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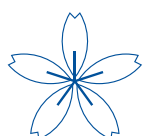
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Rethinking the Middle-Income Trap
in Emerging Asian Economies:
China, Malaysia, and Thailand

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Rethinking the Middle-Income Trap in Emerging Asian

Economies: China, Malaysia, and Thailand

By

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Abstract

East Asia is an important area of “emerging economies” in the world because a large number of countries or regions have successfully achieved rapid economic growth over the past few decades. Nevertheless, since the end of 2000s, economists at international financial institutions such as the World Bank and Asian Development Bank (ADB) have cast their doubt on the “East Asian miracle”, and insisted that East Asian economies were going to experience the problem of middle-income trap where upper middle-income countries have suffered economic stagnation and have faced difficulties in shifting to high-income countries.

A typical case is Malaysia, which moved into an upper middle-income category of country in 1991, but has failed in shifting to a high income-country for over twenty years. In 2012, ADB also pointed out that China would face the same problem of middle-income trap so far as she continued to depend on the low-cost advantage of the source of growth. ADB suggested China to switch its growth pattern from an input-driven one to an innovation-driven one to escape the possible trap in the near future.

In this study the author picks up the three countries of China, Malaysia, and Thailand as case studies, and he aims to investigate the current situations of these countries in terms of wage level, labor productivity, and R&D activities (innovation). After confirming the situations of increasing wage-level and low-level innovation, he compares

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the responses of the three countries to the middle-income trap in special reference to the role of government.

At first, he selects China. He claims that China is requested to shift the sources of growth from over-investment and exports to domestic consumption, together with productivity improvement through innovation and industrial upgrading. In the case of Malaysia, he focuses on the increasing role of foreign workers in manufacturing sector (no significant contribution to productivity improvement), and compares the policy agenda between the National Development Plan (NDP: 1991-2010) and the New Economic Model (NEM: 2010-2020). He clarifies by illustrating that the policy targets of the NEM in Malaysia are similar to policy options suggested by ADB for China.

Lastly, in the case of Thailand, he points out the big gap between the government policy targets (the promotion of new-age or next generation industries) and actual competitiveness of local big firms, mostly family businesses based on agro industries and service sectors rather than core manufacturing industries. Therefore, government policies responding to the middle-income trap are less effective if there is no full-scale collaboration from foreign firms. He finally suggests that Thailand is expected to seek a more independent way in which local Thai firms can demonstrate their own advantages on the basis of Thai-ness and hospitality.

I. THE LIMIT TO THE INPUT-DRIVEN GROWTH PATH

What is the ‘middle-income trap’?

Starting around the end of the 2000s, a certain term was often used in discussions about emerging Asian countries. This was the ‘middle-income trap’, a favoured term of economists at international institutions and American think tanks.²

²This literature includes the World Bank (Yusuf and Evenett 2002; Gill and Kharas 2007), IMF (Aiyar, Duval, Puy, Wu, and Zhang 2013), Asian Development Bank (ADB 2012a), the National Bureau of Economic Research (Eichengreen, Park, and Shin 2013), and the Levy Economics Institute of Bard College (Felipe, Abdon, and Kumar 2012).

For example, in *Asia 2050* (ADB 2012a), the Asian Development Bank provided two long-term forecasts for Asia as a whole, giving an optimistic scenario (the Asian century) and a pessimistic scenario (the risk of getting caught in a middle-income trap). Kenichi Ohno (2009) tackled this issue from the perspective of a ‘development trap’ and industrial policy.

The Asian Development Bank addressed this issue in relation to China in 2012 in *Growing Beyond the Low-Cost Advantage: How the People’s Republic of China Can Avoid the Middle-Income Trap* (ADB 2012b). They suggested the path China could take to upgrade from an upper-middle-income country to a high-income country through a combination of four elements: technically advanced domestic firms, high-value goods and services, developed markets, and innovation in products and processes (11).

That same year, the World Bank raised the same issue in a report titled *China 2030: Building a Modern, Harmonious, and Creative High-Income Society* (World Bank and Development Research Center of the State Council, People’s Republic of China 2012). They pointed out the difficulty involved for middle-income countries to shift to high-income countries. In fact, among 101 middle-income countries or economies in 1960, only 13 countries or economies could reach the high-income level in 2008, namely Equatorial Guinea, Greece, Hong Kong, Ireland, Israel, Japan, Korea, Mauritius, Puerto Rico, Portugal, Singapore, Spain, and Taiwan. Four out of those 13 (Hong Kong, Korea, Singapore, and Taiwan) belong to the so-called Asian newly industrialized economies, or the Asian NIES (Suehiro 2008, chapter 1).

Research by World Bank economists Yusuf and Nabeshima (Yusuf and Nabeshima 2009) on Malaysia and studies by Kenichi Ohno (Ohno 2009), Tran Van Tho (Tran 2010), and Nguyen Cao Due (2015) on Vietnam is representative of their respective areas.³ Around 2011 in Thailand, the central bank and the National Economic and Social Development Board started to discuss this issue, warning that Thailand’s international competitiveness was declining. Following government economists, Japanese scholars have also turned their eyes to this issue since 2013, as we see in Egawa (2013), Oizumi (2016), and Suehiro (2017).

³ For more empirical studies on Malaysia, please see Tham and Loke (2011) and Kumagaya (2014).

The term middle-income trap was first used by the World Bank's Gill and Kharas in *An East Asian Renaissance* (Gill and Kharas 2007). They argued that three transformations were required for emerging Asian countries (middle-income countries) to continue their growth: (1) transformation from diversification to more specialization (based on economies of scale) in production and employment; (2) transformation from a focus on investment to a focus on innovation; and (3) a shift from equipping workers with skills that allow them to adjust to new technologies to prepare them to shape new products and processes.

Gill and Kharas sounded a warning that economic growth in these countries would be sluggish without steady progress through these three transformations and that the emerging Asian countries would be caught in a middle-income trap, as is the current situation for many middle-income countries in the Middle East and Latin America (17–18). Likewise, Eichengreen et al. (2013) defined countries suffering the middle-income trap as those that had undergone average GDP growth of at least 3.5% for several years and subsequently stepped down by at least 2% between seven-year periods. Similar observations are shared by the IMF Group (Felipe et al. 2012; Veerayooth 2015, 56).

In particular, the study of Felipe and others notably explored the issue of middle-income trap by employing two major criteria: the income range used to distinguish a middle-income country, and the average duration of stagnation in the same category of middle-income country on the basis of past experiences. They surveyed 124 countries or economies and categorized middle-income countries as those having GDP per capita of between \$2,000 and \$11,759 in terms of 1990 PPP (Purchasing Power Parity) US dollars (a *lower*-middle-income country having less than \$7,250 and an *upper*-middle-income country having more than \$7,250). They calculated the average years of transition and discovered two facts: 28 years for the transition from a lower-middle-income to an upper-middle-income level and 14 years from the latter to a high income level.

As of 2010, 30 out of 38 lower-middle-income countries remained as such for more than 28 years. Five out of 14 upper middle-income countries stayed in the same income range for more than 14 years. If looking at Southeast Asian countries, we find that Malaysia is one of the five that may have fallen into the upper-middle-income trap, while Indonesia is in danger of

remaining in the lower-middle-income trap.

The study of Felipe and others focuses on past economic performance in terms of per capita income. On the other hand, if we focus on the growth pattern of a country, we find that the middle-income trap closely connects with the path of trying to achieve economic growth through additional inputs of cheap labour and low-cost capital. In other words, it refers to the situation in which the low-cost advantages have been tapped out because of wage increases that exceed increases in productivity and a downward trend in investment efficiency (Suehiro 2014, chap. 6).

A country's growth rate will therefore decline unless improvements in labour quality (increased skills and technical know-how) and technological innovation can increase labour productivity. The country will hit the so-called wall of input-driven growth. The middle-income trap highlighted by international institutions has virtually the same meaning as this wall.

Doubts about the theory of the middle-income trap

This paper first considers the example of Malaysia, which is a typical country facing the middle-income trap (Table 1).⁴ Malaysia transitioned to what the World Bank defines as an upper-middle-income country in 1979. It subsequently dropped back down to lower-middle-income status, and, although it regained its status as an upper-middle-income country in 1991, it has so far been unable to join the group of high-income countries, as the study of Felipe and others has pointed out (Felipe, Abdon, and Kumar 2012).

Between 2010 and 2015, per capita GNI in Malaysia increased from US\$9,069 to US\$9,766, or by merely US\$700, in contrast to the case of China, which impressively increased per capita GNI from US\$4,516 to US\$7,925 in the same period. Malaysia clearly remains at a standstill compared to Taiwan, which took 15 years to transition to a high-income country after becoming an upper-middle-income country in 1973, and South Korea, which took 16 years to transition to a high-income country after becoming an upper-middle-income country in 1978.

⁴ Table 1 is constructed on the basis of nominal per capita GNI, not the real per capita GDP such as 1990 PPP dollars, according to the definition of the annual report of the World Bank (appendix in the World Bank Development Report).

Table 1 Year of Shifting to High-Income or to Upper-Middle-Income Economy in Asian Economies

Country/ Economy	Grouping	Per Capita Nominal GDP (\$)			The Year of Entering into a Group		
		2015	2010	1990	High-Income	Upper-Middle-Income	Lower-Middle-Income
Singapore	High-Income	52,889	46,570	11,864	1981	Before 1962	...
Hong Kong	High-Income	42,423	32,550	13,485	1978	Before 1962	...
Japan	High-Income	32,477	42,935	25,124	1967	Before 1962	...
Korea, Republic	High-Income	27,221	22,151	6,642	1993	1978	Before 1962
Taiwan	High-Income	23,298	19,864	8,178	1988	1973	Before 1962
Malaysia	Upper-Middle	9,766	9,069	2,417	—	1979-86, 1991	Before 1962, 1987-90
China	Upper-Middle	7,925	4,516	316	—	2010	1998
Thailand	Upper-Middle	5,816	5,112	1,508	—	2010	1966
Indonesia	Lower-Middle	3,346	3,125	631	—	—	1979
Philippines	Lower-Middle	2,899	2,145	715	—	—	Before 1962
Vietnam	Lower-Middle	2,111	1,334	98	—	—	2008
Laos	Lower-Middle	1,812	1,147	204	—	—	2010
India	Lower-Middle	1,582	1,388	375	—	—	2007

Notes: In 2014, World Bank defined high-income economies as economies with a GDP per capita of \$12,736 or more; upper-middle-income economies as those with a GDP per capita between \$4,126 and \$12,725; lower-middle-income economies as those with a GDP per capita between \$1,045 and \$4,125; and low-income economies as those with a GDP per capita of \$1,045 or less (World Development Indicators 2016).

Sources: Compiled by the author based on both *World Development Reports* (various issues) and the World Development Indicators 2016 Online (accessed 10 February 2017).

This highlights how Malaysia has been caught in the middle-income trap. More precisely, Malaysia has hit the ‘wall for transitioning to a high-income country’ (Suehiro 2014, 127). By contrast, Thailand and China both joined the group of upper-middle-income countries in 2010. It is unfair to apply the middle-income trap theory used in relation to Malaysia to countries that have only just become upper-middle-income countries. Moreover, an issue confronting both of these countries, and an issue for Indonesia, which is on the verge of becoming an upper-middle-income country, is the clarification of what policies are required to transition into high-income countries.

Lastly, India and Vietnam both finally escaped from the group of low-income countries in 2007 and 2008, respectively, so they cannot be discussed in the same terms as Thailand and China. This is because the issue that India and Vietnam face is clarifying what policies are needed for a future transition into an upper-middle-income country, not a high-income country.

An interesting point in Table 1 is the trend of Latin American countries.

After having previously been a high-income country, Argentina dropped back down into the upper-middle-income country category in 1968. While Brazil and Mexico are both referred to as middle-income countries, they have fluctuated between being upper- and lower-middle-income countries. Except for Malaysia, such examples have not been evident in Asia.

At any rate, it is clearly unreasonable for international institutions to group emerging Asian countries together as middle-income countries, even though their per capita income levels differ, and assert that they are all caught in a hidden trap. What instead need to be considered are the hidden problems in the growth patterns common to these countries; in other words, the problems of growth limitations grounded in the low-cost advantage. Rather than referring to this problem as the middle-income trap, this paper refers to it as the 'limit to the input-driven growth path'.

'The Myth of Asia's Miracle' and 'Innovative East Asia'

A similar argument to that of the middle-income trap was presented in 'The Myth of Asia's Miracle' (Krugman 1994), a paper by Paul Krugman that aimed at criticizing *The East Asian Miracle*, published by the World Bank (1993).

Krugman asserted that the previous high growth in East Asia was due to additional inputs of capital and labour, not technical innovation. He thus predicted that if wages in Asia rose and investment efficiency declined, Asian growth would eventually slow down and the 'miracle age' would end.

Krugman's prediction came true with the outbreak of the Asian currency crisis three years later, and his thesis became famous overnight. The currency crisis was ultimately attributed to a combination of such international factors as large, speculative movements of short-term international funds and such domestic factors as fragile financial systems and poor corporate governance (Suehiro 2008, chap. 4). It was not a consequence of the higher wages and lower investment efficiency purported by Krugman.

Nevertheless, World Bank economists took the currency crisis as a turning point, considering all East Asian economic development after that time as 'input-driven growth' and emphasising its negative aspects. For example, Yusuf and Evenett asserted the following in *Can East Asia*

Compete? (Yusuf and Evenett 2002).

Except for the low-income economies, innovation will be the engine of growth for much of East Asia now that the initial resource-intensive phase of industrialization is ending [meaning the end of the input-driven growth era]. Innovation in a broad range of areas, from products to services and business organizations, will be the principal source of increases in productivity and in export competitiveness. (3–4)

Furthermore, they note the importance of tackling three areas: (1) creating an environment that stimulates research and development (R&D) by public and private entities which form the fundamentals of innovation; (2) integrating the manufacturing sector with the financial and services sectors; and (3) leveraging information and communications technology. In addition, regarding (1), Yusuf and Evenett discuss the importance of creating corporate clusters of networked firms based not on government-driven policies but on open competition.

The arguments presented in these reports are virtually the same as the middle-income trap argument that became popular in the early 2010s (Aiyar et al. 2013; Eichengreen et al. 2013; Veerayooth 2015). The phenomenon had therefore been noted more than 10 years earlier. So why was there interest in the ‘limit to the input-driven growth path’ at this time? The following section considers this point from the aspects of wages and labour productivity.

II. HIGHER WAGES AND LOWER LABOUR PRODUCTIVITY

End of the low-cost advantage era

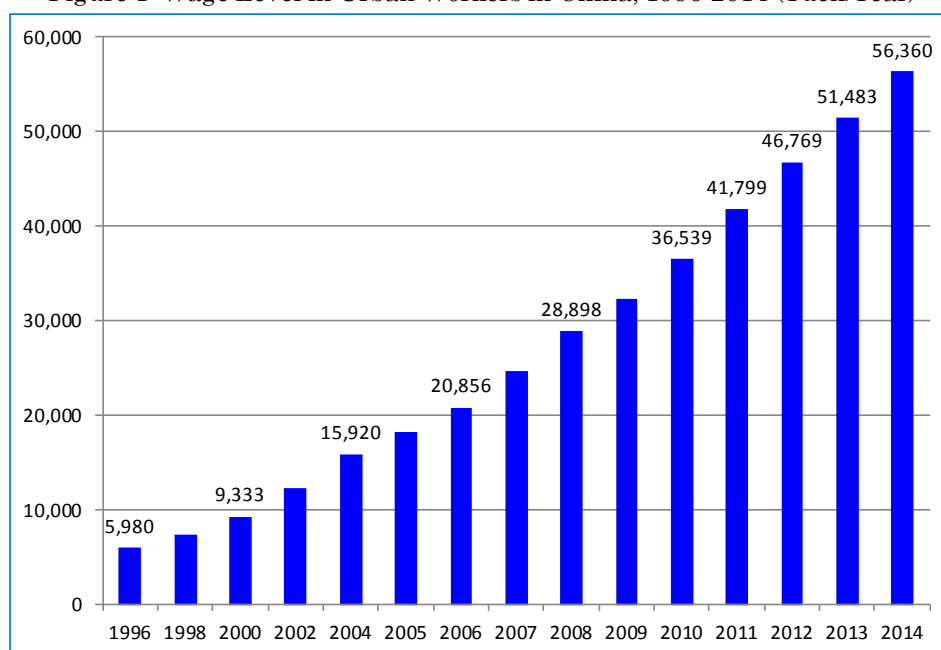
The main reason that the Asian Development Bank and others discussed China from the perspective of the middle-income trap was the pronounced rise in nominal wages starting in the late 2000s (Figure 1). The main attribute of East Asia’s economic development is that its industrialisation is labour-intensive and focuses on export-oriented industries. Therefore, the ability to continually secure a high-quality labour force at comparatively

low wage levels is vital to sustaining industrialisation.

On this point, China has a population of 1.3 billion, with enormous labour reserves living in its countryside, and it was even said back around the early 2000s that there was no limit to China's labour supply. In fact, farmworkers who have moved from rural villages to the city (180 million people as of 2011) have supported the development of labour-intensive industries (Kan 2013).

However, a labour shortage appeared in coastal cities' industrial areas in the late 2000s, and both nominal and real wages started to rise. The concern about China's economy in the mid-2000s, which focussed on 'whether or not China had already reached a Lewisian turning point', reflected this phenomenon. For reference, a Lewisian turning point indicates a break point at which real wages start rising as excess labour from the farm sector (nonmodern sector) is absorbed by the modern sector in the cities.

Figure 1 Wage Level in Urban Workers in China, 1996-2014 (Yuen/Year)



Source: Compiled by the author based on information from IV. Employment and Wages in *China Statistical Yearbook 2015*.

As illustrated in Figure 1, the rate of wage increase in China in the 2000s exceeded 10% per annum. Moreover, in 2012, vice president Xi Jinping (who became the head of state the following year) suggested a policy that would condone wage increases of about 13% per year for the following

four years to improve living standards and expand domestic demand, and after that there was no stopping higher wages in China.⁵

While the degrees vary, sharp wage increases also occurred in Thailand and Vietnam. For example, in January 2013, the Thai government adopted a policy concerning the minimum wage, increasing it from a daily wage level of between 162 baht (regional provinces) and 215 baht (Bangkok and its surrounding five provinces) to a nationwide uniform figure of 300 baht (implemented in the capital area starting in April 2012). While this policy was intended to confirm that wage levels in the capital had already exceeded 300 baht, it also reflected the Thai government's desire to shift to an industry structure oriented towards technology and knowledge-intensive industries by constraining the entry of foreign-owned companies that were looking for a low-wage labour force.

Furthermore, Thailand had been confronted with a chronic labour shortage since 2000. Therefore, the government not only issued work permits to foreign workers from Cambodia, Laos, and Myanmar (CLM) who had legally entered the country to work, but also gave temporary work permits to illegal immigrants from CLM on the basis of agreements with those countries.

These foreign workers were employed in such wide-ranging occupations as fishing, transporting of paddy, harvesting of natural rubber and palm oil, and construction, as well as in menial jobs in various manufacturing sectors and housework. According to publicly released data (Ministry of Labour, Office of Foreign Workers Administration), as of 2011, Thailand had 580,000 legal workers and 1.25 million illegal immigrants and people with temporary work permits, for a total of 1.83 million foreign workers, of whom more than 80% were from Myanmar (Takeguchi 2014). The large presence of foreign workers is highlighted by the fact that private-sector companies in Thailand employ about 11 million Thai people in manufacturing, construction, and service sectors.

There has also been a pronounced increase in wages in Vietnam in recent years. According to the World Bank's *Vietnam Development Report 2008* (World Bank 2007), the minimum wage was 290,000 dong per month

⁵For literature referring to the interrelationship between the Chinese economy and the middle-income trap, please see Eichengreen, Park, and Shin 2011, ADB 2012b, Peerenboom (2014), Kan Ryu (2014), and Kato and Kajitani 2016.

in 2004, but at foreign-owned companies in 'Area 1', which includes Hanoi and Ho Chi Minh City, it was 487,000 per month (World Bank 2007, 43). Subsequently, the minimum wage in Area 1 has been raised almost every year, rising to 450,000 dong (810,000 dong for foreign-owned companies) in October 2006, then increasing to 1.35 million dong (1.55 million dong for foreign-owned companies) by January 2011. Minimum wages at Vietnamese and foreign-owned companies were then unified in October 2011 and raised to 2 million dong (US\$100). The minimum wage has continued going up since then, reaching 2.35 million dong (US\$112) in 2013, and 2.75 million dong (US\$131) in 2014 (data from the Japan External Trade Organization's Hanoi Office).

Vietnam's policy of rapid wage increases is not due to an overall workforce shortage, as is the case in China and Thailand. It should be seen as the result of two issues: the inherent problem for developing countries of not enough workers qualified for employment in modern factories, and the recent rise in the cost of living.

Two indicators of labour productivity

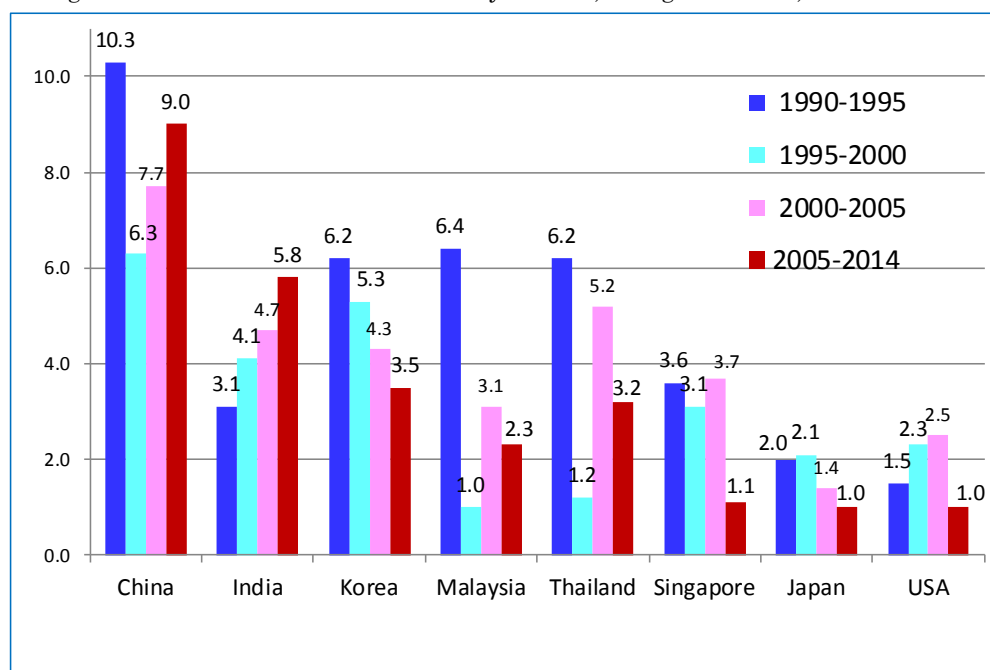
Increased labour productivity is vital if economic growth is to be maintained when wages are rising. Two metrics indicate increased labour productivity.

One metric is growth of labour productivity, which is measured as the annual growth rate in the amount of production per capita (the amount of value added). The other is the differential in labour productivity, which is measured by taking the amount of added value produced per capita in the top developed country (the US) as 100 and looking at how much the same figure for a given country varies from the US figure.

It is important to note that the annual growth rate in labour productivity has constantly been higher in Asia than in all other regions in the world, including developed countries. According to the results of an International Labour Organization (ILO) survey, the annual growth rate in labour productivity from 1990 to 2005 averaged 3.87% for Asia as a whole, and 3.33% for Asia excluding China. By contrast, labour productivity growth in Latin America was a very low 1.35%. In addition, the figure for Asia was about twice that of the US (1.80%) and Japan (1.41%) (McMillan and Rodrik 2011).

The issue to be raised here is not the annual growth rate of labour productivity over a certain time period, but rather the change in the annual growth rate over time. This is because the growth rate of labour productivity tends to fall when capital stock increases with progress in industrialisation. Figure 2 shows the data for each country over four time periods, using the *Productivity Databook* of the Asian Productivity Organization (APO 2015).

Figure 2 Per-Hour Labour Productivity Growth, Using 2011 PPP, 1990-2014 (%)

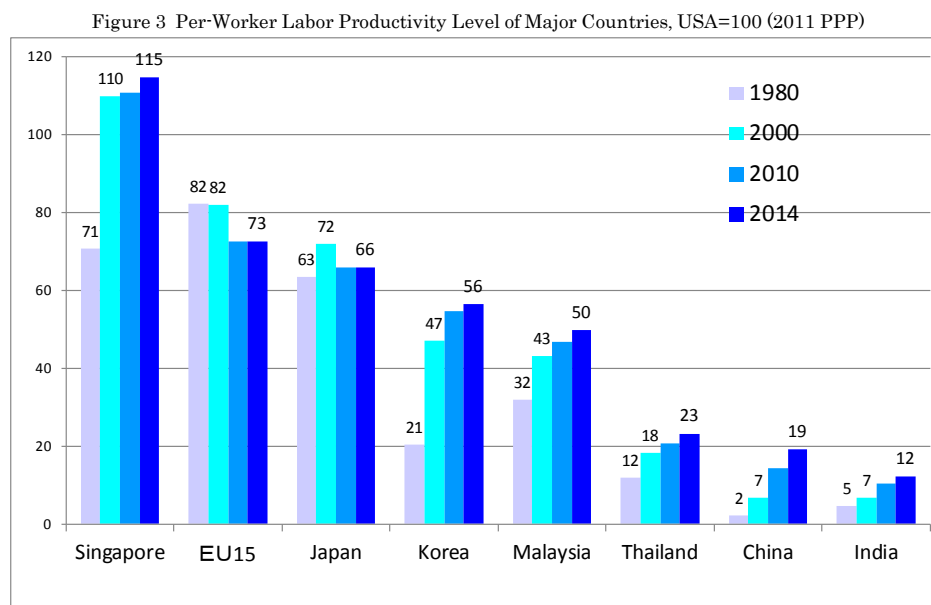


Source: Compiled by the author based on Asian Productivity Organization (2015: 65).

As shown in the figure, all countries apart from China and India are trending downward in their annual growth rate of labour productivity. Even though China has fallen from 10.3% in the early 1990s, it showed a high annual growth rate of 9.0% on average from 2005 to 2014. On the other hand, Thailand has experienced a sharp decline, from 5.2% in 2000–2005 to 3.2% in 2005–2014, while Malaysia also showed a similar decline, from 3.1% to 2.3%, in the same period. A downward trend can also be confirmed for South Korea (from 4.3% to 3.5%) and Singapore (from 3.7% to only 1.1%), which are high-income countries.

Still, we cannot necessarily say that China does not have a problem with labour productivity. Taking the United States to be 100 and comparing the

amount of added value produced per worker indicates that China was only 7 in 2000 and 19 even in 2014 (Figure 3).



Source: Computed by the author based on Asian Productivity Organization (2016: 65).

Singapore already caught up with the United States, at 115 in 2014, and even Japan was low at 66, reflecting the low productivity of its service sector. Furthermore, in 2014, Malaysia was 50, and Thailand was not only low at 23 but should be looked at for the very moderate pace of improvement over the past 35 years, from 1980 to 2014.

The OECD (Organization for Economic Co-operation and Development)'s theory of newly industrialising countries, or NICs (OECD 1979), and the author's book *Catch-Up Industrialization* (Suehiro 2008) refer to a catch-up index that illustrates the extent to which the *per capita income differential* between developed countries and emerging industrialised countries is contracting. However, prior to the 1980s, the catch-up index used by international institutions and economists was the *differential in productivity* with the United States at 100. The representative study on this issue is Abramovitz's classic thesis 'Catching Up, Forging Ahead, and Falling Behind' (Abramovitz 1986).

When using the differential in productivity, it is important to note the large gap with the United States that still exists even for a high-income country such as South Korea, not to mention emerging Asian countries.

‘Criticism of Catch-Up Industrialization’ is provided in chapter 6 of Suehiro (2014). However, in regard to a metric illustrating the differential in productivity of an individual country, it should be noted that the catch-up index remains an issue for NIES as well as for emerging Asian countries such as China.

One way to reduce the differential in productivity with developed countries is to upgrade the country’s industrial structure by shifting the manufacturing sector from low-value-added industries to high-value-added ones, or by shifting from manufacturing to the service sector. Another way is to switch from an input-driven growth path to an innovation-led growth path.

III. INTERNATIONAL COMPARISON OF INNOVATION AND R&D

National innovation systems

Innovation can be discussed at two levels: the national level and the corporate level. This section considers innovation at the national level.⁶ A representative work is Nelson’s *National Innovation Systems: A Comparative Analysis* (Nelson 1993). In the first chapter of this book, Nelson and Rosenberg assert that the systems and organizations established by a nation, particularly expansion of higher education and implementation of fit-for-purpose industrial policies, are indispensable for promoting innovation. Similarly, Freeman, who has conducted research on Japan’s technological development, developed solid arguments in his article ‘The “National System of Innovation” in Historical Perspective’ (Freeman 1995).

Freeman asserted that the prospect of a country achieving innovation was defined not only by government policy but by strong systemic and organizational factors as well, including corporate organizations and industrial organizations. Therefore, he focused on Germany’s introduction of a technical education system in the past (in contrast to what was done in the UK) and Japanese manufacturers’ policy of focusing on the workplace (in contrast to what was done in the US).

Furthermore, after comparing Japan with the former Soviet Union in

⁶For innovative works at the corporate level, please see chapter 4 in Suehiro 2014.

the 1970s, and East Asia with Latin America, Freeman used South Korea and Brazil as case studies to explain how differences in national systems of innovation impact economic performance.

A particularly salient feature of Freeman's thesis is the regional comparison he makes between East Asia and Latin America. This is because he uses some unique metrics to explain why Asian NICs (later Asian NIES) have experienced more economic success than Latin American NICs (13).

He used the following seven unique metrics: (1) the spread of higher education and the proportion of *engineering students* amongst university students; (2) differences in whether the import of technology led to domestic technological changes and R&D; (3) the proportion of *industry R&D* in total R&D expenditures; (4) the extent of infrastructure for developing science and technology; (5) the relative importance of foreign direct investment and the level of implementing *Japanese management models*; (6) the size of investment in *telecommunications infrastructure*; and (7) the share of *electronics industries* as compared to all industries. Asian NICs outperformed Latin American NICs on all seven metrics.

These intentionally chosen metrics clearly highlight the focus of Freeman's thesis on the manufacturing sector and production sites, with a pronounced concentration on the telecommunications and electronics industries. Such arguments were directly linked to the strong interest in Japanese-style production systems (such as the Toyota production method) as US manufacturing declined and Japanese manufacturers made rapid progress in the late 1980s.⁷

However, Japan headed into a long recession with the bursting of the bubble economy. Interest in Japanese production systems swiftly waned, and arguments about 'national innovation systems' referencing Japan's success also disappeared. Replacing this were 'cluster theory', advocated by Michael Porter of the Harvard Business School, which focused on geographic concentrations of manufacturers, service industries, and R&D institutions in designated regions and their interconnectedness (Porter 1998), and the World Bank's *Innovative East Asia: The Future of Growth* (Yusuf 2003).

The previous discussions that focused on the lead role of government, improvements in manufacturers' production technologies, and education

⁷For the Japanese production system, please see Suehiro 2008, chap. 10.

and training at production sites receded, and arguments favouring collaboration between the government and the private sector, tie-ups between the manufacturing and nonmanufacturing (finance and services) sectors, and the building of flexible corporate networks including universities and accounting firms came to the fore.

International comparison of R&D expenditure and R&D personnel

Let us return to our discussion of innovation at the national level. Such metrics as the ratio of R&D expenditure to nominal GDP, per capita R&D expenditure, population density of R&D personnel, the number of patent applications and acceptances, and the number of scientific articles published in international peer-reviewed journals assess whether a particular country is actively innovating.

Table 2 highlights the results of the first two of the above-mentioned metrics using data from information on the UNESCO STAT. As the table illustrates, compared with European countries (apart from Sweden), Japan and Asian NIES have a higher ratio of R&D expenditure relative to GDP. However, European countries have a slightly higher per capita R&D expenditure metric.

Nevertheless, what is most interesting is the extremely wide gap between the Asian NIES and ASEAN countries. One indicator of whether a country is science and technology focused is whether its ratio of R&D expenditure to GDP is more than 2%. As shown in the latest year (2014), Malaysia had 1.26%, Thailand had 0.48%, and Indonesia was less than 0.1%. This puts them a long way from transitioning to a high-income country. While Latin American countries' metrics are slightly higher than those of ASEAN countries, they are still much lower than the Asian NIES.

Another feature common to ASEAN countries is the lack of notable improvement in performance between 2000 and 2014. Upgrading science and technology education and pursuing R&D should have been important national targets for both Malaysia and Thailand during those 15 years. Nevertheless, no results are evident in the two countries in general, and in Thailand in particular. There is a striking contrast in this regard when compared to China's performance, which is aiming to be a 'leading nation in science and technology'.

Table 2 Expenditure of R&D in Major Countries including Emerging Asia: 2000, 2010 and 2014

Countries/ Economies	R&D expenditure against GDP (%)			R&D expenditure per capita (\$)		
	2000	2010	2014	2000	2010	2014
Japan	3.00	3.25	3.58	786	1,104	1,309
Korea	2.18	3.46	4.29	401	1,063	1,485
Taiwan	1.90	2.80	3.00	419	1,080	1,389
Singapore	1.82	2.01	2.18	767	1,420	1,797
China	0.89	1.72	2.04	26	159	269
Malaysia	0.46	1.03	1.26	60	214	324
Thailand	0.24	0.23	0.48	18	29	76
Indonesia	0.06	0.08	0.08	3.1	6.5	8.5
India	0.74	0.79	0.82	15	35	39
Brazil	0.99	1.15	1.23	90	164	194
Chile	0.33	0.37	60	85
Mexico	0.31	0.45	0.53	33	66	92
Sweden	3.42	3.21	3.16	930	1,341	1,426
USA	2.62	2.74	2.72	953	1,323	1,441
France	2.08	2.17	2.25	555	806	905
Germany	2.39	2.71	2.86	640	1,093	1,318

Note: R&D expenditures per capita include both public sector and private sector.

Sources: (1) GDP (%): http://www.globanote.jp/p-data-g/?dno=1190&post_no=10315; (2) Per capita (persons): http://www.globanote.jp/p-data-g/?dno=2580&post_no=10315. Original data are extracted from UNESCO STAT.

China's technology promotion policy was provided in the 'Guidelines on the National Medium-Term and Long-Term Program for Science and Technology Development (2006–2020)', announced in 2006 (Science Portal China 2016). The key words in these guidelines are 'indigenous innovation, leapfrogging in priority fields, enabling development, and leading the future'. 'Indigenous innovation' is not borrowed technology but refers to the 'national innovation capability' to develop domestic new technologies (Table 3).⁸

⁸ According to Kato (2016), 'development of indigenous technology' does not exactly mean the creation of fully self-reliant technology. Conversely, the majority of technology in China is borrowed from abroad and is improved to adjust to local mass markets. Therefore, technology formation in China shows a typical case of an informal system of Chinese capitalism. Likewise, Marukawa (2013) also insisted that Chinese technological development is not the 'catch-up' type but rather the 'catch-down' type in the sense that they downgrade both the level of production technology and the quality of products to meet local market needs. See also Sato 2014.

Table 3 National Science and Technology Development Plan (2006-2020) in China

Code	Item
(1) Guidance by the State: Four Major Slogans	
1	自主创新 Self-reliance innovation. Enhancement of state capacity of innovation; combination of local technology with foreign one.
2	重点飛躍 Realize leaving development by adapting core and advanced technologies to state economy, people's life and national security.
3	發展支援 Support a sustainable development by developing basic technologies as well as versatile-type technologies on the basis of current needs.
4	未來牽引 Creating new market needs, the new type of industries and the future economic society by diffusing basic research and advanced technology.
(2) National Targets of the Plan	
1	The ratio of R&D expenditure against nominal GDP shall exceed 2.5% by 2020.
2	The contribution of science and technology to the GDP growth, or more exactly speaking, total factor productivity (TFP) is computed as 60% and over.
3	The dependency ratio of foreign technology (cost of introducing foreign technology/(R&D expenditure for domestic technology + cost of introducing foreign technology) is less than 30%.
4	Ranking the Top Five Countries in the World in the fields of patents and scientific academic papers (citation)
(3) Key Sectors to be Promoted: 11 Sectors and 68 Items	
	①Energy (5), ②Water and Mineral resources (7), ③Environemnts (4)、④Agriculture (9), ⑤Manufacturing (8), ⑥Transportation (6), ⑦Information and modern service industry (7), ⑧Medical and healthcare services (5), ⑨Urban development (5), ⑩Public safety industry (6), ⑪Defense industry (6, but not identified).
(4) New Advanced Technologies to be Promoted: 8 Fields	
	①Biotechnology, ②Information and technology, ③New materials industry, ④Advanced manufacturing technology, ⑤Advanced energy industry, ⑥Maritime technology, ⑦Lazer industry, ⑧space development industry.

Source: Compiled by the author based on the documents in Science Portal China.
Retrieved on 28 November 2016 from <<https://...>

https://www.spc.jst.go.jp/policy/science_policy/chapt3/3.01/3_1_1/3_1_1_1.html.

At the same time, the government established four major national targets in science and technology: (1) the ratio of R&D expenditure to GDP will reach 2.5% by 2020; (2) the contribution of technological progress to GDP growth or total factor productivity will account for 60% and over; (3) the cost of importing foreign technology against the total cost of developing new technology will account for less than 30%; and (4) China will be ranked

in the top five in terms of the number of patents and scientific articles in peer-refereed international journals. In brief, the Chinese government's stance completely focused on a traditional approach to innovation or the creation of a national system of innovation.

On the other hand, the reference to 'leading the future' in the guidelines indicates the government's vision to enable basic research and create new industries from a long-term perspective. New industries or new advanced technologies designated by the government fell into eight fields: biotechnology, information and technology, new materials, advanced manufacturing technologies, advanced energy, maritime technology, laser technology, and space development. These industries are assumed to develop under the dominant role of government-owned corporations. The government therefore is expected to make a more *direct* contribution rather than an *indirect* contribution to innovation. Such a view, as mentioned above, is quite different from that in Porter (1998), Yusuf and Evenett (2002), and Yusuf (2003).

Propelled by this technology promotion policy, China's ratio of R&D expenditure to GDP successfully exceeded the national target of 2.0% in 2014.⁹ Therefore, even though both China and Thailand occasionally both became upper-middle-income countries in 2010, China seemed to gain an advantage with regard to advancing to become a high-income country. On the other hand, the absence of fundamental structural reforms will make China risk being caught in the middle-income trap in the near future (World Bank and Development Research Center of the State Council 2012; Kan Siyu 2013).

In the next part, three countries—China, Malaysia, and Thailand—are examined in relation to their patterns of experience in avoiding the middle-income trap. According to the survey research of Veerayooth (2015), the patterns of avoiding the middle-income trap are classified into three major groups: (A) establishing appropriate education and institutions; (B) changing export composition through comparative advantage; and (C) promoting industrial upgrading through state intervention.

Differences in the three groups are affected by the different roles played by governments in instituting innovative measures. Group C is

⁹The figure of 2.0% is an important criterion when we judge whether a certain country belongs to an innovation-oriented state.

characterized by the most active role of government in innovation and industrial upgrading, while group A is characterized by a minimal state role in industrial promotion; rather, the state is expected to facilitate such infrastructure as an educational system for the sake of promoting innovation. Group B maintains a position between group A and group C, where both private firms' efforts (supply side) and the condition of the world market (demand side) are more important than government policies of promoting exportable products. A shift to higher-value-added exports is realized through market mechanisms rather than state intervention (Veerayooth 2015: 56–57).

In this paper, China is supposed to represent group C, while Malaysia and Thailand belong to group B. It is true that the governments of Malaysia and Thailand have constantly intended to play significant roles in both industrial upgrading and changes in export composition. But new industries and new products have eventually been introduced by foreign firms in general, and by multinational firms in particular. Government roles are limited as compared to the case of China. In addition, local private firms seem to have discovered their competitive advantages in resource-based industries and the service sector rather than core manufacturing industries. They also seem to have focused on niche products and niche markets rather than new products and new production technology (Khoo, Tsunekawa, and Kawano 2017).

Comparing two countries in particular reference to the role of government in formulating national economic plans, Malaysia seems to follow the pattern of group C because the government is empowered to supervise the private sector. Likewise, the Thai government is also given the power to support targeted industries through tax incentives and semigovernment institutions (*sathaban*). However, its actual contribution is very limited.¹⁰ In this sense, it is safe to say that Thailand belongs to group A. Keeping these characteristics in mind, let me examine the experience of each country in reference to its effort of avoiding or overcoming the middle-income trap.

¹⁰ For the active role of Thai government in industrial upgrading, see Intarakumnerd (2010) and Suehiro (2010). Intarakumnerd (2017) introduces the case studies of the hard disk drive, the automobile, and food processing in reference to the public-private partnership and the role of semigovernment agencies such as the Thai Automotive Institute.

IV. THE RESPONSE OF THREE COUNTRIES: CHINA, MALAYSIA, AND THAILAND

China: Growing beyond the low-cost advantage

Growing Beyond the Low-Cost Advantage: How the People's Republic of China Can Avoid the Middle-Income Trap by the Asian Development Bank (in cooperation with the National School of Development, Peking University),¹¹ which was introduced at the beginning of this chapter, stated the following (ADB 2012b, 3).

International experiences show that, in many countries, growth slowed significantly after they attained middle-income status. They find they were caught in what is increasingly known as the 'middle-income trap'. On one hand, they could no longer compete with low-income countries because of rising wages. On the other, they were unable to compete with high-income countries because they have not shifted into higher-value production through innovation and industrial upgrading.

So what are the issues China faces in transitioning into a high-income country? Table 4 summarizes the points highlighted in the Asian Development Bank's report.

The Asian Development Bank listed seven risks and problems for China: (1) large productivity gaps as compared to advanced countries (see also Figure 3 in this paper); (2) labour market changes and the rapid rise in wages (see Figure 1 in this paper); (3) a growth pattern that relies excessively on public investment (high saving) and exports; (4) widening domestic income inequality; (5) exploitation of natural resources and environmental degradation; (6) an international backlash against the rapid growth in China's presence in the world economy; and (7) the weakness of institutions in supporting long-term growth. These almost duplicate the items listed in the World Bank's *China 2030* report (World Bank and DRC

¹¹ This ADB report was actually written by Juzhong Zhuang, Paul Vanderberg, and Yiping Huang.

2012).

Table 4 The Middle-Income Trap Facing Contemporary China and the ADB Policy Options, 2012

Fields	Risks and Problems	New Direction for Long-term Growth
Productivity	Large technology and productivity gaps with advanced countries	PRC growth needs to be driven increasingly by productivity improvements through innovation and industrial upgrading.
Labor markets and wages	Rapid rise of wages. PRC is approaching the so-called "Lewis turning point"	
Sources of growth	Growth has relied too much on investment (high saving) and net exports	Shift of the sources of growth from over-investment and exports to domestic consumption; development of service industries
Income inequality	Rising income inequality: Gini coefficient increased from 30 in the early 1980s to 43.4 in 2008	Reducing income inequality to make growth more inclusive; enhancing governance
Pressures on natural resources	Rapid growth has created pressure on its natural resources and the environment (water shortage, pollution).	Promoting green growth to conserve resources and protect the environment
External economic environment	As the World's second largest economy, impact of the PRC becomes significant	Strengthening international and regional economic cooperation
General	Weakness in governance and institutions to support the long-term growth	Deepening structural reforms: reforms of enterprises, labor and land markets, the financial sector, and the fiscal system

Source: Summarized by the author based on information from ADB (2012).

The measure that is stressed the most in the report is productivity improvement through innovation and upgrading of the industrial structure. The report also proposes the adoption of three strategies: (1) inclusive growth to reduce income inequality; (2) a shift from a growth path that has relied too much on investment and exports of industrial goods to one based on increasing domestic demand and developing the service sector;¹² and (3) environmentally friendly growth (green growth) that both conserves resources and protects the environment.

¹² Computing the percentage of contribution by important activities to GDP growth rate between 2009 and 2011 (just after the worldwide financial crisis), we see that the largest contribution in China is gross capital formation or investment (48%), followed by final consumption at household (35%) and exports (28%). By contrast, in the United States, the largest contribution is final consumption at household (71%), followed by government consumption (18%) and investment (15%). International financial institutions such as the IMF, therefore, insisted that China rebalance its growth pattern (Suehiro 2014, 211–216).

Still, these economic challenges are very broad and lacking in detail, although China has started the state-led policy of developing science and technology on the basis of self-reliance innovation as summarized in Table 3. Among the seven policy issues in Table 4, the most important one is probably structural reform. However, structural reform is a problem that lies at the root of the socialist system.¹³ The implementation of a ‘reform and open’ path provides the dream and incentives for economic growth shared by both corporations and Chinese citizens, but the pain that accompanies structural reform creates conflicts of interest for related parties. Considering such difficulties, China’s path of transition to a high-income country is not necessarily going smoothly.

Malaysia: From ‘new economic policies’ to a ‘new economic model’

The Malaysian economy is currently in crisis. Under the Mahathir administration, the economy achieved a certain degree of success, with growth in production and exports of industrial goods, mainly from the electric appliance and electronics sector, as well as rectification of inequalities between ethnic groups under policies favouring ethnic Malays (the Bumiputra Policy; Torii 2006). However, there has clearly been an economic slowdown since the 2000s (see also Table 1).

Let’s compare the growth rates of two periods on either side of the 1997 Asian currency crisis: the 10 years from 1987 to 1996 and the 10 years from 2000 to 2009. In the 10 years before the Asian currency crisis, the annual growth rate for Malaysia’s manufacturing sector was 13.9%, which was higher than that of China (12.6%), Thailand (11.8%), and Vietnam (6.6%).

However, in the decade starting in 2000, Malaysia’s growth rate plummeted to 3.7%, which was lower than that of China (10.8%), Vietnam (10.5%), and Thailand (5.6%). The same is true for the annual growth rate of exports. Malaysia’s annual rate of export growth was 11% from 2000 to 2009. This was not only below that of booming China (23%) and Vietnam (21%), but also below that of Thailand (14%).

Yusuf and Nabeshima attribute this economic stagnation to the bias of export products towards electric and electronic goods. While the makeup of

¹³A similar idea is shared among Kan Siyu (2013), Peerenboom (2014), and Kato and Kajitani (eds.) (2016).

Malaysia's exports was similar to that of other Asian countries (and competition with China was severe), little progress was made towards diversification, there was no shift towards high-value-added export products, and training of personnel to develop new technologies and new products did not take place (Yusuf and Nabeshima 2009, chap. 2 and 3).

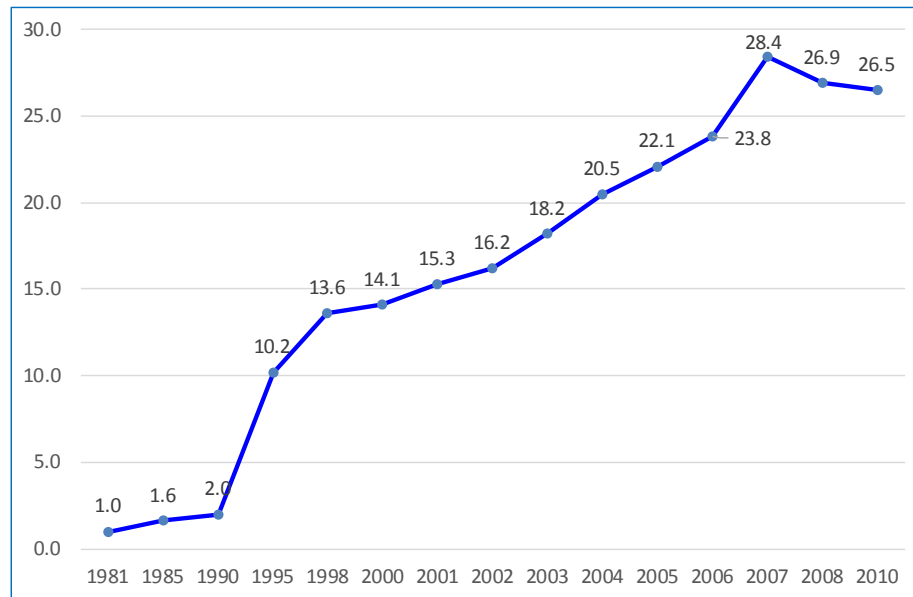
The electric and electronics sectors, which drove the Malaysian economy, grew into a large industry accounting for more than 70% of manufactured exports and more than 50% of total exports at the end of the 1990s. However, after Seagate (the largest manufacturer and exporter of hard disk drives in the world) closed its plant in 2000, Intel, Motorola, and Dell all either shrunk their operations or closed their plants in 2001, shifting their production bases to China (Yusuf 2003, 294). In 2002, Malaysia ceded to China its title as the number one exporter of PCs to the US market.

The most serious issue for Malaysia was the high proportion of foreign workers (mostly workers coming from Indonesia, followed by those from Bangladesh and Nepal) in the manufacturing sector. The percentage of foreign workers, which accounted for a mere 2% in 1990, rose to 10% in 1995, to 21% in 2004, and surpassed 28% in 2008 (see Figure 4). Migrant foreign workers are thought to have hardly contributed to the improvement of labour productivity and innovative works. This is because they have no incentives due to their short-term employment contracts and their unstable working status. As a result, the Malaysian government froze new employment of foreign workers in 2009, when the number of foreign workers totalled 2.3 million, and set a policy to reduce it to 1.5 million by 2015 (Tham and Loke 2011).

Nevertheless, the number of foreign migrant workers in unskilled fields remains at a very high level. According to the latest survey of the International Labour Organization (ILO), the ratio of migrant employment to total manufacturing employment was 37% in 2009, and 34% even in 2014. Likewise, the ratio of migrant employment to total construction employment remained 30% and 34% in the corresponding years (ILO 2016, 2).¹⁴

¹⁴To tackle this problem, the Eleventh Malaysia Plan (2016–2020) has stated that a comprehensive immigration policy for foreign workers will be developed, with the Ministry of Human Resources (MOHR) assuming the lead role in policy making. At the same time, the Institute of Labour Market Information and Analysis (ILMIA) has also been established under MOHR to carry out labour market studies, including

Figure 4 Migrant Workers in the Malaysian Manufacturing Sector, 1981-2010 (%)



Source: Tham, Siew-Yean and Wai Heng Loke (2011). "Industrial Deepening in Malaysia: Lessons for Developing Countries," *Asian Development Review*, 28 (2), p.102.

To deal with this situation, the Najib administration announced its New Economic Model (NEM) in March 2010 following the expiry of the National Development Plan (NDP, 1991 to 2010), which in turn had succeeded the New Economic Policy (NEP), which was aimed at correcting the economic inequalities between ethnic groups. At the same time, the government embarked on the Economic Transformation Programme (ETP), which aims at escaping from the middle-income trap (Nukaya 2012).

Table 5 compares the NEM with the NDP implemented during the Mahathir and Abdullah administrations. The NEM under the Abdullah administration consists of seven strategies. It is a radical transformation that involves a shift (1) from an investment-driven growth path to a productivity-focused growth path; (2) from being government driven to private sector led; (3) from centralization to local autonomy; (4) from a focus on balanced regional growth to the creation of strategic clusters; (5) from favouring specific industries and companies (steel, cement, automobiles, etc.) to favouring technologically capable industries and companies; (6) from an export focus on the G3 market (Europe, US, and Japan) to a focus on markets within Asia; and (7) from relying on foreign workers to selectively

estimating labour supply and demand from 2015 to 2030 (Othman and Rahim 2014) .

appointing foreign specialists and attracting skilled professionals from overseas.

Table 5 Two National Development Plans in Malaysia: NDP and NEM

National Plan	National Development Plan (NDP)	New Economic Model (NEM)
Period	From 1991 to 2010	From 2010 to 2020
Governments	Mahathir bin Mohamad; Abdullah bin Haji Ahmad Badawi	Haji Mohd Najib
Growth strategy	Growth through capital accumulation	Growth through productivity
Public/private	Dominant state participation in the economy	Private sector led growth
Policy installment	Centralized strategic planning in the decision-making process	Localized autonomy in decision-making process
Local development	Balanced regional growth	Cluster and corridor-based economic activities
Industrial policy	Favor specific industries and firms	Favor technologically capable industries and firms
Export promotion	Export dependence on G-3 markets (US, Europe and Japan)	Asian (including ASEAN) and Middle East orientation
Human resources development	Restriction on foreign skilled workers, increasing unskilled foreign workers	Retain and attract skilled professionals, including return of overseas brains

Source: Compiled by the author based on information from Malaysia National Economic Advisory Council (NEAC) (2010).

Among the aforementioned policies, (1), the productivity-focused growth path, is the same as the policy proposals made by international institutions in relation to China. In other words, the aim is to revise the input-driven growth path. Meanwhile, items (2) to (5) aim at correcting the distortions in resource allocation resulting from the Bumiputra Policy (in the NEP and NDP) so that the economic structure is in tune with the era of globalization.

However, there is strong resistance to revising the Bumiputra Policy, even from within the ruling party. In addition, the percentages of R&D expenditures against nominal GDP are stagnant—1.03% in 2010 and 1.26% in 2014, lower than those of China (1.72% and 2.04% respectively). As Kawano (2017) introduces in excellent examples of local private firms' activities in the natural rubber industry, Malaysia begins to promote notable innovation in resource-based industries. However, carefully examining these case studies, we recognize that local private firms (Top

Glove and Kossan) have mainly developed niche products, such as medical surgical gloves, with the improvement of imported technology rather than new products with new production technology.

In core manufacturing industries such as the automotive industry, the government has not been successful in inviting new multinational corporations into Malaysia after the Asian currency crisis. Reviewing these elements, Malaysia is likely to face a much harder path of transition into a high-income country than China (Nukaya 2012; Onozawa 2014).

Thailand: Pursuing new age industries and ‘Thai-ness’

Last is the case of Thailand. National Economic and Social Development Board Secretary General Arkhom stated the following about the direction of the Thai economy, taking into consideration the 11th National Economic and Social Development Plan that was inaugurated in October 2011 (Arkhom 2011).¹⁵ His idea is summarized as in the following.

‘When comparative advantage was being discussed from the 1960s to the 1980s, a factor and resource input growth strategy was not only mainstream, but it also worked. Once the era of competitive advantage began, the policy shifted to efficiency and productivity-led growth strategy. In the 2010s, the policy needs to shift to an innovation- and creative-led growth strategy.

So far, this does not differ much from what has already been said by international institutions. What is unique about it is the substance of the ‘creative economy’ (*setthakit sarngsan*) needed for this to be achieved. Secretary General Arkhom referred to four examples of creative economy: (1) industries using cultural assets and natural resources (tourism, Thai food, spas, etc.), (2) the performing arts, (3) media (movies, music, animation), and (4) functionally creative industries (advertising, fashion, urban planning, etc.). In short, the target is shifting from low-cost-advantage-based manufacturing industries to service industries that emphasise ‘Thai-ness’. In fact, the 11th National Economic and Social Development Plan extolled the cultivation of knowledge-based industries

¹⁵Arkhom was appointed Minister of Transportation under the Prayudh administration in 2014 to promote the mega projects including a high-speed railway system.

(the service sector; Porametee 2011).

The approach of seeking out ‘Thai-ness’ as Thailand’s competitive advantage is also confirmed in the Thailand Board of Investment’s ‘New Investment Promotion Strategy (2013 to 2017)’ in Table 6 (Udom 2013).

Table 6 10 Industries to be Promoted in the Future of Thailand (January 2013)

10 Industries	Type of products or business
(A) Industrial foundation	
1. Basic infrastructure and logistics	①industrial zone, ②power generation from natural gas, ③water resource, ④mass transit, ⑤commercial airport, ⑥logistics
2. Basic industry	①steel, ②petrochemicals, ③pulp and paper, ④machinery etc.
3. Medical device and science	①medical device, ②medicine, ③medical food, ④scientific equipment etc.
4. Alternative energy and environmental services	①power generation from renewable energy, ②recycling, ③industrial waste disposal service, ④energy service company (ESCO) etc.
5. Services that support industrial sector	①R&D, ②HRD, ③engineering design, ④software, ⑤calibration, ⑥regional headquarter, ⑦trade & investment support office etc.
(B) Advanced Core Technologies that helps elevating Thai industry	
6. Advance core technologies	①biotechnology, ②nanotechnology, ③advanced material technology etc.
(C) Industries that are developed from domestic resources and Thainess	
7. Food and agricultural processing industry	①processed food, ②food additive, ③herbal extract, ④plant propagation, ⑤products from natural rubber, ⑥bio-fuel such as ethanol, bio-diesel.
8. Hospitality & wellness	①tourism and sports promotion activities, ②Thai motion picture production, ③dedicated health center, ④retirement home and care center
(D) Industries that Thailand is competent to be global's manufacturing base (Global Supply Chain)	
9. Automotive and other transport equipment	①cars, ②motorcycle, ③train, ④electric train, ⑤aircraft, ⑥shipbuilding and maintenance.
10. Electric and electrical appliances	①electronic design, ②organics & printed electronics, ③HDD/SDD and parts, ④solar cells, ⑤white electrical appliances.

Source: Compiled by the author based on Udom (2013: 16-17).

This New Investment Promotion Strategy was groundbreaking because it was the first time the Board of Investment (BOI) had left out labour-intensive industries (textiles and clothing, athletic footwear, etc.) from the list of industries to be promoted. In addition, the scheme also

revised the zone-based incentives policy that prioritized investment in regional provinces and shifted from a system of tax incentives (exemption of up to seven years on corporate tax and import duties) to a policy of nonfinancial facilitation (such as deregulation of land ownership and employment of foreign specialists). This resulted in strong objections from industry associations of the excluded industries and regional chambers of commerce.

Table 6 provides a summary of the New Investment Promotion Strategy. My focus here is to show the level of Thai-ness evident in the formulation of the four basic strategies and the choice of the 10 areas to be promoted. Industries targeted for investment promotion are wide-ranging, and I do not have a particular problem with this, as such is to be expected of a government document.

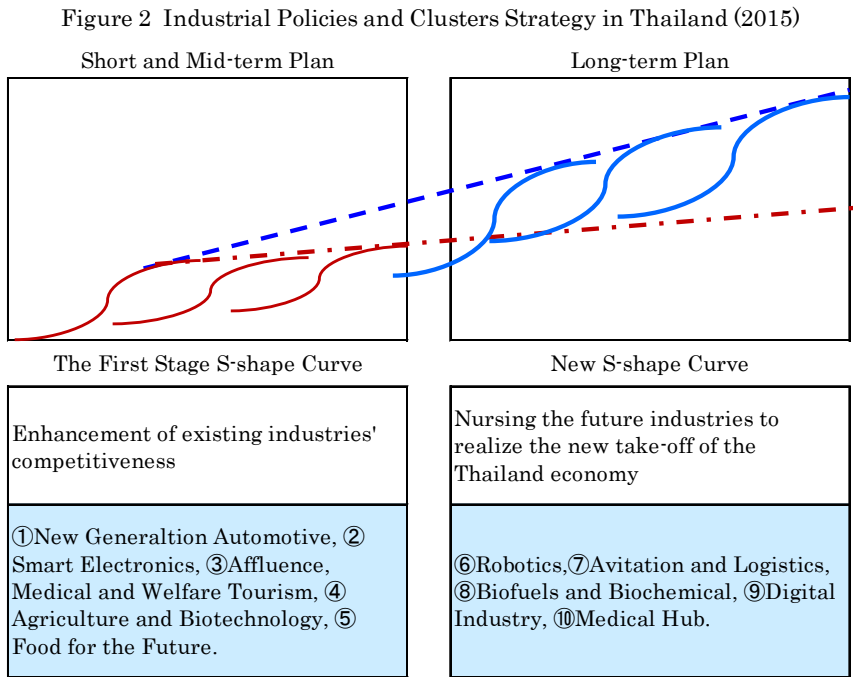
First, as discussed in Suehiro (2014, chap. 5), 4 of the 10 industries being promoted—(2) basic industry, (6) advance core technologies, (9) automotive and other transport equipment, and (10) electronic products and electrical appliances—are industries in which foreign-owned companies have an overwhelmingly large share, so it is hard to expect much participation from Thai companies.

However, Thai companies will be able to use their competitive advantage in four of these sectors: (1) basic infrastructure and logistics, (4) alternative energy and environmental services, (7) food and agricultural processing, and (8) hospitality and wellness. In particular, within (7), processed foods, herbal extracts (cosmetics), natural rubber products, and biofuels are products that can effectively use domestic resources, while within (8), tourism and sports promotion, health-care services, long-term accommodation for foreigners, and retirement home and care facilities were selected on the basis of leveraging Thailand's national characteristic of hospitality.

In May 2014, a Thai military group launched a coup d'état to stop unproductive political conflict between pro- and anti-Thaksin groups that started in 2013. Under the Prayut Chan-ocha government, the Ministry of Industry rearranged the previous policies and investment targets and submitted a cabinet with a new idea of promoted industries (Figure 5).

According to this new idea, industrial policies occur in two different

stages: the first stage encompasses the short- and mid-term plan to enhance the competitiveness of existing industries such as new-generation automobiles, medical and welfare tourism, and agriculture and biotechnology; and the second or new stage is the long-term plan to nurse future-type industries that reflect the new surging of Thailand’s economy, such as robotics, biochemistry, digital technology, and Thailand as a medical hub. On the one hand, it is very easy to understand that the first stage exactly follows the previous BOI’s investment plan of targeted industries as summarized in Table 6. On the other hand, the second stage, or the new surging of Thailand’s economy, is very ambitious, comparable to the National Science and Technology Development master plan (2006–2020) in China.



Sources: Compiled by the author based on Oizumi (2016: 4-5) and Ministry of Industry, Thailand (2015).

Glancing at the Ministry of Industry’s plan, Thailand seems to aim at reviving the active role of the state in industrial policies as we saw before the 1997 Asian currency crisis. According to the classification of Veerayooth (2015), Thailand seems to shift its position from group A to group C. However, such an observation is not accurate because there is neither institutional support nor budgetary backup to realize its plan. It is likely

that the government will entrust the development of both existing and future industries to private firms, including multinational corporations.

In my recent work examining the possibility of Thai firms demonstrating their advantages, I pointed out three major sectors (Suehiro 2017): (1) oil refineries, natural gas, and petrochemicals under the control of the PPT group ¹⁶ (government-linked companies); (2) export-oriented agro-industry, including new energy industries based on biotechnology; and (3) service industries based on Thai-ness and Thai hospitality such as tourism, medical and health-care services, restaurants and fast food, housing, and entertainment.

Table 7. Major Family Businesses in Agro Industry and Service Sector, as of 2015

Category	Type of businesses	Name of Group/ Family Business (specific company)
Agro industry	Beer, soft drinks	TCC (Thai Beverage, Oishi), Boon Rawd Brewery (Singha)
	Rice, silo, warehousing	CP (CP Intertrade), Capital Rice, Asian Golden Rice
	Sugar + Ethanol	Mitr-Phol, Thai Roon Ruang, Kwang Soon Lee
	Natural rubber	Sri Trang Agro Industry, Thai Hua Rubber, Von Bundit, Teck Bee Hang, Thai Rubber Latex Corporation
	Broiler chickens	CP (CP Foods), Betagro, Laemthong Sahakarn
	Canned tuna, shrimp	Thai Union Frozen Products (TUF) , CP (CP Foods)
Property, housing and industrial estates	Construction	Italian-Thai Development (ITD), Ch. Karnchang
	Real estates, Propert business	L&H, CP (CP Land), TCC (Univentures, TCC Land)
	Housing industry	Pruksa Real Estate, Supalai, Quality House
	Industrial estate	Saha Group, Amata, Hemaraj
Shopping mall and other service industries	Convenience stores	CP (CP All: 7-Eleven), Central (Familymart), Saha Group
	Supermarkets, C&C	CP (Siam Makro), Central (CPN), Siam Future
	Department store	Central (Central, Robinson), The Mall, TCC
	Restaurants	Central (CRC), MK Restaurant, Saha Group
	Chains of fast food	Mahakijisiri (Nesle coffee), Minor Group (Pizza Hut)
	Hotel services	Central (CENTEL), CP (CP Land), Dusit Thani
	Hospital, healthcare services	BGH (Bangkok Dusit Medical Service), Thonburi Hospital
Entertainment	Cinema	Major Cineplex
	TV Programs	BEC World, Grammy, Kantana

Source: Compiled by the author based on information from his field survey.

What is interesting to us is the fact that leading groups of family-owned business are unexceptionally involved in both agro-industry and service

¹⁶ PTT group is the conglomerate under the management control of the former state enterprise of Petroleum Authority of Thailand (PTT). They do not use the name of PAT because that PAT has already been used by the Port Authority of Thailand (PAT).

industries, as shown in Table 7. Typical cases are the CP (Charoen Pokphand) Group of the Chearavanont family, the Central Group of the Chirathivat family, the TCC Group of the Sirivadhanabhakdi family, the TUF Group of the Chansiri family, and the Saha Group of the Chokewattana family.

These family-owned groups are active in developing new products and new production technology in agro-industry (Intarakumnerd 2017). They also are very active in promoting their overseas activities in ASEAN countries in general, and in CLMV (Cambodia, Laos, Myanmar and Vietnam) in particular. They look for new business opportunities in manufacturing and nonmanufacturing by constructing strategic business alliances with large Chinese firms (Suehiro 2017). In Thailand, the active player is not the government, but a private firm. Family businesses seek their own positioning in Asian markets regardless of support from the government.

V. THE ROLE OF THE STATE IN NEW CHALLENGES

Computing the average annual growth rates for the three countries in the 16 years from 2000 to 2015, China shows the best economic performance (9.53%), followed by Malaysia (5.08%) and Thailand (4.06%).¹⁷ As compared to the average figure in the world (3.79%), Thailand still maintains a better position. However, the increased rate of per capita GNI in Thailand between 2010 and 2015 is merely 114% (from US\$ 5,112 to US\$ 5,816), lower than the average figure of upper-middle-income countries, 124% (US\$ 6,240 to US\$ 7,737) (Table 1).

Malaysia suffered the lowest rate, 108% (from US\$ 9,069 to US\$ 9,766), but its absolute level of per capita GNI in 2015 is the nearest position to the rate of high-income countries. According to the World Bank's definition, per capita GNI of high-income countries was US\$ 12,736 and over in 2014. It is apparent that Thailand is far behind Malaysia.

Contrary to the expectations of Porter (1998) and Yusuf and Evenett (2002), in emerging Asia, the role of the state was not replaced by flexible networking of various actors in manufacturing, services, and academic circles. Rather, as the case of China apparently demonstrates, the state has

¹⁷These figures are computed from the IMF World Economic Outlook 2016 (IMF 2016).

continued to play its active role in promoting a national system of innovation, and in otherwise facilitating the institutions' support of private firms' innovation.

Under the Thaksin administration (2001–2006), Thailand also formulated the National Competitiveness Plan on the basis of a partnership between the public and private sectors (Suehiro 2010). This ambitious plan is comparable to the national 10-year plan 'Made in China 2025' to transform Chinese manufacturing industries into the strongest ones in the world. However, a military coup d'état took place in September 2006, ending not only the Thaksin government but also the active role of government in economic fields, including industrial policies. Since the end of 2006, Thailand has suffered both continuous political turmoil and economic stagnation.

After the military coup d'état in May 2015, the Prayudh government has successfully realized political stability throughout the whole country but has failed to bring about economic recovery due to the slowdown of exports, the sharp decline of primary commodity prices, and the limitations of domestic consumption. To overcome economic stagnation, the Prayudh government invited Somkid Jatusripitak, who had been Finance Minister and Deputy Prime Minister in the Thaksin administration, to become Deputy Prime Minister in charge of economic fields.

Somkid attempted to introduce economic policies similar to those of the Thaksin era as expressed in the cluster strategy in Figure 5. However, he hardly seems to have been successful in reconstructing a strong partnership between the public sector and the private sector. Rather, private firms, including family-owned firms, are going to discover their own competitive advantage in agro-industry and the service sector rather than in core manufacturing industries. This direction has inevitably led Thailand to a slowdown of its economic growth.

The World Bank optimistically predicted that China would transition to a high-income country in the mid-2020s (World Bank 2012). It is highly likely that Thailand's transition to a high-income country will be later than China's and even Malaysia's. On the other hand, the direction being targeted by Thai private firms and their choice of sectors or fields with competitive advantage are much clearer than Malaysia's.

This fact suggests to us that Thailand is possibly seeking a different

path from China, namely, not becoming a high-income country with a relatively high economic growth rate, but instead remaining an upper-middle-income country with a moderate economic growth rate. The latter is a more realistic path for a country and puts less of a burden on the Thai people.

Even though Thailand's income level stalls at that of an upper-middle-income country (approximately US\$ 13,000), I do not think this would be a wrong choice for the Thai people if Thailand can find its own place within Asian markets and use this to gain social stability. This is because the author does not see a transition to a high-income country as the only path available for upper-middle-income countries.

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