paid on the imports, but not for that part of production sold on the domestic market (Wade 1990).

Three broad points from these specifics. First, Japan, South Korea, and Taiwan engaged in “regional knowledge spillovers” on a large but—to my knowledge—largely unrecorded scale, most likely much denser than between them and countries of Southeast Asia or between the Southeast Asian countries themselves. One can add the existence of a whole class of people described in the mid-1980s media as “aeronautes” for the amount of time they spent above the Pacific between residences in Silicon Valley and Taiwan.

Second, the IDB story illustrates DNR’s general point that “The absence of effective local institutions designed to promote spillovers from foreign producers will result in weak technological capacities on the part of local firms and, as a result, fragile linkages between them and foreign firms” (88). Third, the hallowed neoclassical binary between “import substituting industrialization” and “export-led growth” needs qualification. I was struck by how people engaged in economic policy in Taiwan automatically thought of how to integrate export promotion and import replacement; they saw them, in the metaphor I coined at the time, as “the two wings of the same bird.” I once visited the minister of science and technology. He explained he had just been in discussion with advisors, gathered around a table looking down at an input–output chart of part of Taiwan’s electronics sector, searching for relatively empty cells and asking themselves whether there was potential for inducing importing firms to switch to domestic producers and raise the density of transactions in that cell. The Philips case is a good example of the subtle use of *under-the-radar trade protection* to promote deepening. Commonly the producer who earned extra profit from protected domestic market sales used some of the extra to subsidize the export price; as did Hyundai in its early push into export markets. Richard Luedde-Neurath’s book, *Import Controls and Export-Oriented Development: A Reassessment of the South Korean Case*, 1986, presents detailed evidence of South Korea’s under-the-radar import controls at the time when the government proclaimed dramatic trade liberalization in line with the wishes of the American government and returning economics PhDs from American universities.

### The misleading understanding of East Asian development policy in mainstream economics

In the standard neoclassical account, the single most important cause of economic development success in East Asia (as a whole) has been “liberalized trade,” which is often translated into “export-led growth.” Through the 1980s and 1990s the World Bank treated “trade liberalization” as the Queen of development policies, not just one policy among many; it imposed more conditions on trade policy than on any other domain. The core rationale was: “why throw rocks in your own harbor”? Protection makes for inefficient resource use.

*The East Asian Miracle* and most of the neoclassical literature about Northeast Asia fails to see two basic points. First, protected domestic producers were typically not *insulated* from international competitive pressure; they were *buffered* from international competitive pressure—up to a point. They received protection, but against

certain performance conditions and/or with strong incentives to start exporting the protected products. Recall Taiwan's duty drawback system. Southeast Asia came closer to the neoclassical understanding of protection. For example, DNR say, "Indonesia's oil revenues generally allowed the state to continue supporting industries such as autos, steel and aerospace through the provision of extensive protection and subsidies" (83)—which insulated producers from international competitive pressures. The highly and unconditionally protected Indian auto industry produced grossly inefficient and polluting automobiles based on British auto technology of the 1950s until forced to innovate by a Japanese competitor in the early 1990s.

The second fundamental point missed in most of the neoclassical literature is that in Taiwan, and also in South Korea and Japan, trade policy was seen as one part of and derived from wider industrial development strategy. That may seem blindingly obvious. But strangely it is not—as seen in the fact that even today there are "international trade economists" and (several status levels lower down) "industrial policy economists."

The top people in the IDB and CEPD were very concerned to play up the "face/reality" distinction, and assure visiting economists that Taiwan was a committed free-trade nation, moving as fast to free trade as security concerns allowed. The CEPD even had a vice-president whose main duty was receiving visiting western economists and diplomats and telling them of Taiwan's full-hearted embrace of free markets. CEPD staff gave out copies of their papers and books, but not my *Governing the Market* after it was published in 1990—though I credit Taiwan's economic bureaucracy with a significant contribution to Taiwan's fast growth while the neoclassical economists do not.

No surprise that as IDB and CEPD officials began to hear of my admiration for their successful "interventions" over the decades, they became uncomfortable with my presence. Meanwhile after my fieldwork in Taiwan (and earlier South Korea) I was recruited to the Trade Policy Division of the World Bank in Washington DC in the mid-1980s. The division wanted me to research how Northeast Asian countries had so successfully promoted exports. Which I did. But the managers of the division became anxious when I also researched how those states had promoted import replacement linked to export promotion. To have a person in their division present import replacement as a viable part of an industrialization strategy and highlight the advantages of "non-neutral" incentives in the trade regime as part of a larger industrialization strategy was distinctly threatening to their careers in the Bank, so much did it run against the Washington Consensus. Eventually I left the Bank to work on East Asian industrialization in the more honest environment of the Office of Technology Assessment, an agency of the US Congress.

### **The why question: upstream causes**

DNR bring out two basic upstream causes for *why* the governments of the three Northeast Asian cases managed to impart and sustain "intensive" industrialization in automobiles, in contrast to states of Southeast Asia. One is a looming existential enemy state—most obviously North Korea for South Korea and mainland China for Taiwan. The second is relative lack of natural resources able to be converted

into commodity exports which could earn foreign exchange as an alternative to manufactured exports (Wade 2019). The same two conditions hold for Japan, going back to its opening in the mid nineteenth century and fear that, after it fell far behind in industrial and military technology during two centuries of isolation, the US could gobble it up as a colony; fear which launched the Meiji Restoration in the 1860s followed by fast industrialization and militarization.

How many non-western countries have become developed in the past two centuries? Even using expansive categories of “non-western,” “country” and “developed” and excluding some small islands, the answer is less than ten. My list includes Japan, Russia, Taiwan, South Korea, Hong Kong, Singapore, Israel, maybe a few others. They all have small populations, apart from Japan and Russia; they all faced prolonged existential security threats, which political leaders harnessed to a “fellowship of the lifeboat” discipline among the elite and population at large; they all faced acute shortage of resources to convert into commodity exports, except Russia; while Hong Kong and Singapore were heavily shaped by parachuted-in British public administration and grew rich on the back of dense entrepot trade.

All of them, except British-administered Hong Kong, had governments which acted to impart “directional thrust” (or “strategic interventions” in the language of *The East Asian Miracle*) into industries long before those industries could be considered consistent with the economy’s “comparative advantage” (Lin and Chang, 2009). The calculation is caught in a statement by Ojimi, vice-minister of Japan’s Ministry of International Trade and Industry in the *early 1950s*. The statement illustrates the meaning of *dynamic* comparative advantage thinking, as distinct from the familiar neoclassical static comparative advantage embedded in Washington Consensus thinking:

The MITI decided [in the early 1950s] to establish in Japan industries which require intensive employment of capital and technology, industries that in consideration of comparative cost of production should be the most inappropriate for Japan, industries such as steel, oil-refining, petro-chemicals, automobiles, aircraft, industrial machinery of all sorts, and electronics, including computers. From a short run, static viewpoint, encouragement of such industries would seem to conflict with economic rationalism. But, from a long-range viewpoint, these are precisely the industries where *income elasticity of demand is high, technological progress is rapid, and labour productivity rises fast*. (OECD 1972, p.15, emphasis added)

He did not say, but implied, that these are also industries necessary as foundation for a powerful military needed to deter not one but two close-by perennially hostile states. Two decades later, in the early 1970s, South Korea under President Park embarked on a similar Big Push into heavy and chemical industries, against much criticism from mainstream economists and the World Bank. Nathan Lane’s recent research (2021) on the impacts of the HCI drive using detailed input-output analysis suggests it was, in a word, highly effective.<sup>1</sup>

DNR emphasize the causal importance of differential attainment in education, science, and technology for outcomes in the automotive industry. They show evidence

of “a sharp divide between Northeast and Southeast Asia .... Korea and Taiwan are star performers even compared with the most advanced industrial democracies,” and “China is closer to Korea and Taiwan” than to Southeast Asian countries (69ff).

More recent quantitative evidence pointing in the same direction comes from research by Timothy Besley and Torsten Persson (2011, chapter 8). They calculate scores on indices of “state capacity” and “average income” for a large number of countries. The state capacity index is based on fiscal capacity (share of income tax in total government revenue, 1999), and legal capacity (index of contract enforcement in World Bank’s Doing Business survey, 2006). The income index is based on Penn World Tables, 2006. Taking DNR’s seven countries plus Japan, the Besley-Persson rank order on state capacity and income indices, relative to each other, is as found in Table 1.

**Table 1.** State capacity and average income<sup>2</sup>

	State capacity	Income
Japan	1	1
South Korea	2	3
Taiwan	3	2
Malaysia	4	4
Philippines	5	8
Thailand	6	5
Indonesia	7	7
China	8	6

These rankings on state capacity and average income correlate closely with the relative performance of the automotive industries in the eight countries. China is the obvious exception, whose performance in “intensive” automotive industrialization puts it in the upper tier with the other Northeast Asian countries, as distinct from at or near the bottom in the Besley-Persson ranking of state capacity and income.

Without further comment on this “China as the exception” point, two more points about recent developments in China can be made. First, the government has recently given high priority to what it calls “policy finance”—targeted and concessional credit—as an instrument of industrial policy. Two researchers at a Beijing think tank closely connected to the Chinese Communist Party explain, “At present, the marginal utility of traditional industrial policies such as tax rebates and financial subsidies is diminishing, and *policy-based finance, as a starting point for industrial policies*, can overcome externalities and coordination problems, thereby promoting technological progress and industrial upgrading” (Qiu Zhaoxiang and Liu Yongyuan, 2022, emphasis added).

This is striking in the context of the World Bank’s *The East Asian Miracle*. The research project was forced on the reluctant Bank by its number two shareholder, Japan’s Ministry of Finance, which was angry at top Bank managers persistently telling it to stop using targeted concessional credit in Japan’s aid programs in Southeast Asia, because (to paraphrase) “we know that concessional credit distorts resource allocation” (Wade 1996).



China's assignment of high priority to sectorally targeted "policy finance" also suggests qualification to DNR's argument that governments in northeast Asia have in the past two decades moved away from "promotion and protection" towards a lighter form of industrial policy: "coordinating rather than governing or piloting ..., and to the process of communication, discovery, error detection, and correction, *rather than promotion or protecting*" (p. 299, emphasis added).

The second China point starts from the fact that China's automotive success has been based heavily on Volkswagen, the first foreign manufacturer to build a presence in China almost four decades ago. VW has long relied on China for at least half of its annual net profits and retains double the market share of its nearest competitor. But as of 2022 the political tide is changing as tensions between Washington and Beijing have grown, as a new coalition government in Berlin says it will get tougher on authoritarian governments, as Russia's war in Ukraine has led to severing of VW commercial ties with Russia, and as VW fears it will be pressured to reduce its engagement in China. In any case, several local competitors are proving much more successful than VW in sales of electric vehicles. We may be seeing the Chinese government stepping up its overt and covert support (e.g. concessional credit) for wholly Chinese companies in the spirit of "Made in China 2025" (Miller 2022).

I have argued that the differential success of the automotive industries in the seven East Asian countries, especially between the three northeast Asian and the four southeast Asian cases, is a "fractal" expression of differential success in economic development more generally. Sector studies like these invite research to link the sector causes to the causal force of differences in national interest rates, exchange rates, trade integration (e.g. average manufacturing tariffs) and financial integration—variables highlighted in the "new developmentalism" of Luiz Carlos Bresser-Pereira and colleagues in that paradigm in Brazil (Bresser-Pereira, Araújo, and Costa 2020).

The new developmentalism explanation for northeast Asia's greater success in economic development than southeast Asia and Latin America, especially since the 1980s, would focus on northeast Asia's lower long-term overvaluation of the exchange rate, lower exchange rate volatility, and lower real interest rates (going with less focus on attracting foreign savings, more reliance on domestic savings); and from the 1980s onwards, higher manufacturing protection (but remember, much of the protection was granted against performance conditions). *This macro-price environment made it much easier for good companies to export and innovate in northeast Asia.* Bresser-Pereira et al.'s argument (2020) suggests that the difference in macro-price environment between northeast Asia and Latin America was caused to significant degree by Latin America's much greater trade and financial liberalization (a condition of IMF and World Bank lending during Latin America's two "lost decades" caused by the debt crises of the 1980s initiated by Federal Reserve chair Volcker raising the federal funds rate up to nearly 20 percent). In turn, the difference in macro-prices pushed Latin America's export basket "towards unsophisticated goods with increased dependence on exports of primary commodities" (p. 299). The result was a slow-down in long-run growth, reverse transfer of people from high- to low-value-added industry, and more decades in the "middle-income trap"—though caused less by the effects of the average income level itself than by the macro-prices described here.

## Notes

1. The HCI drive is conventionally dated as 1973–79. Lane (2021) finds that (1) the HCI drive promoted the growth, dynamic comparative advantage, and total factor productivity, of the directly targeted industries. It did the same for downstream users of the targeted industries, and the benefits persisted after the end of the HCI drive, up to his end point of 1986, just before democratization.
2. Brazil's score on state capacity puts it at bottom, ninth position, in this ranking; on income it is between ranks 4 and 5. Mexico's: between 5 and 6 in state capacity, 4 and 5 in income.

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