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Viet Nam Productivity Report

Preliminary Final Edition

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VIET NAM PRODUCTIVITY REPORT

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This English edition is complete except we are awaiting data updates in Chapters 2, 3 and 4, and some style and editorial matters also need to be attended. We print this preliminary edition for circulating our key findings which will in all probability not be affected significantly by data updates. This edition is open to public but citation should mention its preliminary nature. A full report will be published in due course, in Vietnamese and English, to replace this edition.

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INTRODUCTION AND KEY FINDINGS

Productivity is a key concept in economic growth and welfare. It measures how much is expended in terms of effort and materials and how much is produced in terms of goods and services as a result. If large output is obtained with small input, productivity is high and the nation can enjoy a high living standard. If only little value is produced despite large effort and material input, productivity is low and the nation is likely to be trapped in either low or middle income. There are some nations richly endowed with natural resources such as oil, gas, diamond, copper, and the like relative to population size, which permits high income without making much human effort. But most other nations devoid of such given advantage, including Viet Nam, must accumulate knowledge, skills, and technology to climb the industrial ladder, step by step, to high income. For such nations, attaining high income and improving productivity are essentially the same thing. That is why productivity enhancement is critical for Viet Nam's socio-economic development. Viet Nam can attain high income only if it improves productivity significantly from the current level.

The Vietnamese economy is under constant pressure from deepening global and regional integration and the future risk of a middle income trap. Despite the reasonably high growth attained in the last two-and-half decades, Viet Nam's productivity and innovation remain low, and Vietnamese enterprises generally have not secured sufficient competitive advantage to cope with the global market. This Report studies Viet Nam's productivity focusing on labor productivity and total factor productivity (TFP). It analyzes the process of productivity growth of the entire economy, across sectors and over time, as well as by making comparisons with neighboring countries.

Two remarks are in order. First, we need to differentiate the level and the growth rate of productivity. Both are important but point to different aspects of economic performance, and we will study both. Viet Nam is a country that has an average growth rate of productivity within ASEAN, but the absolute level of productivity is still low. If this situation continues, it may take a very long time for Viet Nam to rise to high income. Growth must be accelerated from the current low base.

Second, productivity is a quantity-based measure which asks how many goods and services are produced per unit of input. In addition to quantity, nations must also pursue quality and innovation. Productivity, quality, and innovation are different concepts even though there are overlaps. Original and high-quality products are the hallmark of an advanced economy, and

professionally trained and innovative human resources are required to generate them. Productivity, quality, and innovation are all important, but their relative importance should shift as the economy moves from an early to late stages of industrialization. A nation in an early industrialization stage producing garment, shoes, and electronic devices for export under foreign instruction and management, such as Viet Nam, must attain high efficiency to be integrated into the global value chain. Then, gradually, the nation's product mix must be upgraded from "cheap, common, and standard" to "upmarket, original, and high quality." Finally, the nation should aim to become a creator of new goods and services keenly demanded globally, which bring high income and profit to those who invent and commercialize them.

This Report will concentrate on productivity. This does not mean quality and innovation are unimportant for Viet Nam, but the current status of Viet Nam as a lower-middle income country with mostly borrowed technology calls for deep analyses and effective policies focusing on productivity instead of a broader and more ambitious research. When most workers remain unskilled and factories are operating inefficiently, it is difficult for Viet Nam to conquer the global market with high quality and innovation. Industrial challenges must be taken up in proper sequence without jumping necessary steps. We will focus on the basics of productivity improvement such as business management, factory efficiency, workers' skill and attitude, administrative and logistic efficiency and the like, which directly impact productivity but are not yet effectively and widely practiced in Viet Nam, rather than frontline technologies such as bio-tech, AI, IoT and Industry 4.0. These things will become critical when Vietnamese factories operate at world-class efficiency and Vietnamese workers are well-trained and disciplined, and when Viet Nam is ready to move up from upper-middle income to high income.

Part I of the Report defines productivity and discusses issues related to the measurement of productivity (Chapter 1), then examines the past and current state of labor productivity in Viet Nam from various angles at both the economy level and sector level (Chapter 2). Growth accounting and shift-share analysis methods are used on the data from the General Statistics Office (GSO), the Asian Productivity Organization (APO), and others to estimate the factors contributing to Viet Nam's labor productivity growth (Chapter 3). We also compare the status of Viet Nam's productivity with those of selected economies in Northeast Asia and ASEAN (Chapter 4). Viet Nam's past and current policy efforts in improving labor productivity and total factor productivity (TFP) are reviewed (Chapter 5). Assessment of the current state of productivity in Viet Nam and the results of policy efforts in the post-Doi Moi period are valuable inputs to reform productivity policy in the future.

Part II explores the possibility of availing of additional Japanese cooperation to introduce

globally acknowledged Japanese productivity methods to Viet Nam, with proper selectivity and adjustment. We believe this will become an important pillar of productivity enhancement in Viet Nam if implemented effectively and sustainably. We examine general principles that need to be followed in adopting any foreign productivity models, and study the case of how Singapore learned from Japan in the 1980s (Chapter 6). We then explain ten concrete productivity tools and methods originating in Japan and introduced to many other countries for initiating productivity movements, with the help of the Japan International Cooperation Agency (JICA), the Japan Productivity Center (JPC), and other Japanese public and private organizations (Chapter 7).

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Our key findings are summarized in the following eight points.

First, Viet Nam's economy-wide labor productivity has increased over time but its speed was moderate and unstable. Unlike countries that have achieved high economic development in the rest of Asia, Viet Nam has not experienced a period of very rapid productivity increase that allows an economic take-off to high income. In absolute value (constant 2010 price), labor productivity of the whole economy grew from 18.9 million VND per worker in 1991 to 54.4 million VND per worker in 2015, or by 2.88 times. Any rapidly industrializing economy is expected to attain higher labor productivity growth than this within a quarter century. China, which had labor productivity similar to Viet Nam in 1991, raised it by 8.9% annually or 7.8 times by 2015. Thus, Vietnam's past productivity performance was good but not spectacular. Because of this, Vietnam's speed of catching up with high-income economies has been slow (Chapter 2).

Second, Vietnam's labor productivity evolved in three distinct stages: high growth (1991-95), stagnation (1996-2012) and recovery (2013-). In the first stage, Vietnam steadily eliminated barriers to market and decisively integrated into the international community. These efforts were behind the initially remarkable growth in Vietnam's labor productivity, which peaked at 7.13% in 1995. This was a reviving of economic growth from past suppression and returning to the path which the nation was supposed to tread. There was efficiency catchup within each industry ("within effect") and rising capital intensity as constraints on private business activities were removed. Meanwhile, labor force remained relatively stable in both quality and quantity. In the second stage starting from the mid-1990s, labor productivity growth slowed down. The Asian financial crisis in 1997-98 and the global financial crisis in 2008-09 disturbed the Vietnamese economy. More importantly, growth increasingly relied on heavy capital investment with declining capital efficiency. Lackluster productivity performance continued into

the new millennium. From 2000 to 2012, labor productivity growth was only 3-4% per year. In the third stage, the situation began to improve and labor productivity growth approached the speed in the first stage (until the COVID-19 pandemic hit the national as well as global economy in 2020). TFP's contribution to labor productivity rose to as high as 89% in the period 2011-15, while the contribution of capital intensity declined. The main engine of growth shifted from heavy investment to true efficiency improvement. However, the reason for this desirable change remains unknown (Chapter 2).

Third, looking at the broad three-way sectoral classification, labor productivity growth was highest in the industry and construction sector (secondary industry), followed by the service sector (tertiary industry). Meanwhile, the agriculture, forestry and fishery sector (primary industry) had the lowest labor productivity growth as well as level. Even so, labor productivity growth of manufacturing and construction, which together accounted for nearly 40% of GDP, was not spectacular by global standards, and it even began to decelerate around 2001 when Viet Nam was still a low income country. After growing rapidly in the 1990s, manufacturing labor productivity remained stagnant in the 2000s and 2010s. This slowdown was premature because dynamism of the manufacturing sector should continue for at least a few more decades to take the country to high income (Chapter 2).

Fourth, by ownership type, labor productivity of the FDI sector declined significantly beginning in the early 2000s while those of the state and non-state sectors increased steadily. The low and even declining labor productivity of the FDI sector is surprising because FDI was supposed to bring high technology and global competitiveness to Viet Nam and especially to Vietnamese enterprises, which is clearly not happening. A large part of FDI inflow has been into the manufacturing sector. The disappointing performance of labor productivity of the FDI sector may largely explain why labor productivity of Viet Nam's manufacturing has hardly risen since 2001, and why Vietnamese enterprises are still unable to participate meaningfully in global value chains. Suspicion is that the majority of foreign manufacturers regard Viet Nam as a location to engage in unskilled labor-intensive production—sewing, food processing, parts assembly and other simple processes—and the Vietnamese government has not introduced policies to counter this notion by greatly advancing domestic value. The situation of low manufacturing productivity perpetuates even after a quarter century of global integration. Viet Nam seems stuck at the bottom of the Smiling Curve, which illustrates high value creation in upstream (R&D) and downstream (global marketing) and low value creation in midstream (processing and assembly). Meanwhile, the increase in labor productivity of the state sector partly came from a series of reforms such as the streamlining and equitization of state-owned enterprises. This process eliminated low-

productivity state activities and left highly capital-intensive industries in the public sector, thus pushing up the average labor productivity. Labor productivity of the non-state sector remains very low despite improvements over the years (Chapter 2).

Fifth, the shift-share analysis shows that the driving force of labor productivity in the period 1991-2015 was the within effect (improvement in each sector) though there was also a subperiod, from 2001 to 2010, when the shift effect (labor movement across sectors) was the dominant contributor. However, the shift effect recently subsided even though a large proportion of Vietnamese labor still remains in rural areas and engaged in low productivity agriculture, and industrialization is far from complete. This premature slowdown of inter-sectoral labor movement may point to the existence of barriers to labor mobility such as the small size of production and market of sectors with high labor productivity, or the lack of skills in Vietnamese workers who cannot meet the labor requirement of globally competitive industries. Put more positively, there is much room for Viet Nam to improve overall productivity by removing such barriers and stimulating labor mobility across sectors. Experiences of early industrializing economies such as Northeast Asian economies and Singapore show that the within effect and the shift effect should both be dynamic and interact to sustain high productivity growth. In Viet Nam's development stage, which is lower middle income, both effects need to be greatly re-activated (Chapter 3).

Sixth, when compared with selected Northeast Asian and ASEAN countries, Viet Nam's labor productivity is still very low despite reasonably high economic growth in the past two-and-half decades. In 2015, labor productivity of Viet Nam's nine sectors (following the APO's industrial classification) was at or just above the lowest level in the region. Viet Nam's labor productivity was the lowest in manufacturing; construction; and transportation, storage, and communications. It was the second lowest, only above Cambodia, in agriculture, forestry and fishery; electricity, gas and water supply; and wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants. Meanwhile, Viet Nam's performance was closer to or above average in mining and quarrying; financial intermediation, real estate, renting and business activities; and community, social and personal services (Chapter 4).

Seventh, Viet Nam has made policy effort to improve labor productivity by establishing the Viet Nam Productivity Institute (VNPI) in 1997 and preparing conditions for national productivity enhancement. In the First Decade of Quality (1996-2005), a number of foreign productivity methods were introduced to Vietnamese enterprises to raise productivity while ensuring quality. The Second Quality Decade (2006-2015) expanded and prototyped additional models. In 2010, National Program 712 targeted TFP's contribution to GDP of at least 35% by

2020, and this target was achieved already in 2018. After two decades of effort, a policy framework has been laid and agencies and experts accumulated experience. Nevertheless, productivity movement in Viet Nam is still partial and fragmented, focusing only on the business sector and covering only some aspects of productivity. As explained above, Viet Nam's productivity remains near the bottom of the region and the productivity movement is top-down rather than being driven by the initiatives of individuals, firms and community groups. Productivity agencies and their mandates are scattered in different ministries which makes policy coordination difficult. Productivity policy needs to be integrated at the national level, by establishing the National Productivity Council or a similar high-level mechanism, with strong authority to direct and monitor implementation (Chapter 5).

Eighth, support for productivity enhancement has been offered through international cooperation, especially from Japan and the Asian Productivity Organization (APO). This has contributed greatly to Viet Nam's productivity movement, but more is needed because current productivity performance is far from the desired level. This Report lists ten Japanese productivity methods which produced good results in Japan and many Asian countries and the rest of the world—but not yet introduced to Viet Nam in earnest. Viet Nam should study them carefully and choose some of them for execution in proper sequence, with selectivity and adjustment to Viet Nam's reality. Viet Nam may also learn productivity from other countries, but it is advisable to start with Japan because the Japanese government is ready to cooperate further, and the Japanese business community is also willing. At the same time, the learning must not be passive but effectively owned and promoted by the Vietnamese side. Viet Nam can learn technical aspects of productivity from foreigners, but administrative and institutional mechanisms that spread good practices must be homemade because political, economic and social circumstances differ from country to country. Copying foreign tools works only to a certain point, beyond which a truly domestic system is needed to design and implement policies in a way most suitable for Viet Nam. Viet Nam's Productivity movement must be "Made in Vietnam" (Chapters 6 and 7).

PART I

CHARACTERISTICS OF LABOR PRODUCTIVITY PROGRESS IN VIET NAM

CHAPTER 1

DEFINITION AND MEASUREMENT OF LABOR PRODUCTIVITY

Productivity is a key indicator of economic effectiveness, revealing how well the resources are combined and utilized to achieve the desired and expected results (Bain, 1982). Productivity can be examined at different levels: economy-wide, industry, or organization. It can even be applied to factories, departments, and individuals (Prokopenko, 1987).

One of the most common measurements of productivity is labor productivity. It is the ratio of output of goods and services to labor input to produce such output. Another way to measure it is by way of capital productivity, which is the ratio between output of goods and services to physical capital input. It is usually measured by the incremental capital-output ratio (ICOR), i.e., an increase of GDP which a unit of capital investment supports. The third measurement is total factor productivity (TFP). This is the amount of output that is not explained by the quantity of various inputs used in production, showing effectiveness in the utilization of inputs. Compared with the first two productivity measures, which are partial, TFP is a comprehensive proxy since it reflects the amount of output that is not yet accounted for by all factor inputs in the production function. Estimating TFP, however, is a complex statistical exercise which is sensitive to models and different parameter assumptions, producing widely different results across researchers.

Which measurement of productivity should be used depends on the purpose of research and the availability of data. If there is doubt about the underlying growth process or if the data of capital stock is unreliable, labor productivity is the most suitable measure to examine the tendency in short and medium-term (about ten years or less). If these problems are minor, TFP is more credible in studying long-term trends (Sargent & Rodriguez, 2001). The two indicators should be considered concurrently to assess the short-term and long-term trends of economic growth.

Our research focuses mainly on labor productivity, the most common measurement used globally in general and in Viet Nam in particular. TFP will also be examined, especially in connection with the decomposition of labor productivity growth.

According to the International Labor Organization (ILO), economy-wide labor productivity is the total amount of output (measured by GDP) produced by total labor input (measured by total number of employed person) in a specific reference period. The Organization

of Economic Cooperation and Development (OECD) defines labor productivity as the ratio of the output measured by GDP or total value added to total labor input measured in total hours worked or total number of employed persons (OECD, 2001). Thus, labor productivity can be calculated easily with available estimates of output and labor input. In practice, labor productivity is often measured by real GDP (a value added concept) either per hour worked or per employee, depending on the purpose of international comparison and data availability.

Nonetheless, calculated labor productivity indicators may be influenced by the accuracy of data as well as the method of defining input and output. The first limitation relates to the definition of output, that is, whether it is a gross or net concept. *Gross output* measures all economic activities in the production of new products and services without deducting intermediate costs, while *value added* is net output obtained by subtracting intermediate costs from gross output. While it is relatively easy to measure value added in current price, it is more difficult to measure it in constant price, because separate price indexes are needed to deflate sales and inputs. The problem of deflating inputs may be more severe due to various service inputs used by an economic unit, whose price indexes are hard to get. Measuring gross output, on the other hand, is fairly straightforward as it just requires price indexes for observable sales (Steindel & Stiroh, 2001). Another problem occurs in the measurement of labor input. Different concepts and statistical sources are used to measure it in different countries, which can impede international comparability. In principle, the measurement of labor input should take into account differences in workers' education, qualification, skill, and experience. But in practice, only data for number of hours worked or number of workers is available.

In this Report, labor productivity is calculated with a simple formula as follows.

$$Labor\ productivity = \frac{Output}{Total\ number\ of\ employed\ persons}$$

The output is measured by GDP at the economy level and by value added at the industry level. The next section discusses two theories often applied in decomposing labor productivity, including the growth accounting method and the shift-share analysis method.

1.1 Decomposition of labor productivity growth

1.1.1 Growth accounting method

The neoclassical growth accounting framework was pioneered by Solow (1957) and has been used extensively. In this framework, labor productivity growth is decomposed into two main components: capital deepening (increase in capital per unit of labor) and the growth of total factor productivity (effective improvement, sometimes also regarded as innovation). The Asian

Productivity Organization (APO) in its annual report also adopts this two-way decomposition. In addition, APO classifies capital input into two sub-categories, namely, information technology capital (IT capital) and non-information technology capital (non-IT capital).

Using the production function framework, Jorgenson and Stiroh (2000) decomposes labor productivity growth into three components: capital deepening, labor quality, and TFP growth. They considered *labor quality* as the change in the ratio of number of hours worked by workers who have higher marginal products. As a result, labor quality enhances labor productivity which is accompanied by increased labor compensation. Vu Minh Khuong (2014) likewise applies the three-way decomposition, in which labor productivity reflects improvement in labor skills and proper matching between skills and jobs.

This research, however, uses the more common two-way decomposition of labor productivity growth into capital deepening and TFP growth (Box 1.1) due to the limitation of data availability. Viet Nam lacks information on total hours worked or classification of labor by education level and skills.

1.1.2 Shift-share analysis method

In this decomposition, productivity for the entire economy is the sum of the productivity of each sector weighted by sectoral employment share. However, labor productivity in each industry changes over time and workers also continuously move across sectors. In order to reflect these two processes, the shift-share analysis method decomposes labor productivity growth into three elements, namely (i) the within effect, (ii) the shift effect, and (iii) the interaction effect (Box 1.2).

The within effect reflects the impact of labor productivity growth within individual sectors on the economy-wide labor productivity. The shift effect measures the impact of reallocation of labor to more (or less) productive sectors; productivity changes due to labor mobility across sectors. The interaction effect captures the impact of labor reallocation on sectors with growing productivity (not necessarily high productivity), that is to say, productivity growth due to the combined effects of within-sector productivity growth and reallocation of labor (Timmer & Szirmai, 2000; Alam et al., 2008).

Several studies find that the shift effect is the key driver of labor productivity in developing economies. It is the movement of labor from less productive sectors, typically traditional agriculture, to more productive ones, such as modern manufacturing and service sectors, which should enhance economy-wide labor productivity. However, such “horizontal” economic expansion will become no longer possible once unproductive sectors become small or

totally eliminated. Another problem is that, even if workers move from agriculture to manufacturing or service sectors, they may continue to work with low labor productivity due to the lack of basic knowledge and skills. This trend is further enhanced if manufacturing in developing countries is trapped in simple processing or assembly works which require unskilled labor only. In such circumstances, contribution of internal labor migration to economy-wide labor productivity remains insignificant. Therefore, to accelerate labor productivity growth, developing countries need to improve productivity within each growing sector toward the level of advanced economies, rather than just relying on internal labor migration (Timmer & Szirmai, 2000; Alam et al., 2008).

The within effect depends on the improvement of technical knowledge and innovation in the production process. This must be facilitated by worker training in knowledge and skills as well as by technology transfer or purchase from foreign countries (Molnar & Chalaux, 2015).

Box 1.1 Decomposition of labor productivity by growth accounting method

Let the production function be:

$$Y = A.K^{\alpha}.L^{\beta} \qquad (1.1)$$

where Y, K, L, A are output, capital, number of employed persons, and TFP, respectively.

Assuming constant return to scale, we have $\alpha + \beta = 1$.

Dividing both side by L, we get

$$\frac{Y}{L} = \frac{A.K^{\alpha}.L^{\beta}}{L^{\alpha+\beta}} = A.\left(\frac{K}{L}\right)^{\alpha} \qquad (1.2)$$

Defining $y = \frac{Y}{L}$ and $k = \frac{K}{L}$, then y and k are labor productivity per worker and the capital-labor ratio (average capital per worker). Equation (1.2) becomes:

$$y = A.k^{\alpha} \qquad (1.3)$$

Taking log and differentiating both side, we have

$$lny = \alpha lnk + lnA$$

$$\Delta lny = \alpha \Delta lnk + \Delta lnA \qquad (1.4)$$

Equation (1.4) says that labor productivity growth can be decomposed into capital intensity growth ($\alpha \Delta lnk$) and TFP growth (ΔlnA). Capital intensity makes labor more productive by providing a greater amount of capital for each worker, which improves economy-wide labor productivity in proportion to the contribution share of capital (coefficient α) in the production function. TFP growth enhances labor productivity growth by the ratio of one-to-one.

Box 1.2 Decomposition of labor productivity growth by shift-share analysis method

Productivity for the entire economy is expressed as the sum of the productivity level of each sector weighted by sectoral employment share, as follows.

$$P_m = \frac{Y_m}{L_m} = \sum_{j=1}^{n}\left(\frac{Y_j}{L_j} * \frac{L_j}{L_m}\right) = \sum_{j=1}^{n}\left(P_j * S_j\right) \quad (2.1)$$

where Y, L, and P (=Y/L) are output, number of employed persons, and labor productivity of sector j (j = 1, …, n) and of the entire economy (m). S_j is the labor share of sector j in the total economy. Labor productivity in year t is

$$P_m^t = \sum_{j=1}^{n}\left(P_j^t * S_j^t\right) \quad (2.2)$$

The increase in economy-wide labor productivity for year t relative to base year 0 is

$$P_m^t - P_m^0 = \sum_{j=1}^{n}\left(P_j^t * S_j^t\right) - \sum_{j=1}^{n}\left(P_j^0 * S_j^0\right) \quad (2.3)$$

Add and subtract $\sum_{j=1}^{n}\left(P_j^t * S_j^0\right)$, $\sum_{j=1}^{n}\left(P_j^0 * S_j^t\right)$, and $\sum_{j=1}^{n}\left(P_j^0 * S_j^0\right)$ on both sides and rearranging, and dividing through by P_m^0, we have equation (2.4) that decomposes economy-wide labor productivity growth in year t relative to base year 0, as follows.

$$\frac{P_m^t - P_m^0}{P_m^0} = \frac{\sum_{j=1}^{n}\left[\left(P_j^t - P_j^0\right) * S_j^0\right]}{P_m^0} + \frac{\sum_{j=1}^{n}\left[P_j^0 * \left(S_j^t - S_j^0\right)\right]}{P_m^0} + \frac{\sum_{j=1}^{n}\left[\left(P_j^t - P_j^0\right) * \left(S_j^t - S_j^0\right)\right]}{P_m^0} \quad (2.4)$$

On the right side of equation (2.4), the first component is the within effect, reflecting the contribution of sectoral labor productivity growth to economy-wide labor productivity, assuming that labor shares remain unchanged. An increase in sectoral labor productivity leads to an increase in economy-wide labor productivity. The within effect has a positive impact on labor productivity when there is improvement in knowledge or technology in the industry, which may be called vertical economic development.

The second component is the shift effect, which measures the effect of labor reallocation across sectors, assuming that labor productivity in each sector remains unchanged. Aggregate labor productivity increases thanks to the shifting of labor from low labor productivity sectors to higher labor productivity sectors, reflecting horizontal economic development.

The third component is the interaction effect, which captures the relationship between changing labor shares and the changes in sectoral labor productivity. The positive sign of the interaction effect means the within effect and the shift effect are complementary, that is, sectors with an increase in labor productivity expand, and vice versa. If the interaction effect is negative, the within effect and the shift effect are substitutes, that is, labor productivity growth is positive in shrinking sectors and negative in expanding sectors. The interaction effect shows labor movement to productivity-growing sectors, but not necessarily to high-productivity sectors (Maddison, 1952; Timmer & Szirmai, 2000; Alam et al., 2008).

CHAPTER 2

CURRENT SITUATION OF LABOR PRODUCTIVITY IN VIET NAM

In this chapter, we calculate and evaluate Viet Nam's labor productivity using secondary data from the General Statistics Office (GSO) (see also Appendix 1). Main trends in the level and growth of labor productivity are identified for the period 1991-2015. We examine the entire economy, three broad economic sectors (agriculture, industry, and services), and their subsectors as well as by ownership type. We will also discuss four notable and mutually related facts about Viet Nam's labor productivity concerning (i) rural-urban labor migration and Lewis' turning point, (ii) stagnation of labor productivity of manufacturing and the FDI sector, (iii) persistence of unskilled labor, and (iv) inability to participate meaningfully in global value chains.

2.1 Labor productivity over time

Since the time of Doi Moi and global economic integration, Viet Nam's labor productivity has increased although the pace was unstable and without making a breakthrough into a very high level. In absolute value (constant 2010 price), labor productivity of the whole economy rose from 18.89 million VND per worker in 1991 to 54.43 million VND per worker in 2015, or only by 2.88 times. In East and Southeast Asia, any rapidly industrializing economy is expected to attain much higher labor productivity growth within a quarter century. Viet Nam's past productivity performance was therefore good but not spectacular. Because of this, Viet Nam's speed of catching up with high-income economies has been slow.

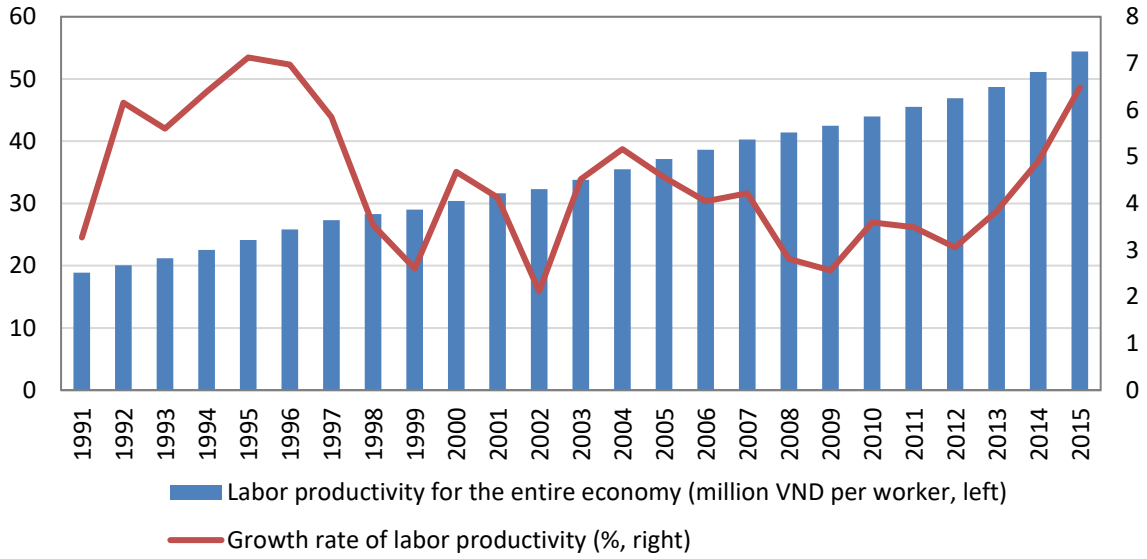
Viet Nam's labor productivity evolved in three distinct stages: high growth (1991-95), stagnation (1996-2012), and recovery (2013-) as illustrated in Figure 2.1 and Table 2.1.

During the first half of the 1990s, Viet Nam vigorously eliminated barriers to market and decisively integrated into the international trading community. These efforts were behind the remarkable initial upsurge in Viet Nam's labor productivity, which peaked at 7.13% in 1995. This mostly reflected efficiency improvement in virtually all sectors thanks to the reduction of apparent inefficiencies and rising capital intensity as economic constraints and controls were significantly removed, encouraging output and investment across all sectors including manufacturing. This should be regarded as a one-time jump from economic suppression to liberalization. Many policy measures for establishing a multi-sectoral market economy, stimulating the participation of enterprises and attracting foreign direct investment were key

factors in these early years[1]. Meanwhile, in the 1990s, Vietnamese labor force remained basically unchanged in terms of both quality and quantity.

Figure 2.1 The level and growth rate of Viet Nam's labor productivity

(Constant 2010 price)



Source: VEPR's calculation based on GSO data.

Table 2.1 Decomposition of GDP growth into labor productivity and employment growth

		Growth rate (%/year)		
		Labor productivity	Employment	GDP
All period	1991-2015	4.51	2.47	6.98
Period of high productivity growth	1991-1995	6.32	2.47	8.79
Period of productivity stagnation	1996-1999	3.99	2.23	6.22
	2000-2007	4.10	3.15	7.25
	2008-2012	3.18	2.65	5.83
Period of productivity recovery	2013-2015	5.69	0.64	6.33

Source: VEPR's calculation based on GSO data.

[1] The 1990s was marked by the issuance of crucial documents that formed a solid legal framework for the market economy in Viet Nam. They included the Private Enterprise Law and Enterprise Law (1990); recognition of private ownership in the 1992 Constitution; legal clarification over private ownership in the 1995 Civil Law; the Law on Promotion of Domestic Investment (1994); the State-owned Enterprise Law (1995); the Amendment of the Foreign Investment Law (1996); the Commercial Law (1997); and the Land Law (1987) and its Amendment (1993). Simultaneously, international trade and investment were promoted with the signing of the trade agreement with EU (1992); normalizing diplomatic relation with the USA (1995); and joining ASEAN (1995) and APEC (1998).

However, the growth of labor productivity slowed down in the late 1990s. The external shock from the Asian financial crisis in 1997-98 disturbed the Vietnamese economy. More importantly, growth then relied heavily on capital investment with declining capital efficiency. Lackluster productivity performance continued into the new millennium. From 2000 to 2012, labor productivity growth was in the range of 3-4% per year. Meanwhile, China, which started from income and economic situation similar to Viet Nam, quickly rose and surpassed Viet Nam in labor productivity during this period. In 2008-09, another global financial crisis lowered Viet Nam's labor productivity growth to 2.6%. However, the external shock was not the sole or even primary reason for the low performance. More fundamentally, a series of economic reforms introduced in the new millennium had positive quantitative effects on employment and enterprise registration but did not generate visible results in quality, productivity, or competitiveness[2].

More recently, labor productivity growth started to recover from around 2013 approaching the figures recorded in the mid-1990s. In terms of its decomposition, too, previous lackluster trends began to reverse with rising contribution of labor productivity growth and falling contribution of employment growth to overall growth. The cause(s) and sustainability of recent productivity spurt are still uncertain. Further work is needed to determine the relative contributions of private dynamism, policy improvement, and external factors. If recent good performance is thanks to either of the first two factors, economic structure may have shifted for better and high growth may continue into the future. But if it is due to sheer luck or a favorable external shock, it may be just temporary. Program 712, the first national productivity program, was launched in 2010 with the aim of increasing the contribution of TFP to overall growth (Chapter 4). How much influence it had on the long-term productivity trend requires investigation.

2.2 Labor productivity by economic activity

Labor productivity of individual sectors contributes to labor productivity of the entire economy in proportion to the amount of labor employed in each sector. Analysis at the sector level is of great importance in understanding the dynamics of a nation's labor productivity. We may ask such questions as: what are highly productive industries that sustain productivity growth and that should be maintained and strengthened, and what are low-productivity industries that pull down

[2] The Enterprise Law (2000) removed barriers to business registration, simplified procedures and reduced market entry costs, generating a more favorable business environment. Equitization of SOEs was also accelerated. Signing a bilateral trade agreement with the United States (2001), establishment of stock exchanges (2000) and joining WTO (2007) further expanded new business opportunities.

overall productivity growth? We will do this by using the GSO's Viet Nam Standard Industrial Classification System, shown in Table 2.2, on which our data is based.

Table 2.2 Viet Nam Standard Industrial Classification System

Large sectors (group of industries)	Agriculture, forestry, and fishery	Industry and construction	Services
Subsectors (industries)	1. Agriculture 2. Forestry 3. Fisheries	1. Manufacturing 2. Mining 3. Construction 4. Electricity, gas, steam, and air conditioning supply 5. Water supply, sewerage, waste management	1. Wholesale and retail trade; repair of motor vehicles and motorcycles 2. Transportation and storage 3. Accommodation and food service activities 4. Information and communication 5. Financial, banking and insurance activities 6. Real estate business activities 7. Professional, scientific and technical activities 8. Administrative activities and support services 9. Activities of socio-political organizations; compulsory security; public administration 10. Education and training 11. Health, social assistance activities 12. Arts and entertainment 13. Activities of households producing undifferentiated goods and services of households for own use 14. Other service activities

Source: General Statistics Office.

2.2.1 Labor productivity of three broad sectors

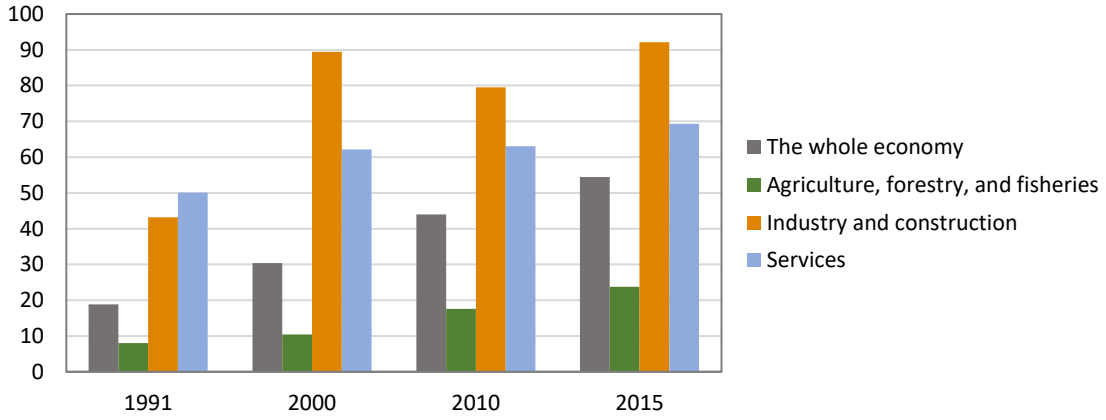
In general, labor productivity of three main economic sectors—(i) agriculture, forestry, and fisheries; (ii) industry and construction; and (iii) services—has each improved significantly over the years (Figure 2.2). Among them, agriculture, forestry, and fisheries had the lowest labor productivity in absolute level while industry and construction had the highest labor productivity. The latter sector includes activities with high labor productivity such as mining and certain manufacturing. In 2015, the average labor productivity of industry and construction was 1.33 times higher than that of services and 3.88 times higher than that of agriculture, forestry, and fisheries. This structure of labor productivity across broad sectors is consistent with the expected dynamism in a developing country such as Viet Nam in which industry is the main driver of structural transformation.

Yet, the development of labor productivity was not smooth over time. From 2000 onwards, labor productivity growth slowed down in both the industry and construction sector

and the services sector, the two sectors that contribute most, more than 80%, to GDP (Figure 2.3). Below we will look at the movements of labor productivity at subsector level to gain further insight.

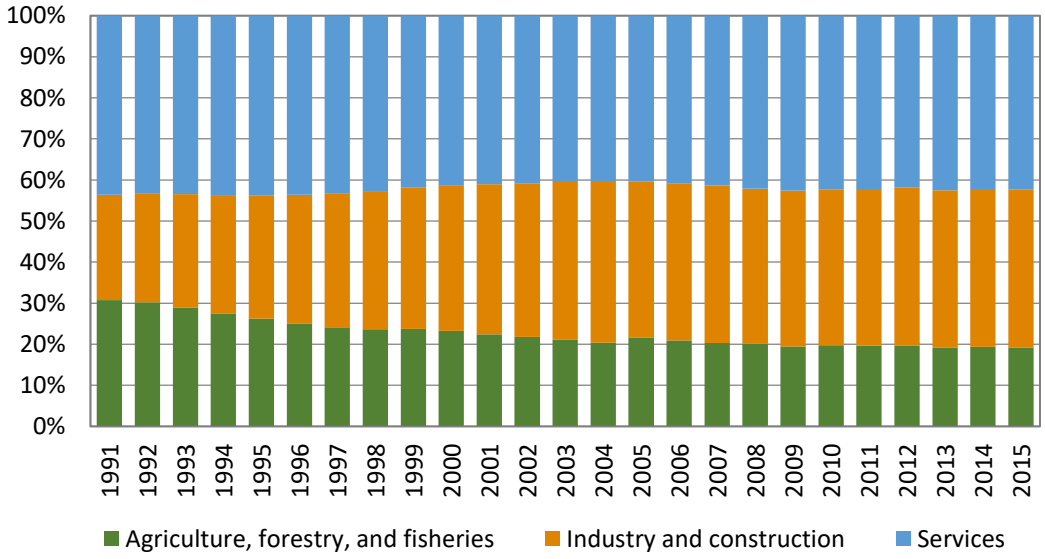
Figure 2.2 Labor productivity of broad economic sectors

(In million VND per worker, at constant 2010 price)



Source: VEPR's calculation based on GSO data.

Figure 2.3 Contribution to GDP by economic sectors



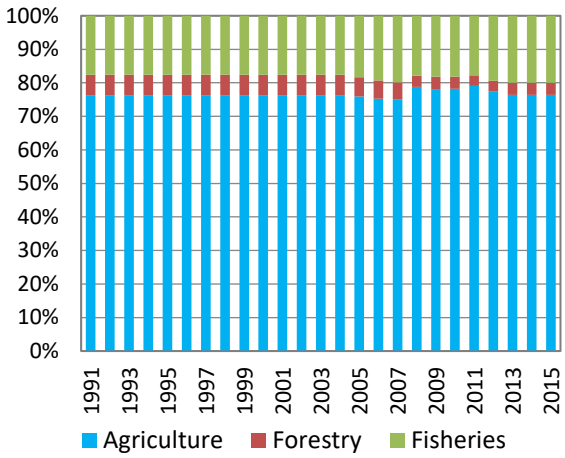
Source: same as above.

2.2.2. Agriculture, forestry, and fisheries

The agriculture, forestry, and fisheries sector has the lowest labor productivity but the highest growth rate, with a steadily upward trend over the years (Figure 2.4). The spike in 2005 might be due to a data problem rather than any real productivity shock. If this temporary abnormality is ignored, labor productivity growth of agriculture, forestry and fisheries seems to have been influenced by international shocks, market movements, and other external conditions such as favorable weather, high GDP growth, and good conditions for export. In particular, Viet Nam's accession to the World Trade Organization (WTO) in 2007 and a series of free trade agreements (FTAs) in recent years have facilitated the export of agricultural and aquatic products[3].

Figure 2.4 Labor productivity: agriculture, forestry, and fisheries
(Constant 2010 price)

Figure 2.5 Composition of value-added: agriculture, forestry and fisheries
(Constant 2010 price)



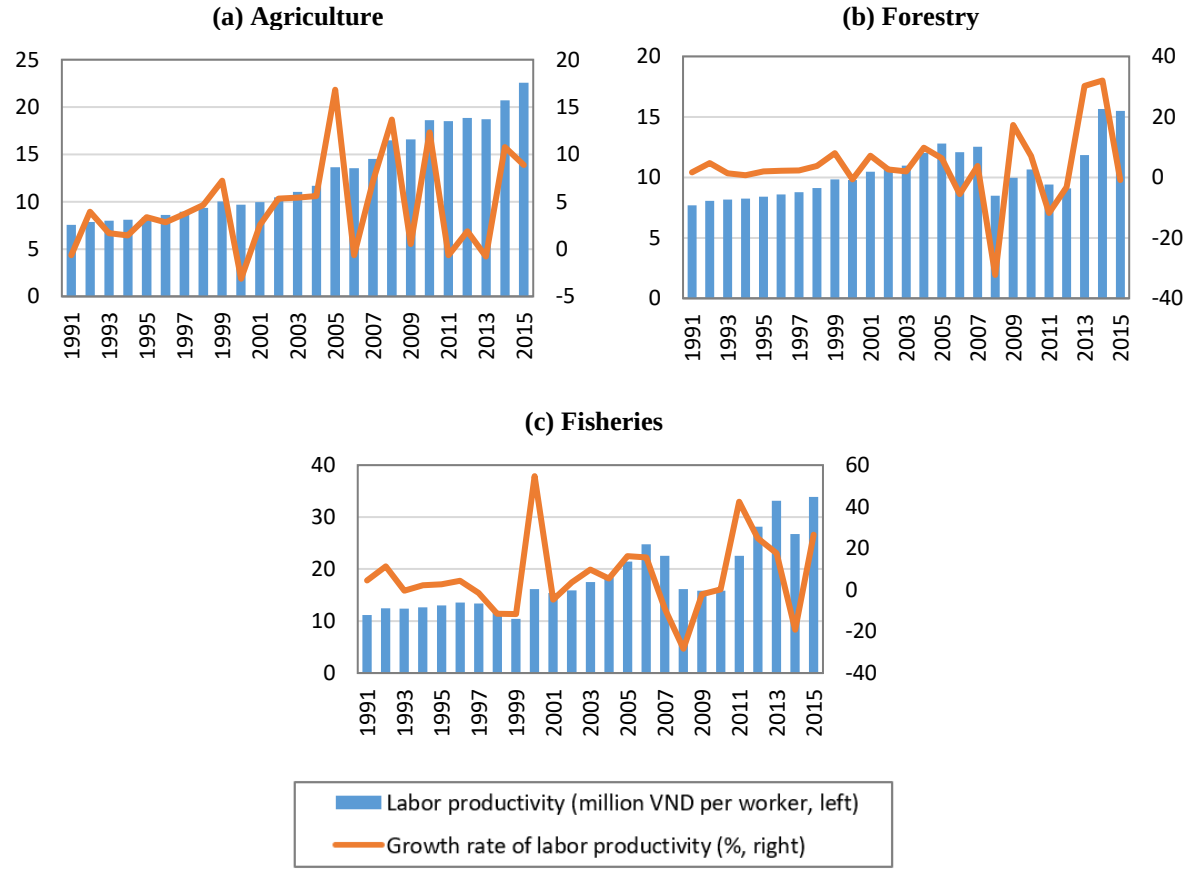
Source: same as above.

Agriculture is the largest creator of value-added in this broad sector (76% in 2015), followed by fisheries (20%) and forestry (4%) as seen in Figure 2.5. Despite an improving trend over the years, agricultural labor productivity remains low in absolute terms, at only half of that of the whole economy in 2015. The fisheries industry has relatively high labor productivity, 2.18 times higher than forestry and 1.50 times higher than agriculture in 2015, thanks to rapid improvement from 1991 to 2015 (Figure 2.6). Labor productivity of fisheries is sensitive to the

[3] After joining WTO, Viet Nam concluded a number of free trade agreements such as the Vietnam-Japan Economic Partnership Agreement (VJEPA) in 2009, the Vietnam-Chile Free Trade Agreement (VCFTA) in 2014, the Vietnam-Korea Free Trade Agreement (VKFTA) in 2015, and the Vietnam-EU Free Trade Agreement (EVFTA) in 2019. These FTAs aim to expand commodity markets and reduce tariffs, benefiting Viet Nam's agricultural and aquatic products which generally have comparative advantage compared to foreign products.

world situation because fishing and aquaculture in Viet Nam are mostly export-oriented, to the tune of over 80% of total sales (Vietfirst securities, 2018), their major markets being the United States and Europe.

Figure 2.6 Subsectoral labor productivity: agriculture, forestry, and fisheries
(Constant 2010 price)



Source: same as above.

2.2.3 Industry and construction

The industry and construction sector has the highest labor productivity in the economy. It registered a relatively robust productivity growth in the 1990s but faced a decline and stagnation in the first ten years of the twenty-first century (Figure 2.7).

Within this broad sector, manufacturing is a critical subsector occupying 46% of sectoral value-added in 2015 (Figure 2.8) and expected to play a vital role in job creation and economic growth and transformation. However, its labor productivity has hardly increased since 2001, a phenomenon which is shocking and deeply disappointing in an industrializing economy such as Viet Nam. The reason(s) for this unusual stagnation will be explored more fully in a separate section below.

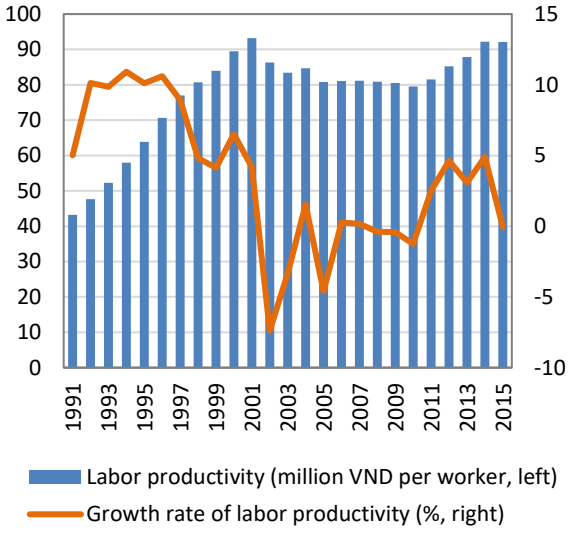
Mining, having the highest labor productivity level within this broad sector, at 1.4 billion VND per worker in 2015, experienced low productivity growth and evening a decline around the mid-2000s but recovered significantly from 2010 onwards (Figure 2.9). To interpret this trend, it is necessary to understand the special characteristics of this natural resource-based and domestic market-oriented subsector in Viet Nam, in addition to the general fact that mining is an industry with a high capital-labor ratio (VNPI, 2016). In Viet Nam, minerals are export-restricted products (Item 7, Article 3, Law on Minerals, 2010), the annual output of mining products is prescribed in the Development Plan (Article 10, Law on Minerals 2010), and the prices of some minerals such as coal, iron ore, limestone, and basalt are state-controlled because they are key inputs to price-stabilized goods and services such as electricity, cement, and steel. With output and prices decided by the government, the labor productivity of mining hinges on the number of workers mobilized each year, which fluctuates greatly.

Construction has the lowest labor productivity among this group (Figure 2.9). Recent negative growth in its labor productivity can be explained by the faster growth of employment compared with the growth of its value-added. Besides that, performance of the construction subsector is highly correlated with the cycles of investment and credit in the national economy, and its declining labor productivity is attributable to slow investment in buildings and infrastructure. The government's credit tightening policy, such as raising interest rates and commercial banks' reserve ratios, causes a sharp fall in both output and prices in the property market, with a serious reverberating effect on the construction industry. From 2009 to 2015, the prevalence of non-performing loans in the banking system hindered smooth capital flows into construction, which reduced value creation in this subsector. This may be the main reason for the significant decline in labor productivity, measured in market price, of the construction industry in recent years.

Labor productivity of electricity, gas, steam, and air conditioning supply, and that of water supply, sewerage, waste management are also shown in Figure 2.9. As they are mostly managed by the government, their labor productivity is outside market influence.

Figure 2.7 Labor productivity: industry and construction

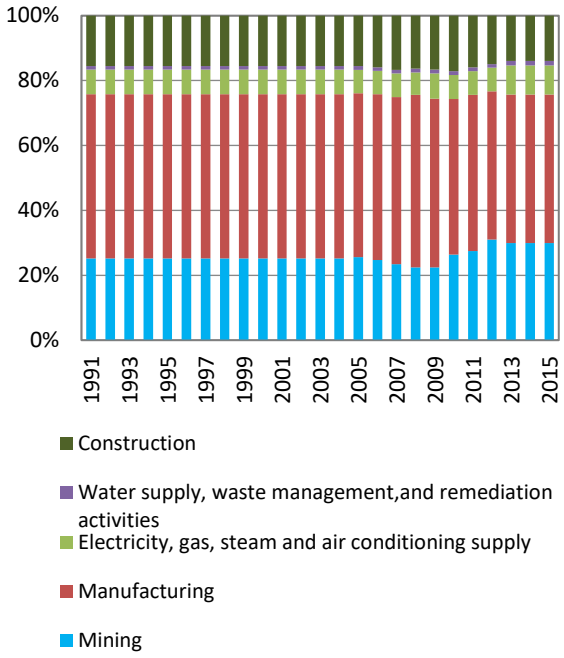
(Constant 2010 price)



Source: VEPR's calculation based on GSO data.

Figure 2.8 Composition of value-added: industry and construction

(Constant 2010 price)

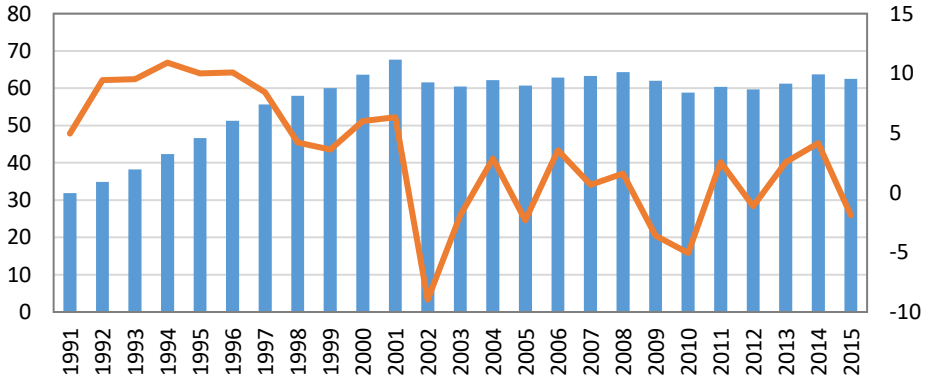


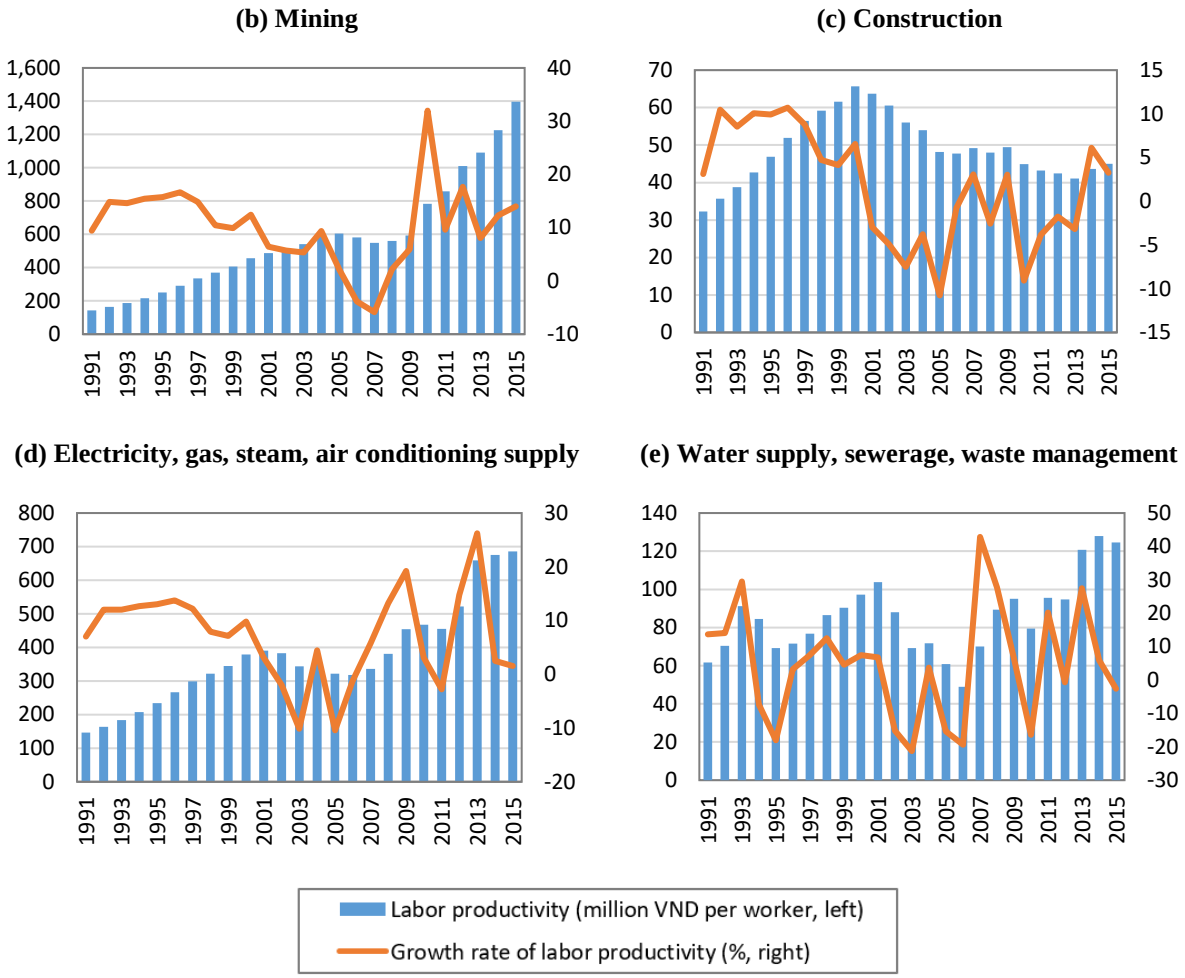
Source: same as above.

Figure 2.9 Subsectoral labor productivity: industry and construction

(Constant 2010 price)

(a) Manufacturing





Source: same as above.

2.2.4 Services

In the services sector, labor productivity hovered around 60 million VND per worker in the period 1991-2015 (Figure 2.10) without any strong upward trend. Wholesale, retail, and repair accounts for about 35% of value-added of this sector, while other subsectors carry the weight of about 5-10% each (Figure 2.11). The value-added structure of services has remained relatively stable over the years. The apparent jump in 2013 may reflect the change in the definition of wholesale, retail and repair where one activity belonging to this subsector was moved to the "other" category in that year, and is therefore artificial and inconsequential.

Figure 2.10 Labor productivity: services

(Constant 2010 price)

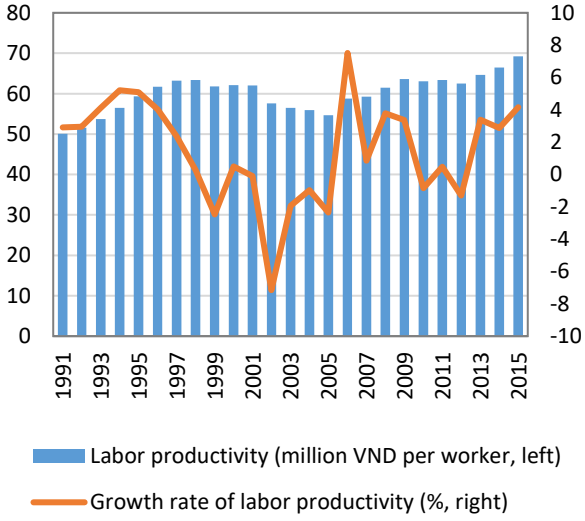
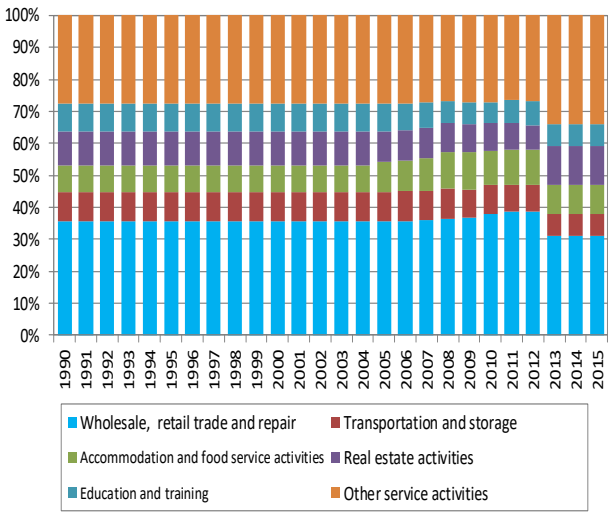


Figure 2.11 Composition of value-added: services

(Constant 2010 price)



Source: same as above.

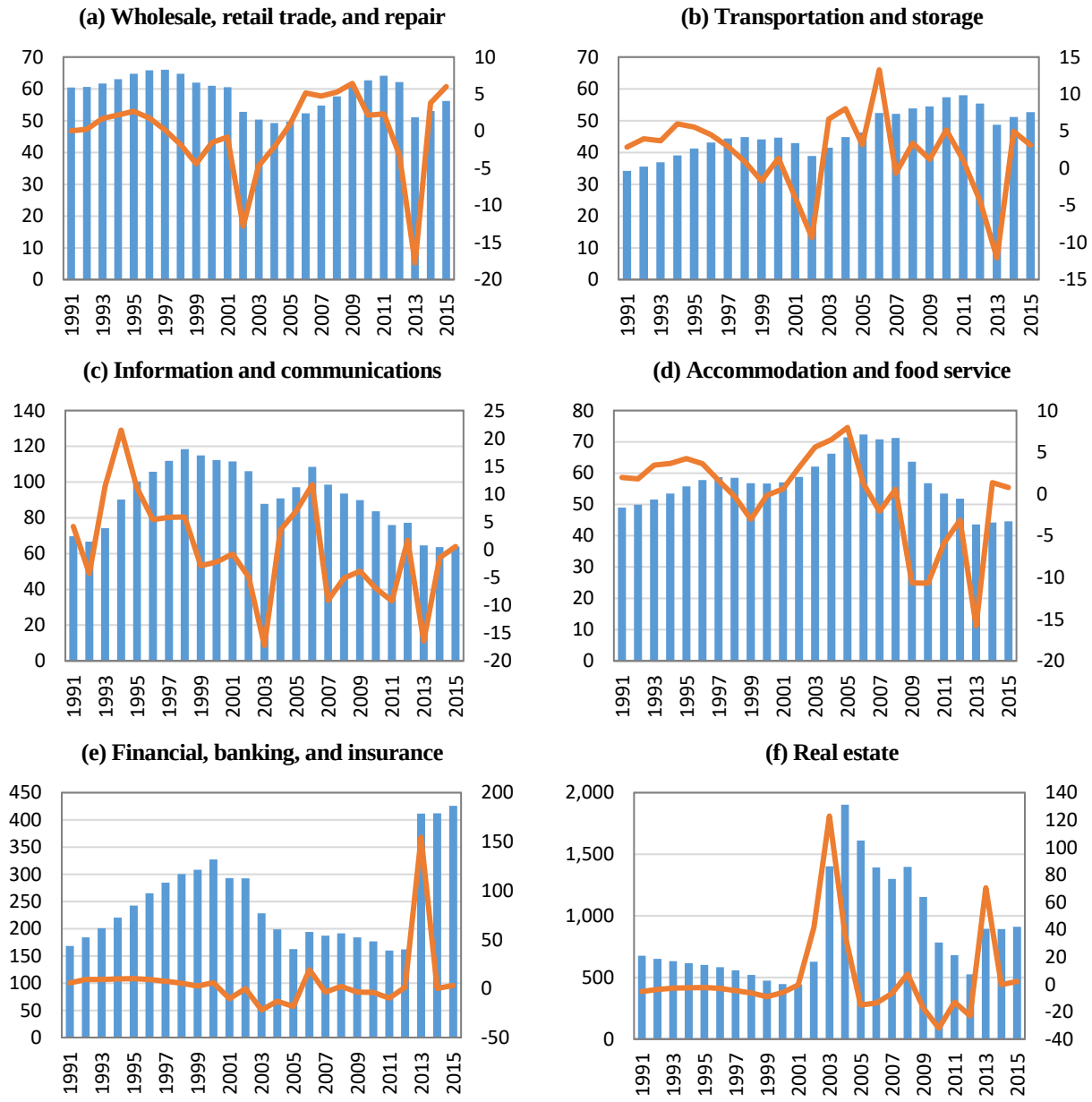
Labor productivity of wholesale, retail trade, and repair exhibited no long-term trend either upward or downward, with medium-term cycles, during the entire period (Figure 2.12). This can be explained by the particular nature of Vietnamese consumers and those who cater to their needs. According to the 2017 Economic Census, this subsector was dominated by unincorporated individual traders who outnumbered commercial enterprises by 11 times. The value-added of each individual trader is insignificant and tends to decrease over time. Their operation is very small, with an average capital size of 136.5 million VND and labor size of 1.5 employees, and this situation remained basically the same across different Census years. Their business is spontaneous, fragmentary, and without modern business methodology. Yet this segment attracts a large number of sellers of about 3.3 million, providing convenience to consumers with a variety of goods with reasonable prices supplied near their residences.

Real estate business and financial, banking, and insurance activities are two subsectors that have recorded high labor productivity, not just among services but even in the entire economy. Yet, both showed significant volatility. Real estate business had very high labor productivity from 2003 to 2009 when the Vietnamese economy boomed under a property bubble and high inflation. Similar to the construction subsector, performance of the real estate subsector is highly correlated with macroeconomic booms and busts, investment strength, and credit growth. Medium-term volatility with little long-term improvement was also observed in other subsectors. Other than transportation and storage, which had a mild upward trend, it is difficult

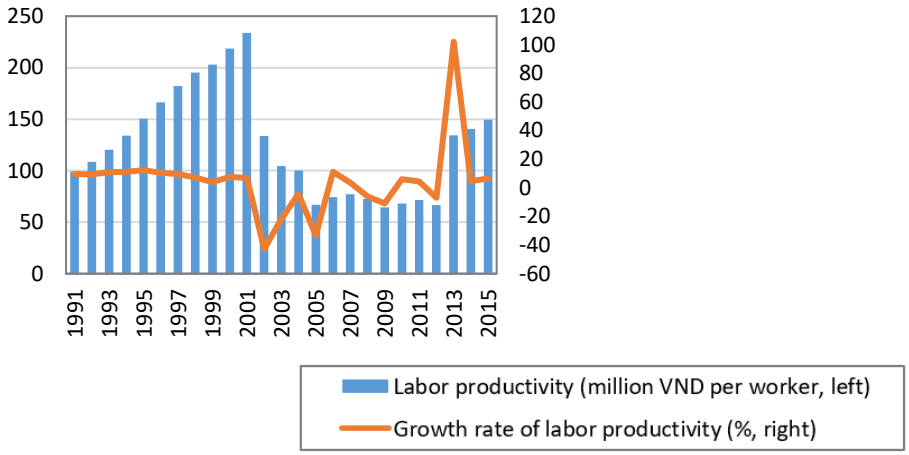
to detect any steady improvement in labor productivity of the services sector as well as its subsectors.

Figure 2.12 Subsectoral labor productivity: services

(Constant 2010 price)



(g) Professional, scientific and technical activities



Source: same as above.

2.3 Labor productivity by type of ownership

This section examines labor productivity by type of ownership, namely, the state sector, the non-state sector, and the FDI sector.

During the quarter century from 1991 to 2015, labor productivity of the FDI sector increased 1.26 times, that of the non-state sector 2.48 times, and that of the state sector 3.76 times (Figure 2.13). However, this end-to-end comparison conceals unusual in-between developments, especially in the FDI sector.

From 1991 to 2001, labor productivity of all ownership types increased gradually, though from different initial levels. In these years, labor productivity of the FDI sector was far higher than those of the two domestic ownership types. However, the situation changed suddenly and dramatically in 2002 when the labor productivity of the FDI sector began to decline significantly for several years. By 2015, it was overtaken and surpassed by that of the state sector. This unexpected result will be further analyzed in a separate section below.

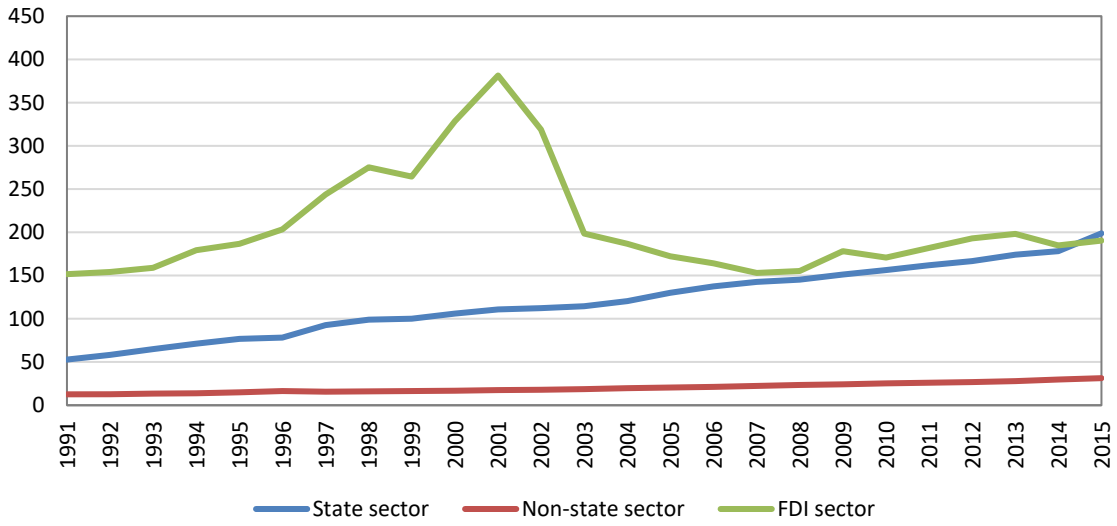
Meanwhile, the steady growth of labor productivity in the state sector can be attributed to two reasons. First, a series of state-owned enterprise (SOE) reforms implemented by the government had succeeded in reducing the number of SOEs and retaining only the most efficient ones in the state hand. This selection with "winners" bias naturally raised the average productivity of the SOE sector over time. Second, remaining SOEs tended to be large and highly capital-intensive, and enjoyed government support and monopolistic price-setting powers, which allowed them to generate apparently high labor productivity unlike most private firms which were smaller, less capital-intensive, and under strong market competition. To the extent that remaining privileges were more critical than the success of SOE reform, the steady improvement

of labor productivity in the state sector does not really reflect efficiency achievement but an artificial advantage derived from high capital intensity and state protection.

Despite steady growth, labor productivity of the non-state sector remained far below those of the other two sectors without any sign of overtaking either of them. This sector is a mixture of traditional and modern firms, and the former dominate in terms of number. There are innovative and dynamic private firms in Viet Nam, but their good performance cannot compensate for the majority of firms with small-size, low-capital, and pre-modern operations. The non-state sector is the largest sector in terms of employment, and should take the driver's seat in producing value and competitiveness in a multi-sectoral market economy. Persistently low productivity of this sector should be a serious concern for policymakers.

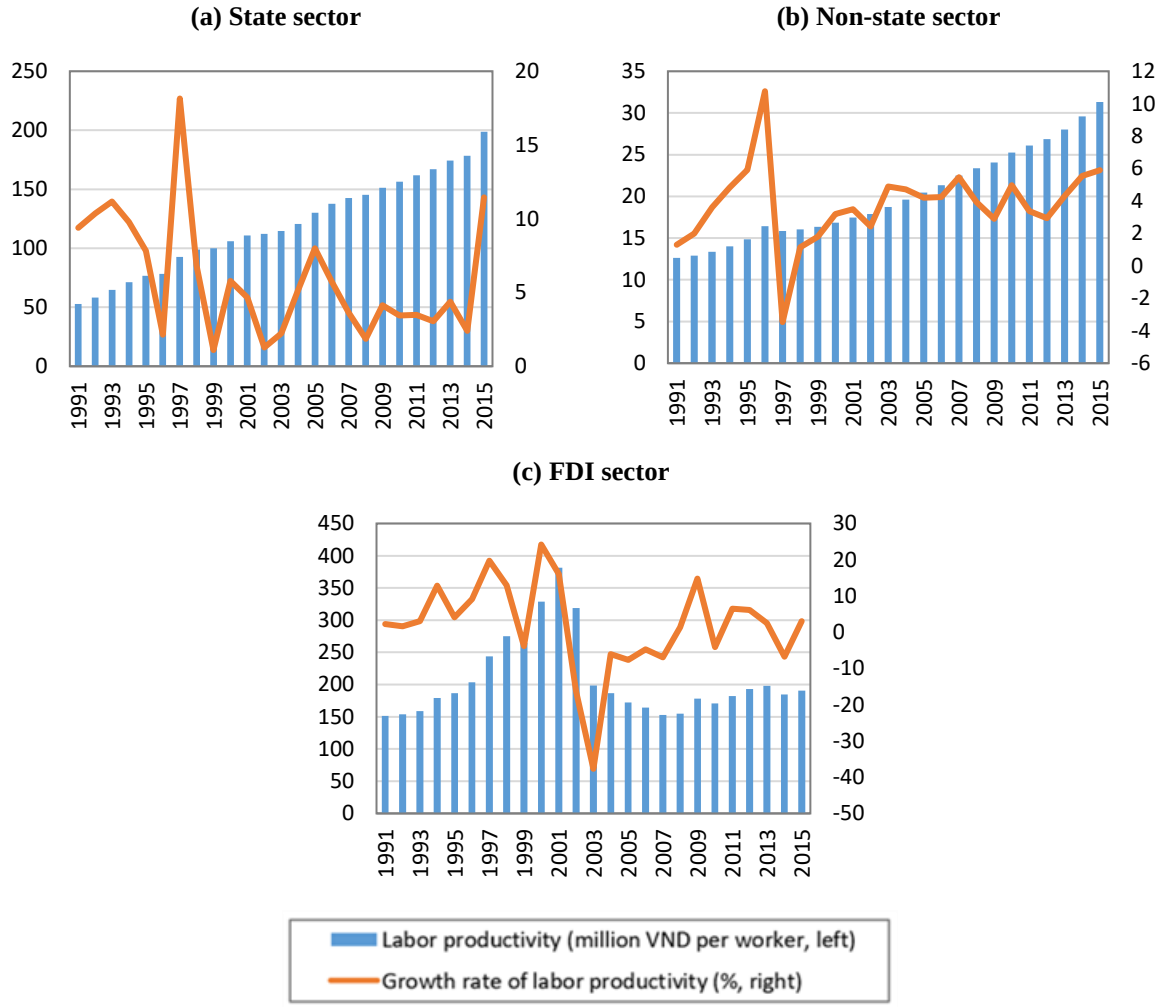
Figure 2.13 Labor productivity by ownership

(VND million per worker, at constant 2010 price)



Source: VEPR's calculation based on GSO data.

Figure 2.14 Labor productivity by ownership (level and growth)



Source: VEPR's calculation based on GSO data.

2.4 The labor market and Lewis' turning point

The dual economy model of Arthur Lewis postulates that industrialization of a labor-abundant traditional society is accomplished by expansion of modern industry which absorbs rural surplus labor through rural-urban migration (Lewis, 1954). If this process proceeds smoothly, idle or underemployed workers will eventually be eliminated. This is Lewis' "turning point" at which labor surplus turns to labor shortage in the national economy. Beyond this point, wages start to rise and the total wage bill expands, which shifts income distribution in favor of labor. However, the process may stall if agriculture cannot supply sufficient food for urban workers, if industrial growth is too weak or narrow to absorb rural labor, or for any other reasons. For a developing economy like Viet Nam, it is crucial to know where the country stands in the Lewis' growth trajectory, and whether and when the labor market tightens and workers' wages and welfare begin to rise.

The labor structure of Viet Nam has changed greatly from 1991 to 2015 (Table 2.3). Labor moved from agriculture, forestry, and fisheries to industry and construction as well as to services. The manufacturing and construction subsectors, which accounted for the bulk of industrial activity, saw their combined labor share increase from 10.0% to 21.8% between 1991 and 2015. If manufacturing alone, it went up from 7.7% to 15.3%. By type of ownership, employees working in the state sector decreased from 12.9% to 9.8% while that of the FDI sector increased from 0.8% to 4.2% in the same period. The proportion of workers in the non-state sector was more stable, staying around 86-87% during the entire period. Thus, in Viet Nam, reallocation of labor across different industrial and ownership sectors seems to have played a major role in promoting labor productivity in the national economy. Shift-share analysis in Chapter 3 will provide more concrete evidence for this conclusion.

Table 2.3 Labor share by sector (%)

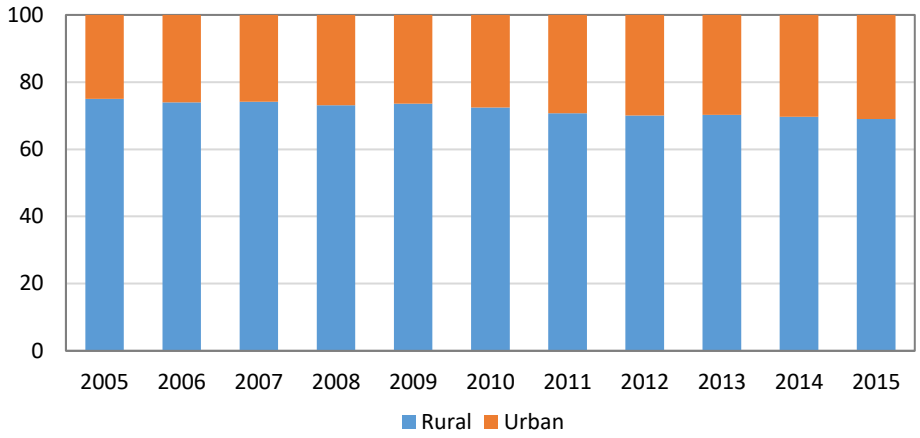
	1991	2000	2010	2015
By economic activity				
Agriculture, forestry, and fisheries	72.35	67.77	49.50	44.02
Industry and construction	11.20	12.03	20.95	22.74
Mining	0.86	0.59	0.61	0.45
Manufacturing	7.68	8.55	13.51	15.30
Construction	2.32	2.54	6.34	6.49
Services	16.45	20.20	29.55	33.24
Wholesale, retail, repair	4.87	7.34	11.31	12.70
Transport and storage	2.16	2.51	2.89	3.01
Accommodation and food service activities	1.40	1.84	3.49	4.62
Information and communications	0.27	0.25	0.52	0.64
Financial, banking and insurance activities	0.23	0.18	0.52	0.69
Real estate activities	0.13	0.30	0.21	0.31
Professional, scientific and technical activities	0.13	0.09	0.44	0.48
By type of ownership				
State sector	12.90	11.70	10.40	9.80
Non-state sector	86.34	87.30	86.10	86.00
FDI sector	0.76	1.00	3.50	4.20

Source: VEPR's calculation based on GSO data.

One principal cause of accelerated internal labor movement was the liberalization of foreign trade and investment. Just within one year, from 2001 to 2002, the number of newly approved FDI projects increased by 46%, from 555 to 808, as a result of the signing of the bilateral trade agreement with the United States in December 2001. FDI further increased by Viet Nam's WTO accession in 2007, after which the number of FDI projects never fell below 1,000 per year. In 2008, the value of registered FDI projects was USD 71.8 billion which was 24 times higher than that in 2002. Most of these FDI projects were in the industry and construction sectors, which occupied 70.5% of cumulative registered FDI capital as of December 2017 (GSO data). Due to this huge FDI inflow, a large amount of agricultural land had to be converted to industrial land. In this urbanization process, rural workers migrated to cities and their surrounding areas in search of cash income, many of whom ended up in industrial zones.

Figure 2.16 shows the trend of urban workers gradually increasing in number relative to rural workers (data is available only from 2005). However, industrial and construction value-added grew more slowly than the speed of this labor movement, which put a downward pressure on labor productivity. Apparently, it takes a certain amount of time and effort for rural workers and previous farmers to adjust their working style, adapt to new job requirements, and improve productivity, a process which is captured by the within effect in the decomposition analysis of Chapter 3. However, it is worrisome that the ratio of unskilled workers relative to skilled ones is on the rise instead of falling. According to Nguyen Ba Ngoc and Pham Minh Thu (2014), between 2007 and 2013, labor who lacked skill, as defined by job duty and required certification, rose from 7.1% to 11.1% in agriculture, from 55.5% to 65.5% in industry and construction, and from 30.5% to 56.4% in services. Skill training lags behind the rapidly rising demand for skilled workers. Although Vietnamese population is large and still relatively young, labor force remains mostly unskilled and its conversion to skilled workers has been slow.

Figure 2.15 Distribution of labor between rural and urban areas (%)



Source: General Statistics Office.

Is Viet Nam approaching the Lewis' turning point, or at least progressing toward it? Labor has migrated from agriculture to industry, construction, and services as shown above, but the pace of this movement is neither very fast nor accelerating to satisfy the growing demand for industrial labor. Wages are rising and acute labor shortage has emerged in large cities, while workers still appear plentiful and superfluous in rural villages and remote areas. Hanoi and Ho Chi Minh City may have already crossed the turning point but the rest of Viet Nam seems to be still in a labor surplus economy. Possible causes of this dual labor market structure may include (i) rural surplus labor becoming increasingly scarce due to past industrialization, despite the appearance of continuing labor surplus, (ii) insufficient incentive or mechanism for rural workers to acquire skills needed by modern industry, (iii) insufficient income gap between rural agriculture and urban industry to trigger labor migration, or (iv) the existence of some cost, friction, or policy impediments preventing smooth labor migration across sectors and geographic locations.

Viet Nam's villages are turning to non-farm activities faster than population data suggests, as revealed by income structure of rural households. Based on the Viet Nam Household Living Standards Survey, Newman and Kinghan (2015) found that, on national average, income derived from agriculture, forestry, and fisheries declined from 28.6% in 2002 to 19.9% in 2012. For rural households only, the share of income from agriculture went down from 43.4% in 2002 to 31.8% in 2012, and had since 2010 been surpassed by income derived from the industrial sector as salaries and wages. Table 2.4 shows that, between 2008 and 2014, the decrease of households specializing in agriculture on the one hand and the increase of households engaged in both agriculture and wage labor on the other were almost matched in magnitude. Meanwhile, households combining farm income and enterprise activity fell significantly. Other income

categories remained relatively stable. This data suggests that the main source of rural income is shifting from agriculture to industry and services, mostly in the form of hired labor, without necessarily leaving the village or abandoning agriculture.

Table 2.4 Economic activities of household (%)

	2008	2010	2012	2014
Single source				
Agriculture	25.16	22.38	20.59	19.53
Labor	4.09	4.45	5.73	5.64
Enterprise	2.39	3.03	3.58	3.76
Double source				
Agriculture & labor	40.62	41.91	43.15	45.62
Agriculture & enterprise	11.41	12.10	9.35	6.79
Labor & enterprise	2.44	2.93	2.43	3.39
Triple source				
Agriculture, labor & enterprise	11.50	10.04	10.45	10.36
No activity	3.39	3.16	4.72	4.91

Source: adapted from Newman and Kinghan (2015).

Disparity in earning opportunity between big cities and rural villages is the main motivation for labor migration. However, in Viet Nam, the income gap between the two areas has gradually narrowed, which is good for attaining shared growth (Table 2.5). This may partially explain why rural-urban labor migration is not as vigorous as can be expected from the quantitative expansion of modern industry.

Table 2.5 Urban-rural income gap (thousand VND)

	2002	2004	2006	2008	2010	2012
Whole country	356	484	636	995	1,387	1,999
Urban	622	815	1,058	1,605	2,129	2,989
Rural	275	378	506	762	1,070	1,579
Urban/rural ratio	2.3	2.2	2.1	2.1	2.0	1.9

Source: World Bank Group (2016).

From the above data, though limited in scope and not necessarily up-to-date, it can be concluded that labor migration from agriculture to industry and services is currently in progress in Viet Nam driven by ongoing industrialization, with or without physical migration into cities.

Some actually move to cities permanently, temporarily, seasonally, or irregularly while others take up non-farm jobs without leaving the village. This was a phenomenon commonly observed in Northeast and Southeast Asian economies during their rapid growth. The process is not yet complete in Viet Nam as surplus labor still seems to exist nationally, especially in rural areas. This leads us to conclude that Viet Nam as a nation has not reached Lewis' turning point. However, Hanoi, Ho Chi Minh City, and their surrounding areas have long faced labor shortage since the 2000s under strong wage pressure and frequent job-hopping. The question is why labor migration does not occur in a more massive way to fill this regional labor gap, to the extent that rural villages are almost emptied of young workers, as we historically observed in Japan in the 1960s and China in the 1990s and 2000s. Rural-urban labor migration does occur in Viet Nam but the pace seems to be stable or at least not accelerating. We already mentioned possible reasons for this, such as emerging labor shortage even in rural areas, workers ill-equipped with industrial skills, the narrowing income gap between cities and villages, and the existence of some mobility barriers preventing smooth labor migration.

2.5 Manufacturing and the FDI sector: why labor productivity is stagnant

Manufacturing plays a key role in the catch-up process of an industrializing economy, and its labor productivity growth is expected to lead the overall performance of the national economy. In fact, this is precisely what happened in many high-performing Asian economies. In Viet Nam also, the labor productivity of Vietnamese manufacturing in 2015 was 62.56 million VND per worker, which was 15% higher than the average of the whole economy. However, the shocking fact is that manufacturing labor productivity has hardly increased in Viet Nam since 2001, as illustrated in Figure 2.9(a) in Section 2.2.3 above.

Another striking discovery is that labor productivity of the FDI sector fell significantly and stagnated over the years, as shown in Figure 2.14(c) in Section 2.3 above. In the 1990s and up until 2001, labor productivity of the FDI sector was far higher than that of the state or non-state sector, and was rising strongly. However, it suddenly began a steep fall in 2002, which lasted for several years, then stabilized thereafter. In 2015, labor productivity of the FDI sector was overtaken by that of the state sector. Other studies also corroborate our finding. Nguyen Tien Dung et al. (2017), using micro data from the Vietnam Enterprise Census, report that value-added per worker in the FDI sector increased only 0.7% per year between 2004 and 2015 while that of the private and state sector rose 8.5% and 9.7% per year, respectively, during the same period. This

dramatic and unexpected development in the labor productivity of the FDI sector needs explanation.

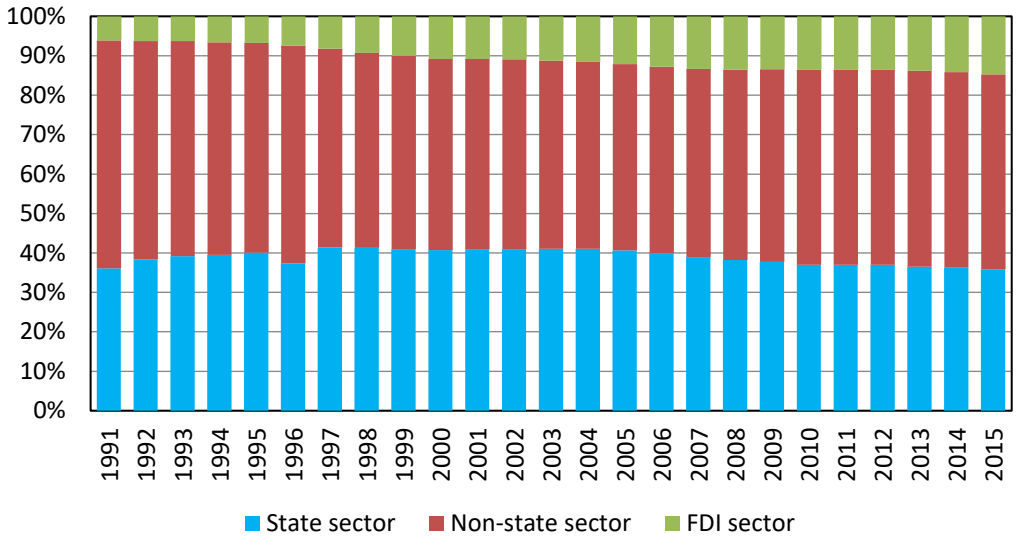
These two phenomena, in the manufacturing sector and the FDI sector, are inter-related because many FDI firms engage in manufacturing. According to the GSO data, 58.4% of cumulative FDI inflow at the end of 2017 was in the manufacturing sector. Disappointing productivity performance of the FDI sector can be attributed partly to the contraction of mining, especially oil. Viet Nam's crude oil output declined sharply from its peak in 2004. This decrease, combined with weak global oil prices, severely hit the oil-producing sector which included FDI enterprises. However, the crisis in energy and mining cannot explain the lackluster performance of manufacturing FDI. Foreign manufacturers are supposed to bring advanced management, technology, and marketing to developing countries, with strong spillover effects, and contribute to the latter's economic development. This is not happening in Viet Nam, and we need to ask why this is so. Put another way, we may also ask why so many foreign manufacturers have been attracted to Viet Nam when manufacturing productivity was hardly rising.

One important cause of declining labor productivity of the FDI sector was a dramatic sectoral shift which occurred in the early 2000s. Truong Quang Hung (2012) notes that, previously in the 1990s, FDI inflows mainly targeted mining and import substitution sectors. Since 2000, however, FDI in export-oriented, labor-intensive, large-scale manufacturing suddenly and greatly increased. Many of such firms were engaged in garment, footwear, electronics, and food processing which hired a large number of unskilled workers in production lines. Within two years, the number of employees at FDI firms more than doubled, from 339,100 in 2001 to 770,900 in 2003, which started to cause labor shortage in and around Ho Chi Minh City and also in and around Ha Noi several years later. Meanwhile, value-added of this sector increased only 1.18 times from 129.33 billion VND in 2001 to 153.18 billion VND in 2003. This explains a sharp decline in labor productivity of the FDI sector which began in 2003 (Figure 2.14(c)).

Subsequently, from around 2006, foreign investors began to focus more on services, some of which achieved high growth, and labor productivity of the FDI sector began to pick up. Looking at the composition of GDP, contribution of the FDI sector continued to grow steadily, though slightly, even in recent years despite the weak performance of labor productivity (Figure 2.16). In 2015, the FDI sector accounted for 15% of GDP while corresponding figures for the non-state and the state sector were 50% and 35%, respectively. Quantitative expansion of output and employment more than offset the stagnant labor productivity in the FDI sector, resulting in an increasing share of GDP.

Figure 2.16 GDP share by ownership

(Constant 2010 price)



Source: VEPR's calculation based on GSO data.

We now turn to the crucial question of why the labor productivity of manufacturing FDI, especially of labor-intensive export-oriented type, remains persistently low. A study by Nguyen Viet Khoi & Shashi Chaudhary (2019) suggests that this may be because foreign investors choose Viet Nam as a place to engage in lowest productivity activities such as sewing and cutting, manual assembly, and other simple processes in the global value chain, which is at the bottom of the famous Smiling Curve[4]. Many foreign investors view Viet Nam as a middle-stream workshop, not as an executor of upstream or downstream processes whose value creation is greater, and therefore do not expect experienced engineers or skilled workers from Viet Nam, and do not even feel the need to train them as such. For this reason, the labor productivity of manufacturing FDI declined significantly as labor-intensive export-oriented FDI began to arrive in large number around 2003, and remained low in recent decades. This interpretation, if correct, explains why Viet Nam did not achieve any big spurt in manufacturing productivity as massive FDI flowed in, and why many FDI firms remain happy and satisfied with the current situation

[4] Plotting supply chain processes from upstream to downstream on the horizontal axis, and the amount of value creation on the vertical axis, the Smiling Curve is a U-shaped curve showing that high value is generated in upstream (R&D, design, high-tech materials and components, etc.) and downstream (marketing, branding, retail, etc.) while value creation is low in middle stream (simple assembly and processing). This is generally true in many manufacturing sectors in which Viet Nam excels such as apparel, footwear, and electronic device assembly.

without any motivation to improve it themselves or asking the Vietnamese government to remedy it.

Low domestic value creation is a common feature of any latecomer economy in the early stage of FDI-led industrialization, but most governments introduce policies to entice FDI firms to produce more domestic value. Malaysia and Thailand have turned to such a strategy long ago. By contrast, Viet Nam, which has received manufacturing FDI for more than a quarter century, has neither launched such a national strategy nor introduced necessary policy measures in an integrated way. Supporting industry promotion is one of the necessary policy measures, but Viet Nam has not yet produced visible results in this area (Section 7.10). Moreover, there are other measures that need to be adopted, including the general leveling-up of domestic workers and enterprises as proposed in detail in Chapter 7, selective attraction of value-creating foreign investors, incentivizing FDI firms to transfer knowledge and technology, promotion of applied science and pragmatic engineering at universities and research centers, importing skilled foreign labor, and support of technical learning, patent use, and R&D.

It should be added that nationalities and subsectors of FDI also matter. It was mainly Taiwanese and Korean firms that began from around 2003 to aggressively invest in labor-intensive export-oriented processes—especially in garment, footwear, smart phones, and other electronic products—in Viet Nam which generated a downward trend in the labor productivity of the FDI sector. Meanwhile, Japanese FDI, which started to arrive earlier in the mid-1990s, was more concentrated in import-substituting engineering-type processes such as motorbikes, automobiles, consumer electronics, as well as production of die-and-mold and other metal and plastic components required by these processes. Japanese firms also engage in the production of garment, printers, small motors, and the like, but their weight is relatively small.

Finally, there is the problem of transfer pricing. This is an illegal accounting practice in which multinational corporations do not declare the true costs of imported materials and intermediate inputs or the true revenues from exported products in order to minimize or avoid tax payments globally. By over-reporting import costs or under-reporting export sales vis-à-vis parent or group companies abroad, foreign subsidiaries can artificially suppress their revenues and profits which are subject to taxation in the host country. Vietnamese authorities have discovered many such cases. FDI enterprises in garment, leather, and tea production and trading often report business losses. In Ho Chi Minh City, up to 90% of foreign garment producers were "unprofitable," while most domestic producers in the same subsector were profitable. In 2012, the Tax Department of Ho Chi Minh City inspected and found 2,688.5 billion VND of false declaration and 86.8 billion VND of unwarranted reduction and deduction, resulting in 2,611

billion VND of fine and retrospective tax collection. In one incident, by inspecting 16 garment enterprises alone suspected of transfer pricing, the City Tax Department annulled the reported loss of 367.8 billion VND and collected 11.3 billion VND in additional taxes (Nguyen Thi Thu Hoai and Duong Van An, 2015). It is likely that transfer pricing is spread not only in garment but also in many other sectors. To the extent that transfer pricing is pervasive among FDI firms in Viet Nam, domestic value creation is under-reported and so is their labor productivity.

2.6 Persistence of unskilled labor

Two problems that contribute to the weak productivity performance of manufacturing as well as the FDI sector are examined below. The first is the problem of unskilled labor, discussed in this section, and the second is the lack of productive and meaningful participation in global value chains, explained in the next section.

Viet Nam used to have a good reputation of having a large number of young, dexterous, and diligent workers. This statement is, to a large extent, still true even today. However, after three-and-half decades of Doi Moi and a quarter century of global integration, Viet Nam can no longer expect to compete effectively in the global market and progress toward high income by relying only on this labor feature. One reason for this is that Viet Nam's population is sure to age and the ratio of working population will shrink in the future. But the more serious reason is that, after so many years of rapid industrialization, the quality of Vietnamese labor force has not improved very much beyond being young, dexterous, and diligent. Viet Nam has not fostered, nor did its government help to produce, a sufficient number of scientists, managers, engineers, and technicians with professional knowledge and experience who can compete effectively with the world. There is little evidence that Vietnamese labor is improving fast enough to fill the need of emerging industries. On the contrary, there are even signs that the opposite is happening.

As noted above, Nguyen Ba Ngoc and Pham Minh Thu (2015) report that the ratio of workers who never received vocational training increased, rather than decreased, from 2007 to 2013. This ratio went up from 55.5% to 65.5% in manufacturing and construction, and from 30.5% to 56.4% in services. Viet Nam experienced large bubbles in the stock and urban property markets around 2007, which drove many people to speculation in pursuit of short-term capital gain. This incident may have turned the Vietnamese people, who used to be patient and hardworking, to shortsighted materialism instead of technology learning for long-term goals. Around 2015, the number of applicants to technical and vocational colleges in Northern Viet Nam suddenly and significantly declined, threatening such colleges with operational difficulty and the risk of

bankruptcy. In a tightening urban labor market, high school graduates rushed to find easy jobs to earn quick cash rather than go to school for additional years to acquire technical skills. This mindset of the Vietnamese youth is worrisome, as it is not conducive to the building of an industrial nation with global competitiveness.

2.7 Limited participation in the global value chain

Participation in global value chains should provide Viet Nam with increased value creation, more and better jobs, proper specialization and positioning in the global economy, and the spillover effect of technology and management that raises domestic capacity (Taglioni & Winkler, 2016). However, these benefits are not automatic or naturally arising. They must be pursued and earned by domestic businesses and policymakers with good planning and serious effort. The amount of these benefits accruing to the home country varies considerably depending on where and how the country participates in global value chains, whether and how fast the country moves from low-value to high-value processes, and the existence or absence of strategy to participate more deeply and effectively in the global production system on the part of domestic businesses and government.

Nguyen Viet Khoi and Shashi Chaudhary (2019) define the "backward participation" as the amount of domestically produced intermediate products and services contained in a nation's total export, and "forward participation" as the amount of value-added earned abroad in a nation's total export. "Participation in global value chains" is the sum of these two ratios. According to their definitions and calculation, Viet Nam's participation in global value chains greatly increased from 34.2% in 1995 to 55.6% in 2015 (Table 2.6) . However, the increment came only from the rising backward participation, and not from forward participation which remained low at around 11-14% throughout the two decades (except a temporary increase in 2000). This fact is very interesting and also consistent with stagnant manufacturing labor productivity discussed above.

Table 2.6 Viet Nam's participation in global value chains

Year	Forward participation (%)	Backward participation (%)	Participation in global value chains (%)
1995	12.6	21.6	34.2
2000	19.5	27.2	46.7
2005	14.5	36.1	50.6
2010	12.5	40.5	53.0

2015	11.1	44.5	55.6

Source: Nguyen Viet Khoi and Shashi Chaudhary (2019).

The rise in Viet Nam's backward linkage, which may be regarded as the development of supporting industries, occurred in computer and electronic devices, garment and footwear, food and beverages, and electrical machinery. We may judge that the policy of supporting industry promotion thus generated good results at least in these products. However, these industries are mainly engaged in labor-intensive middle-stream activities such as sewing, cutting, and manual assembly which are the lowest segment in the Smiling Curve. Moreover, what little supporting industry base Viet Nam has constructed mainly consists of foreign component suppliers rather than Vietnamese ones. As a result, these export-oriented subsectors contribute greatly to Viet Nam's gross export value, but much less to domestic value-added.

Why does this situation persist for so long? One explanation is that Viet Nam has been largely unable (or did not make enough effort) to upgrade itself and graduate from the status of a simple assembly factory of the world after it gained such a status in the 1990s. The other explanation is that foreign investors and buyers jealously guard high value processes in producing Made-in-Vietnam exports, such as product development and design, input procurement, logistics and distribution, and branding and marketing. They have neither desire, incentive, nor pressure to give these processes to the Vietnamese side *unless* Vietnamese managers and engineers greatly improve their skills to be able to replace foreigners, by offering high quality with lower cost. These two explanations are complementary and mutually reinforcing. Unless this vicious circle is broken, Viet Nam is forever stuck as an assembly platform. Impetus for ending this disadvantage must come from the Vietnamese side because most foreign firms do not see any clear incentive to change and upgrade Viet Nam; they have other investment destinations to migrate to.

2.7 Summary

The economy-wide labor productivity of Viet Nam has risen over time but it absolute level remains low in comparison with economies that have attained high income and technology in East and Southeast Asia. Viet Nam's productivity performance is not poor but about average among regional economies. The nation has not experienced a spell of very rapid increase in productivity to overcome a middle income trap and move up quickly to high income. As a result, Viet Nam's speed of catching up with and overtaking other regional economies has been slow.

In terms of sectors, the labor productivity of industry and construction has been the highest, followed by services, while that of agriculture, forestry and fisheries has been the lowest. Within industry and construction, which constitute nearly 40% of GDP, performance of labor productivity was generally weak. Manufacturing labor productivity stagnated after the early 2000s instead of rising robustly to lead the nation's industrialization. Meanwhile, sectors that account for smaller shares of GDP such as mining and financial, banking, and insurance activities had higher productivity in both level and growth rate though they were very sensitive to business cycles, price fluctuation, and other sector-specific shocks.

Regarding the type of ownership, labor productivity of the FDI sector rose strongly at first but then declined sharply. By contrast, labor productivity of the state and non-state sectors increased more steadily. Even so, labor productivity of the non-state sector remains low in absolute terms despite improvements over the years. Meanwhile, the increase in labor productivity of the state sector partly came from a series of state enterprise reform which streamlined and equitized many of such enterprises, retaining only good performers in the state hand and thus pushing up their average productivity. Other reasons for a relatively good progress of state-sector labor productivity include a high capital-labor ratio and various privileges and protection offered by the government.

This chapter additionally featured four remarkable facts surrounding Viet Nam's labor productivity, labor market, and participation in global value chains.

First, Viet Nam's labor market has not reached Lewis' turning point where vigorous demand for industrial workers eliminates labor surplus nationwide, and causes wages to rise. There is still surplus labor in rural areas which however migrates only moderately to urban areas or to industrial and services sectors, despite acute labor shortage in these areas and sectors.

Second, in the early 2000s, labor productivity of manufacturing stopped rising and that of the FDI sector sharply declined, which were surprising and discouraging phenomena in a rapidly industrializing economy such as Viet Nam. We suspect that this was caused mainly because many—if not all—foreign investors and buyers regard Viet Nam as a platform for simple processing and assembly, without expecting high competence and professionalism from Vietnamese engineers and workers. The government has not introduced policies to rectify this undesirable situation. Great national effort is required for Viet Nam to get out of this trap and move forward.

Third, the quality of Vietnamese workers is not improving rapidly, and some data suggest that it is even deteriorating, in recent years. This is shown by the lack of technical training among

workers, the national mindset toward short-term speculation and away from long-term learning, and unpopularity of technical and vocational colleges among the youth.

Fourth, even with active foreign trade and FDI, Viet Nam's participation in global value chains is limited and does not augment domestic value very much. The degree of participation has risen over the years, but due only to rising backward participation (supporting industry development, the bulk of which was driven by FDI component suppliers) while forward participation (overseas logistics and marketing) remains weak. This result is consistent with the above-mentioned fact that Viet Nam is stuck with low-value activities on the Smiling Curve, and most foreign investors have little motivation to change this situation.

CHAPTER 3

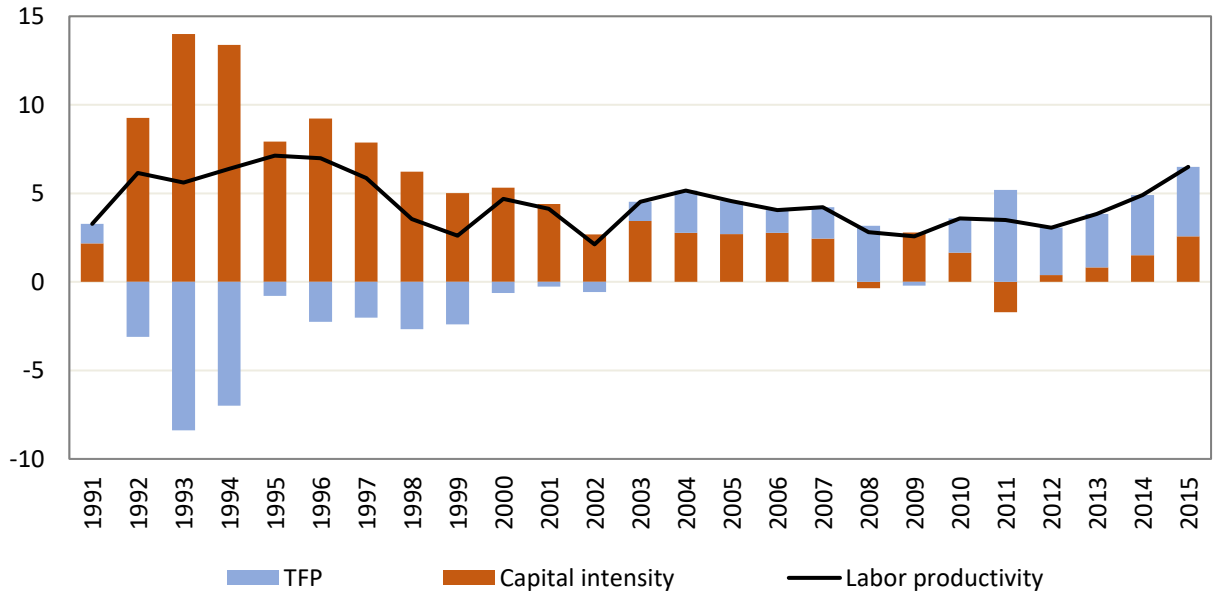
SOURCES OF LABOR PRODUCTIVITY GROWTH

This chapter provides two types of labor productivity decomposition based on growth accounting and shift-share analysis, using data mostly from the General Statistics Office (GSO), to investigate the factors behind Viet Nam's labor productivity dynamics. Subsector data is also employed to look into the structure within the manufacturing sector.

3.1 Growth accounting

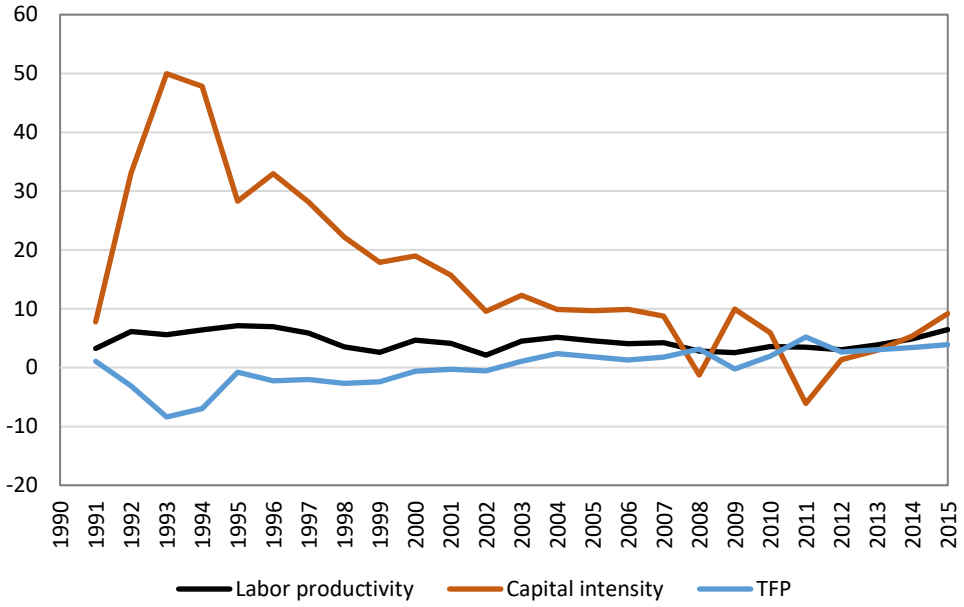
According to the growth accounting method explained in Chapter 1, labor productivity growth can be decomposed into the change in capital intensity and TFP growth. As narrated in Section 2.1, Viet Nam's labor productivity went through three distinct stages: high growth (1991-95), stagnation (1996-2012), and recovery (2013-). The features of each stage can be re-confirmed, and additionally analyzed, by decomposition of labor productivity growth as shown in Figure 3.1 (level), Figure 3.2 (growth), and Table 3.1 (period average).

Figure 3.1 Growth accounting: decomposition of labor productivity growth (%)



Source: VEPR's calculation based on GSO data.

Figure 3.2 Growth rates of labor productivity, capital intensity, and TFP



Source: VEPR's calculation based on GSO data.

During the first half of the 1990s, labor productivity grew rapidly with the primary impetus coming from rising capital intensity. This was the period when Viet Nam actively eliminated barriers to market and decisively integrated into the international trading community with the signing of a trade agreement with the EU (1992), normalization of diplomatic relations with the US (1995), and joining ASEAN (1995). This period also saw introduction of many policy measures for creating a multi-sectoral market economy, stimulating the participation of private enterprises, and inviting FDI. As previous constraints were removed, the number and volume of investment projects increased rapidly, while Vietnamese labor force remained relatively stable in both quantity and quality. This led to a strong rise in capital intensity (i.e., the ratio of capital to labor). As each worker was equipped with a greater amount of capital, labor productivity naturally rose. TFP growth in this period was generally negative, meaning that efficiency improvement in the true sense of technology, knowledge, and innovation had not yet started.

In the late 1990s, labor productivity growth slowed down. Viet Nam's growth continued to rely heavily on capital investment, even though the initial temporary effect of re-introducing the market economy and re-opening to the world had mostly been exhausted. Aggressive investment, though less sudden and spectacular than the previous period, sustained growth quantitatively without corresponding improvement in labor skill or institutional quality. Low efficiency of capital was indicated by a high incremental capital-output ratio (ICOR), which implies that large investment was needed to support an additional growth of 1% (see below for more discussion).

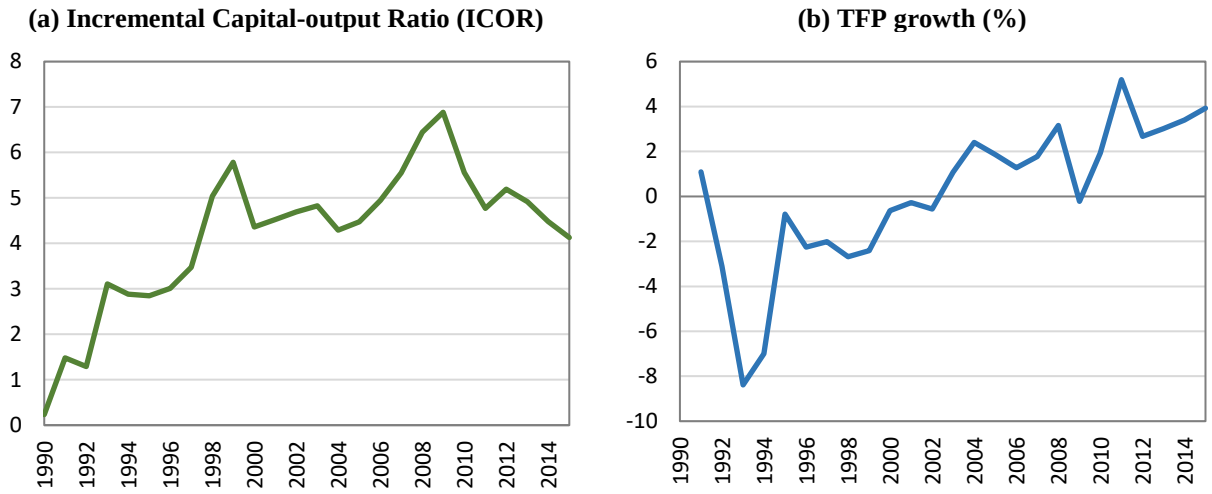
Meanwhile, TFP growth continued to stay in the negative range (Table 3.1 and Figure 3.3). The Asian financial crisis in 1997-98 additionally disturbed the Vietnamese economy.

Table 3.1 Decomposition of labor productivity growth (%)

		Labor productivity growth	Contribution of		Contribution share	
			Capital intensity	TFP	Capital intensity	TFP
All period	1991-2015	4.51	4.23	0.28	93.89	6.11
Period of high productivity growth	1991-1995	6.32	11.05	-4.73	174.90	-74.90
Period of productivity stagnation	1996-1999	3.99	6.35	-2.36	159.02	-59.02
	2000-2007	4.10	3.02	1.08	73.64	26.36
	2008-2012	3.18	0.73	2.45	22.97	77.03
Period of productivity recovery	2013-2015	5.69	2.03	3.66	35.73	64.27

Source: VEPR's calculation based on GSO data.

Figure 3.3 ICOR and TFP growth



Source: VEPR's calculation based on data from IMF and GSO.

Lackluster productivity performance continued into the new millennium. From 2000 to 2012, labor productivity growth was in the range of 3-4% per year. In 2008-09, another global financial crisis lowered Viet Nam's labor productivity growth to 2.59%. The contribution of capital investment to GDP growth became steadily smaller, with capital intensity actually falling in 2008 (-1.2%) and in 2011 (-6.1%). The first incident in 2008 reflected the negative impact of the global

financial crisis on capital investment, while the second decline in 2011 may be due to a data treatment problem (Appendix 1) . To cope with the global financial crisis, the Vietnamese government launched a stimulus package in 2008 which included active public investment (Thanh Hoan, 2009). For some unknown reason, this public expenditure flow was statistically counted as an increase in capital stock in 2009 and 2010, which generated a sharp decline in "capital stock" when the stimulus package ended in 2011. As for TFP growth, it turned from negative to positive in the early 2000s but its growth rate was still low.

More recently, from around 2013, labor productivity growth accelerated from the previous 3-4% range to 5-6% range. The discouraging trends in earlier years also began to reverse with a rising contribution of TFP growth to labor productivity, while the contribution of capital intensity, which was overwhelming in 1991-95, declined. After 2007, TFP growth replaced heavy capital investment as the leading contributor to labor productivity growth.

It must be noted that TFP calculation is subject to error and variation. Our calculation, using the official data of GSO, reveals that TFP growth had contributed significantly to labor productivity growth in the period 2000-2012, or 41% on annual average. Meanwhile, according to Jorgenson and Vu (2013), TFP contributed 50.8% to labor productivity growth in the period of 1990-2000 but this proportion dropped to a mere 3.6% in the period 2000-12 due to the government's aforementioned public investment drive which dominated growth during this period. APO (2015) estimates that TFP contributed about 26% to Viet Nam's annual labor productivity growth at that time. Both studies show much lower contribution of TFP growth than the present report. This difference may be due to the use of different assumptions or datasets in estimation (Appendix 1).

Be that as it may, the decomposition exercise of labor productivity growth clearly indicates that advancement of labor productivity is not always a sign of efficiency improvement in the true sense but may also be generated by excessive capital investment without any efficiency improvement (Ohno, 2016). To properly assess labor productivity growth, additional information must be consulted, among which the incremental capital-output ratio (ICOR) is most handy and useful. It is the ratio of the investment rate (investment/GDP) divided by the growth rate of GDP, showing how much additional capital is needed to produce an additional GDP growth of 1%. A high ICOR implies low efficiency in using capital, and vice versa. Viet Nam's ICOR rose significantly in the 1990s and 2000s, then fell somewhat in recent years, as illustrated in Figure 3.3, with the following average: 2.32 during 1991-95, 4.93 during 1996-2012, and 4.51 during 2013-2015.

The high ICOR in the past may be explained partly by high demand for infrastructure construction. Infrastructure development is an essential requirement for socio-economic development in countries starting from low income and little capital stock, such as Viet Nam in

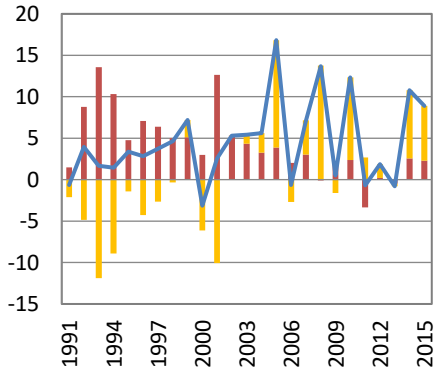
the early years of Doi Moi and global integration. In such circumstances, aggressive public investment may well be justified. However, according to Le Xuan Ba and Nguyen Thi Tue Anh (2010), Viet Nam's ICOR, reaching 6 to 7 at its peak, was far higher than those of newly industrializing countries in Northeast Asia in their take-off periods, such as Taiwan (2.7) and South Korea (3.0) during 1961-80. It was also considerably higher than China's (4.0) in its high growth era of 2001-16 and Thailand's (4.1) during 1981-95. Evidence is strong that Viet Nam's investment was not used effectively after the economy was liberalized and opened up in the early 1990s, even if we take the need to build infrastructure into consideration.

3.2 Growth accounting: subsectors

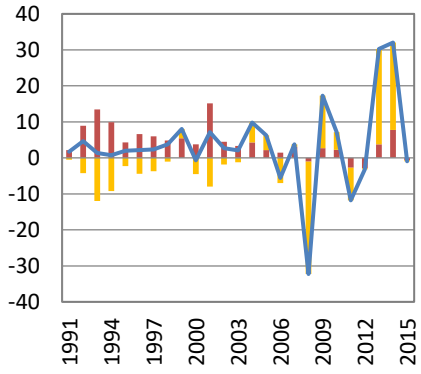
Turning to disaggregated data, the fact that capital intensity drove labor productivity in the period 1991-2000 was also clearly visible in agriculture, forestry, and fisheries as well as industry and construction (Figure 3.4). By contrast, labor productivity growth of services depended mostly on TFP growth rather than capital investment, not just in the early period but the whole period, given the nature of this sector that physical equipment is less essential especially at smaller commercial establishments. After 2000, as a general tendency and in most subsectors, contribution of capital intensity fell and that of TFP growth rose, although some subsectors experienced negative TFP growth. Consistent with our discussion in Chapter 2, manufacturing labor productivity was not strongly driven by TFP growth even in the new millennium, which resulted in weak performance.

Figure 3.4 Decomposition of labor productivity growth: selected subsectors (%)

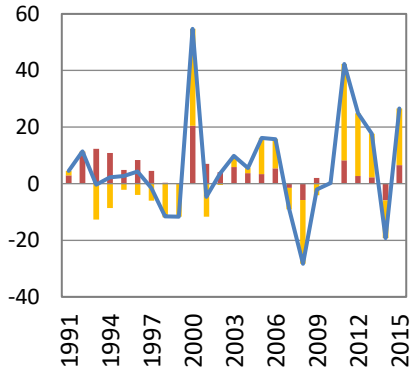
(a) Agriculture



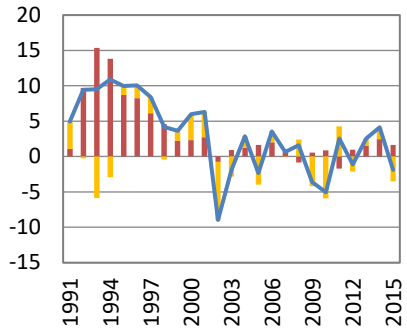
(b) Forestry



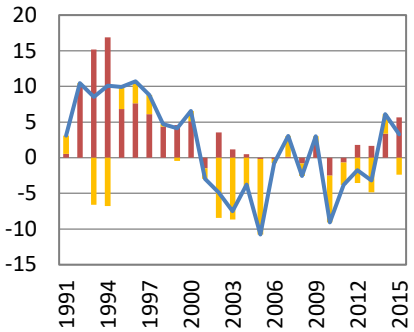
(c) Fisheries



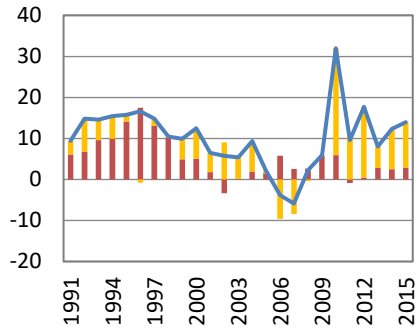
(d) Manufacturing



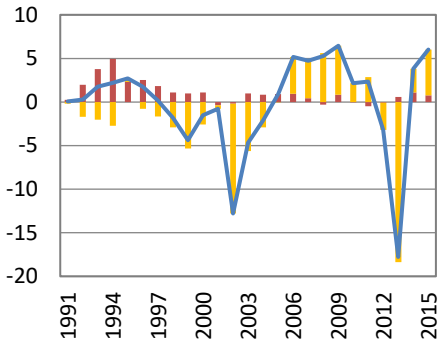
(e) Construction



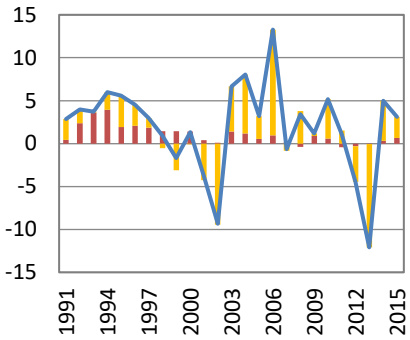
(f) Mining



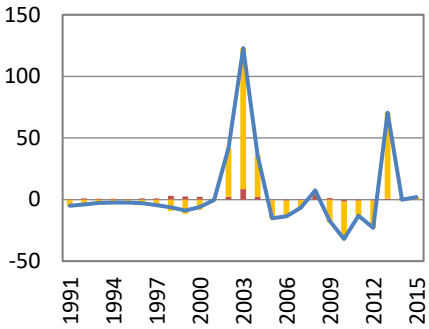
(g) Wholesale, retail and repair



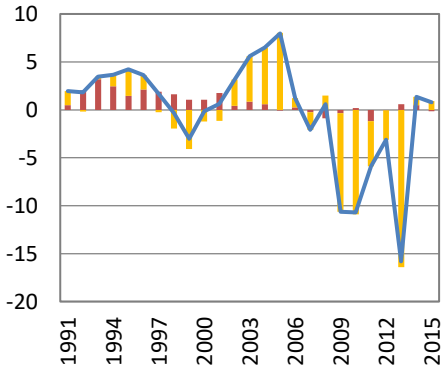
(h) Transportation and storage



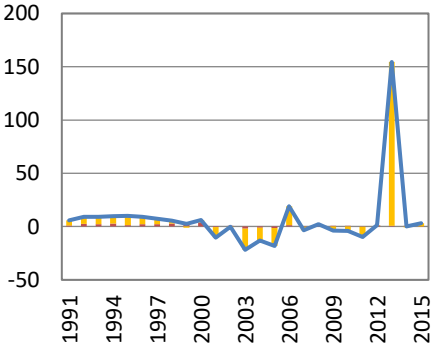
(i) Real estate business activities



(j) Accommodation and food service



(k) Financial, banking and insurance activities

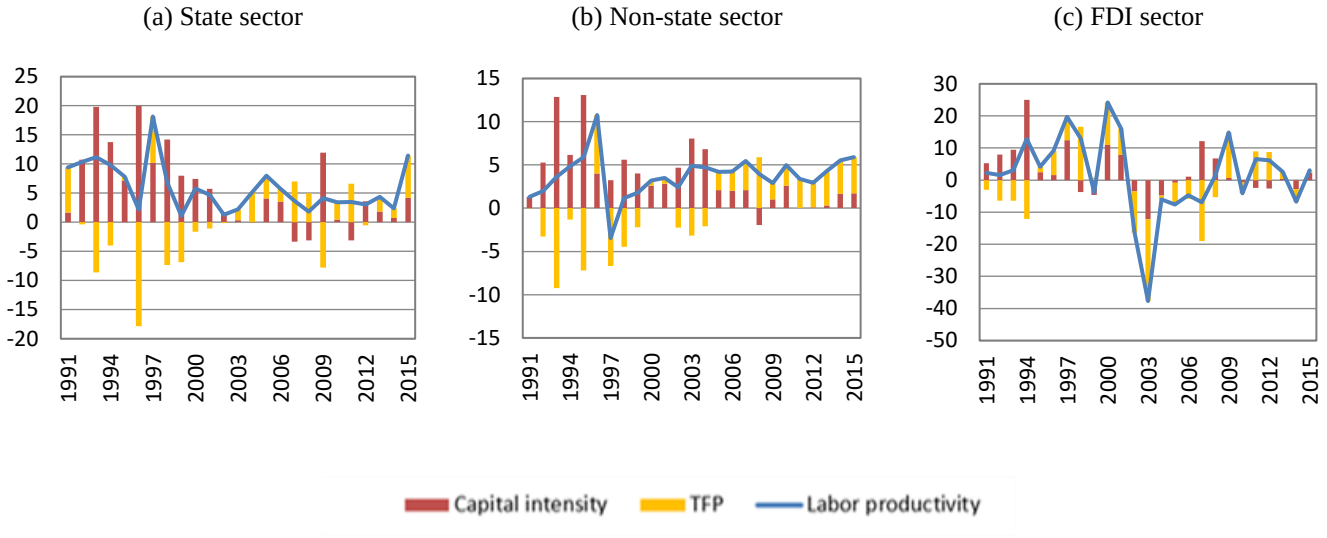


Source: VEPR's calculation based on GSO data.

In terms of type of enterprise ownership, capital intensity had a large influence on labor productivity growth in all sectors in the 1990s, though this effect was slightly less prominent and more volatile in the FDI sector (Figure 3.5). After 2000, the impact of capital intensity generally became small and the role of TFP growth more prominent, especially in the non-state sector. However, TFP contribution was unstable weak in the FDI sector, as its labor productivity fell greatly in the early

2000s—especially in 2003—and then stagnated subsequently, a phenomenon we analyzed in detail in the previous chapter.

Figure 3.5 Decomposition of labor productivity growth by ownership type (%)



Source: VEPR's calculation based on GSO data.

In sum, it may be concluded that Viet Nam's labor productivity was initially driven by heavy investment, which included infrastructure development, but the contribution of capital intensity gradually fell and was overtaken by TFP growth around the turn of the century. This transition of contributing factors was expectable and welcome. However, the manufacturing sector and the FDI sector, the two overlapping sectors in which we detected serious weaknesses in Chapter 2, did not enjoy a strong upsurge of TFP growth in the last two decades.

3.3 Shift-share analysis

As explained in Chapter 1, there is another way to decompose labor productivity growth. Labor productivity for the entire economy is the sum of productivity of each sector weighted by sectoral employment share. However, labor productivity in each industry changes over time and workers may also move across sectors. In order to reflect these two processes, shift-share analysis decomposes labor productivity growth into three elements, namely, (i) the within effect, (ii) the shift effect, and (iii) the interaction effect.

The within effect reflects the impact of labor productivity growth in each sector on the labor productivity of the national economy assuming that sectoral labor allocation remains constant. If

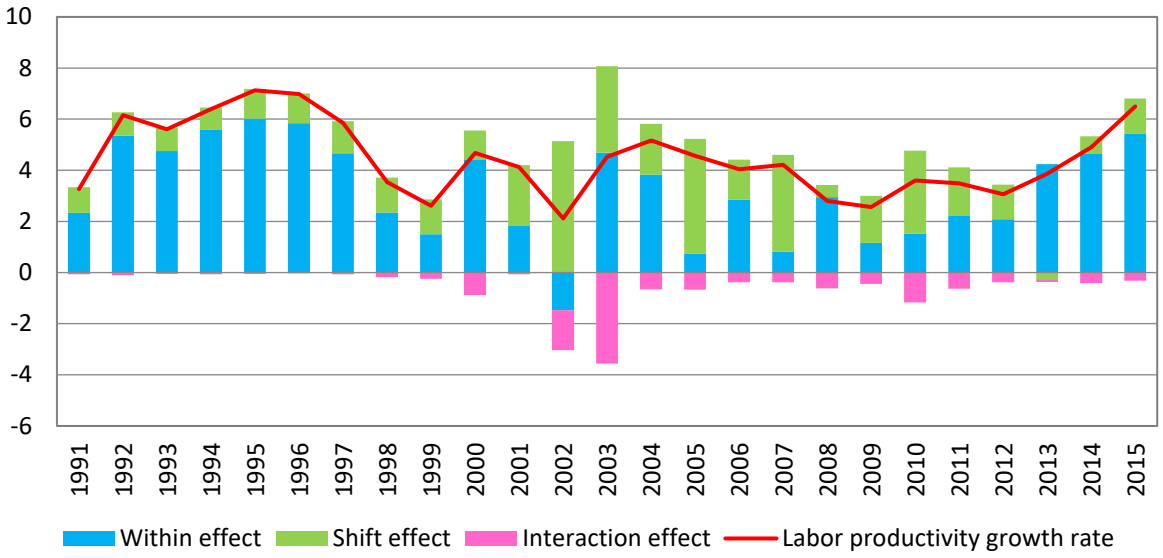
there is an advancement in technology, management, or production method in individual sectors, the within effect will carry a positive sign. The shift effect captures the impact of labor reallocation across sectors assuming that sectoral labor productivities remain the same. Overall labor productivity rises and falls as labor moves from low-productivity to high-productivity sectors, and vice versa. Meanwhile, the interaction effect shows the secondary impact of labor movement across sectors with different speeds of labor productivity growth. This effect will be positive if labor migrates from sectors with low labor productivity growth to those with high labor productivity growth (regardless of their initial levels), and vice versa.

In economies in the process of industrialization and global integration, such as Viet Nam since the 1990s, liberalization policies are expected to immediately raise output and productivity in almost all sectors by removing previous suppression and control, and restoring incentives to invest and produce. Because of this, the within effect is likely to dominate in the initial stage. Subsequently, as labor begins to migrate in large number from traditional agriculture and services to modern and more dynamic sectors, the shift effect will become relatively more prominent. However, both effects must interact and remain active for the industrialization process to proceed strongly until high income is achieved. We will examine whether this presumed pattern is observed in Viet Nam.

Deploying GSO data, aggregate labor productivity is calculated from economic sectors that have sufficient information. There are some sectors with limited output and labor indicators, especially those where household labor, self-production, and self-service are dominant, for which industrial labor data is unavailable. We will use the remaining 21 sectors that have sufficient data on value-added and number of employed workers. Although aggregate labor productivity thus calculated is lower than that based on GDP per worker, the difference is small enough for analytical purposes; both share similar trends and patterns.

In Viet Nam, labor productivity for the entire economy grew 4.24% per year in the period of 1991-2015. During most of this period, the within effect played a key role in promoting nation-wide labor productivity (Figure 3.6).

Figure 3.6 Shift-share analysis: decomposition of labor productivity growth (%)



Source: VEPR's calculation based on GSO data.

From 1991 to 2000, the within effect contributed between 1.49 and 6.01 percentage points, or 57-94% of total, to overall labor productivity growth. The shift effect was between 0.88 and 1.36 percentage points, or 14-52% of total, in its contribution. The interaction effect carried negative signs, which means that labor tended to move from industries with increasing labor productivity to those with declining labor productivity, but in insignificant magnitude. A series of Doi Moi policies based on the "supply-side" theory contributed to the activation of the within effect, which led to strong productivity performance in this early stage. They included removal of internal trade barriers, approval of private commercial establishments, dissolution and/or merger of weak state enterprises, external opening, and attraction of foreign investment (Pham The Anh and Dinh Tuan Minh, 2013).

In the next decade, from 2001 to 2010, the shift effect became more important and overtook the within effect as the main driving force of labor productivity, contributing 65.9% to overall labor productivity growth. This is because a large number of workers migrated from sectors with low labor productivity, especially traditional farming with surplus labor, to sectors with higher labor productivity such as industry, construction, and certain services. Between 2000 and 2010, the proportion of labor engaged in agriculture, forestry, and fisheries fell from 67.8% to 49.5%, while that of the industry and construction sector nearly doubled, from 12.0% to 21.0%, and that of the services sector also expanded from 20.2% to 29.6%. Contribution of the within effect decreased and became more volatile, and even recorded a negative figure in 2002. The interaction effect was negative and sometimes quite large, implying that labor tended to migrate from high-growth to low-growth labor productivity sectors, which partly offset labor productivity growth driven by the shift

effect. The policy initiatives introduced in this period, such as the Enterprise Law, the bilateral trade agreement with the United States, joining the World Trade Organization, and the accelerated equitization of state-owned enterprises created an enabling environment for quantitative business expansion. They stimulated domestic investment and FDI inflow, which drew labor from less productive sectors, without necessarily strengthening labor productivity within individual sectors.

From 2011 to 2015, contribution of the shift effect became less clear than in the previous decade, dropping to 21.0% in 2015. The within effect regained its leading position in driving labor productivity growth, explaining almost all labor productivity growth in 2013-15. Thus, productivity improvement within individual sectors, which had been more subdued during 2001-10, was re-ignited. The interaction effect was still negative but small.

These results, featuring the declining shift effect and the revival of the within effect in recent years, are also confirmed by the Viet Nam Productivity Institute in its annual Vietnam Productivity Report. In there, the contributions of labor mobility and within-sector productivity growth were 55.9% and 44.1%, respectively, during 2005-10. In the following period of 2010-2017, labor mobility slowed down, contributing only 32.6% while intra-industry productivity improvement contributed 67.4%. The interaction effect was reported to be positive in these periods, as opposed to negative values found in our calculation, albeit small or near zero except in 2002 and 2003. In a similar exercise, Dinh Van An and Nguyen Thi Tue Anh (2008) also give a negative interaction effect for the period of 2001-05.

We conclude that, overall and as a rough approximation, Viet Nam's labor productivity was driven mostly by productivity gain in individual sectors, supplemented by labor movement from industries with low labor productivity to those with high labor productivity. As noted earlier, these two forces are those naturally arising in any latecomer developing economies. We normally anticipate that the within effect first dominates, then the shift-share effect catches up as labor starts to migrate in large number with a lag, and both should play strong and interactive influences throughout the industrialization process.

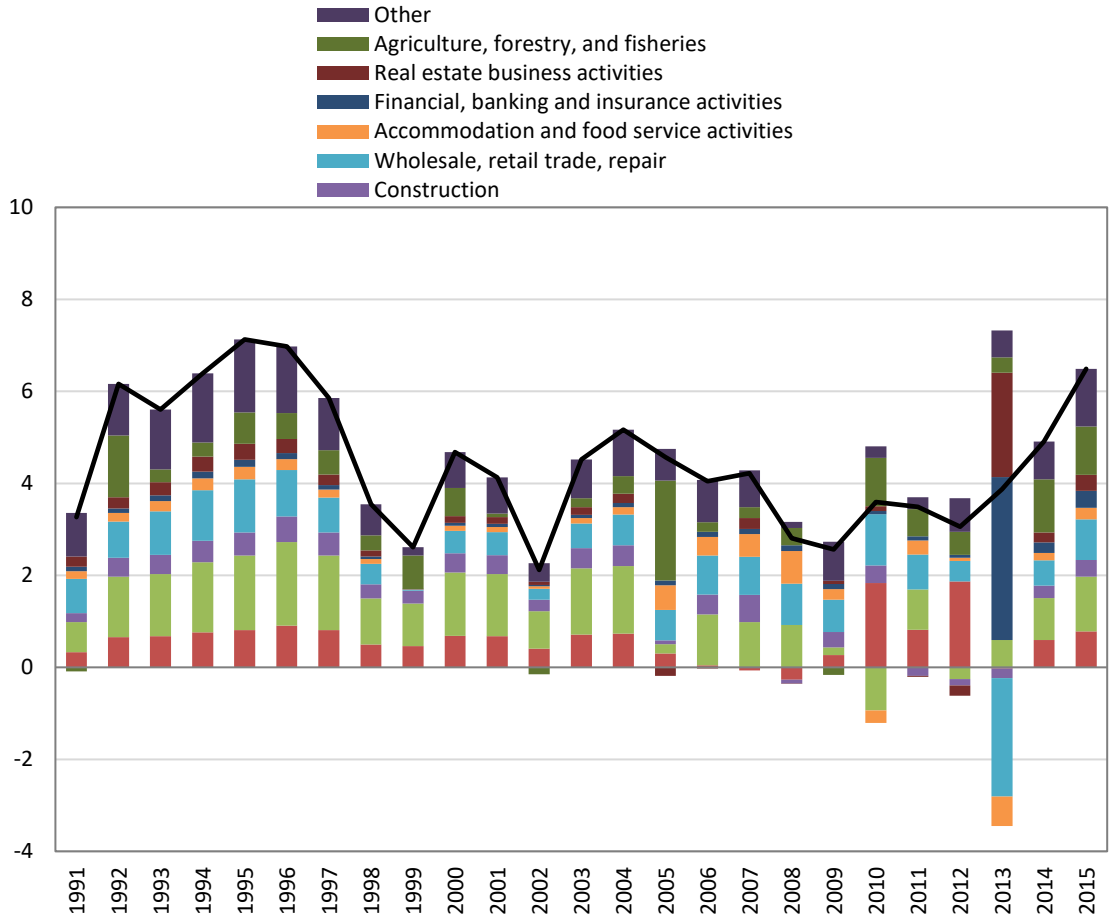
However, in Viet Nam, the impact of labor mobility seems to have weakened in recent years, and labor productivity was again driven mostly by the within effect alone from around 2013. Dynamic interaction between the two effects, which was historically very visible in Japan, South Korea, China, and so on, seems to have waned in Viet Nam when it was still at lower middle income and there remained a long way ahead to high income. We do not possess sufficient information to identify the cause(s) of this peculiar and worrisome phenomenon. We can only suggest, as we did in Section 2.4 above, some possible candidates such as disguised labor shortage in rural villages, insufficient incentive

for workers to migrate to cities or to learn required skills, or the existence of some hidden barriers to labor migration.

3.4 Shift-share analysis: subsectors

During the period of soaring labor productivity, which subsectors were the major drivers of nationwide productivity in terms of the strength of sectoral productivity performance as well as the destination of surplus labor migration? This section examines subsectoral data to try to answer this question. Figure 3.7 graphically illustrates annual contributions of key subsectors to labor productivity growth while Table 3.2 presents the same information numerically for 21 subsectors in period average. Shift-share analysis decomposition by subsectors is given in Table 3.3 for selected years of 2000, 2010, and 2015. Although decomposition results of individual years are unstable and not to be interpreted as long-term trends, this information, together with Figure 3.7 and Table 3.2, can provide us with some hints on what have been happening at subsector levels.

Figure 3.7 Annual subsector contribution to economy-wide labor productivity growth (%)



Source: VEPR's calculation based on GSO data.

Table 3.2 Subsector contribution to economy-wide labor productivity growth: period average (%)

	1991-2000	2001-2010	2011-2015	1991-2015
Whole economy	100.00	100.0	100.00	100.00
Agriculture	8.07	9.38	10.35	9.05
Forestry	0.64	-1.05	0.64	-0.04
Fisheries	1.86	1.77	5.35	2.52
Mining	12.91	12.35	21.58	14.42
Manufacturing	25.91	20.01	13.77	21.12
Electricity, gas, steam, and air conditioning supply	3.88	3.54	6.58	4.29
Water supply, sewerage, waste management	0.59	0.54	0.91	0.63
Construction	7.93	8.73	-0.81	6.50
Wholesale and retail trade, Repair	13.70	19.32	-1.12	12.98
Transportation and storage	3.44	3.78	-1.51	2.59
Accommodation and food service activities	3.18	7.13	0.38	4.20
Information and Communication	0.86	1.17	-0.50	0.71
Financial, Banking and Insurance activities	1.80	2.47	21.25	5.96
Real estate business activities	4.12	2.06	12.14	4.90
Professional, scientific and technical activities	0.61	0.76	4.28	1.40
Administrative activities and support services	0.30	0.16	0.93	0.37
Activities of Communist Party, socio-political organizations	2.82	3.65	-0.46	2.49
Education and training	3.30	1.00	3.66	2.45
Health and social assistance activities	1.53	0.57	2.96	1.43
Arts, entertainment and entertainment	0.52	0.14	1.29	0.52
Other service activities	2.03	2.51	-1.66	1.48

Source: VEPR's calculation based on GSO data.

Five subsectors that had, generally and throughout the entire period, largest impact on overall labor productivity are (i) manufacturing; (ii) mining; (iii) wholesale, retail, and repair; (iv) agriculture, forestry, and fisheries; and (v) construction. They collectively accounted for roughly 70% of overall labor productivity growth in the 1990s and 2000s though their impact was reduced to about 50-60% in the 2010s.

Manufacturing was the largest contributor to overall labor productivity growth in the entire period of 1991-2015 as well as in the first two subperiods of 1991-2000 and 2001-2010, accounting for more than 20% of total labor productivity gain. However, in the subperiod of 2011-2015, its contribution fell to 13.8% and was surpassed by those of mining and financial, banking and insurance activities. This finding probably reflects the stagnation of manufacturing labor productivity which started in the early 2000s, discussed in Chapter 2, as well as the data volatility mentioned above. The within effect of manufacturing was 22.3% in 2000, -27.7% in 2010, and -5.1% in 2015, which is too bumpy for drawing any definite conclusion, but negative figures in later years are at least consistent with the weakening trend in manufacturing productivity performance.

The mining sector's contribution to overall labor productivity growth was 14.4% in the entire period, but from around 2006, it became very volatile year to year. Its subperiod contribution was 12.9% in 1991-2000 and 12.4% in 2001-10, but jumped to 21.6% in 2011-15. Decomposition for both 2000 and 2015 shows a large within effect of 23-24% which was partly offset by a negative shift-share effect. But decomposition of 2010 reports a huge within effect, at 76.0%, which is difficult to interpret. As discussed earlier, the mining subsector is dictated by government plans and global price gyration.

Wholesale, retail, and repair contributed 13.0% to the overall labor productivity growth in the entire period, but it too had an inexplicable decline to -1.1% in the most recent subperiod, with a huge negative contribution in 2013 alone. The within effect was also volatile, but rising from -4.9% to 9.3% and 12.1% across the subperiods. The shift-share effect was always positive though also volatile, at 15.5%, 21.2%, and 1.4%, which may reflect the fact that this subsector has been an important absorber of surplus or discharged labor from traditional agriculture as well as modern industry and services.

Agriculture's contribution was more stable, at 9.1% for the entire period and 8.1%, 9.4%, and 10.4% in three subperiods. Contributions by forestry and fisheries were smaller. The within effect of agriculture was also unstable. What is more important yet baffling is the shift effect of agriculture which evolved from 22.9% to -25.5% and -7.3% in selected years. We expect a constant exit of labor from this subsector and thus consistent negative signs throughout the period.

Construction contributed 6.5% to overall labor productivity growth in the entire period, but its contribution in the last subperiod was negative. Shift-share decomposition is also difficult to interpret.

Table 3.3 Subsector shift-share decomposition for selected years (%)

	2000				2010				2015			
	Total	Within effect	Shift effect	Inter-action effect	Total	Within effect	Shift effect	Inter-action effect	Total	Within effect	Shift effect	Inter-action effect
Whole economy	100.0	94.7	24.1	-18.7	100.0	42.5	90.2	-32.7	100.0	83.9	21.0	-4.9
Agriculture	10.0	-12.2	22.9	-0.7	23.7	52.3	-25.5	-3.1	12.3	20.3	-7.3	-0.7
Forestry	0.8	-0.2	1.0	0.0	0.1	1.4	-1.3	-0.1	0.6	-0.1	0.7	0.0
Fisheries	2.3	49.0	-30.2	-16.5	5.4	0.2	5.2	0.0	3.2	15.9	-10.0	-2.7
Mining	14.6	23.1	-7.5	-0.9	51.0	76.0	-19.0	-6.1	12.0	24.9	-11.3	-1.6
Manufacturing	29.4	22.3	6.7	0.4	-26.1	-27.7	1.7	-0.1	18.3	-5.1	23.9	-0.5
Electricity, gas, steam, and air conditioning supply	4.4	5.5	-1.0	-0.1	-0.6	2.5	-3.0	-0.1	3.6	0.8	2.8	0.0
Water supply, sewerage, waste management	0.7	0.6	0.0	0.0	0.0	-2.1	2.5	-0.4	0.5	-0.2	0.8	0.0
Construction	9.0	7.5	1.4	0.1	10.7	-16.0	29.3	-2.7	5.6	2.7	2.8	0.1
Wholesale and retail trade, Repair	10.4	-4.9	15.5	-0.2	31.0	9.3	21.2	0.5	13.6	12.1	1.4	0.1
Transportation and storage	2.6	1.1	1.5	0.0	1.8	5.5	-3.5	-0.2	3.0	1.4	1.6	0.1
Accommodation and food service activities	2.4	-0.1	2.5	0.0	-7.6	-14.7	8.0	-0.9	3.9	0.5	3.4	0.0
Information and Communication	0.7	-0.5	1.1	0.0	0.6	-2.0	2.8	-0.2	0.8	0.1	0.7	0.0
Financial, Banking and Insurance activities	1.4	2.6	-1.1	-0.1	1.9	-2.3	4.4	-0.2	5.6	2.7	2.8	0.1
Real estate business activities	3.1	-5.9	9.6	-0.6	2.9	-33.1	53.0	-17.0	5.5	1.6	3.7	0.1
Professional, scientific and technical activities	0.5	1.1	-0.6	0.0	0.5	1.2	-0.6	0.0	1.4	1.3	0.1	0.0
Administrative activities and support services	0.2	0.0	0.3	0.0	0.2	-0.2	0.4	0.0	0.4	0.0	0.4	0.0
Activities of Communist Party, socio-political organizations	2.1	1.9	0.2	0.0	2.1	6.3	-3.9	-0.3	2.7	2.5	0.2	0.0
Education and training	2.5	2.4	0.1	0.0	0.5	-1.8	2.3	-0.1	3.0	2.2	0.8	0.0
Health and social assistance activities	1.2	1.5	-0.3	0.0	-0.5	-5.9	6.5	-1.0	1.7	-0.6	2.3	-0.1
Arts, entertainment and entertainment	0.4	0.3	0.1	0.0	0.0	-0.8	0.9	-0.1	0.6	0.3	0.3	0.0
Other service activities	1.5	-0.3	1.9	0.0	2.4	-5.7	8.9	-0.8	1.6	0.6	1.0	0.0

Source: VEPR's calculation based on GSO data.
Note: the total column shows the subsector's contribution share to economy-wide labor productivity growth. The other three columns decompose the subsector's contribution into each effect.

3.5 Additional analysis on manufacturing

Nguyen Thi Tue Anh et al. (2016) analyzed the contribution of "structural change" to the labor productivity growth of manufacturing from 2008 to 2013. We will selectively quote from their research to supplement our results. They defined the sum of the shift effect and the interaction effect as the impact of structural change on labor productivity of the whole economy or any particular sector, whichever the case may be. The research used data from the Statistical Yearbook and the Vietnam Enterprise Census of GSO, and examined 35 activities within manufacturing, placing emphasis on six activities with the largest contribution to labor productivity growth as well as employment. They are (i) food processing, (ii) textile, (iii) shoes and leather, (iv) manufacture of products from other non-metallic minerals, (v) manufacture of products from precast metals except machinery and equipment, and (vi) manufacture of electronic products and micro-machines optical products and products[5]. Decomposition results are presented in a re-formatted form in Table 3.4. Since annual decomposition fluctuates greatly, the following discussion focuses on five-year averages.

Table 3.4 Contribution of selected activities to manufacturing labor productivity growth

(%)

Subsector (classification code)	2008	2009	2010	2011	2012	Five-year average
Food processing (10)						
Total	10.6	-27.7	-72.2	54.0	18.1	-3.4
Within effect	-2.6	-23.7	-57.2	63.9	31.6	2.4
Shift effect	13.3	-3.7	-18.3	-7.5	-12.4	-5.7
Interaction effect	-0.1	-0.3	3.4	-2.4	-1.1	-0.1
Textile (14)						
Total	-0.9	39.7	135.2	-68.4	-52.6	10.6
Within effect	-3.9	37.2	138.2	-70.4	-62.9	7.6
Shift effect	3.0	3.1	-1.6	2.9	13.5	4.2
Interaction effect	0.0	-0.5	-1.4	-0.8	-3.2	-1.2
Shoes and leather (15)						
Total	-28.7	28.1	96.7	-51.4	-25.9	3.8
Within effect	-18.0	20.3	88.0	-56.4	-24.5	1.9
Shift effect	-11.5	8.8	5.2	7.1	-1.6	1.6
Interaction effect	0.9	-1.0	3.5	-2.1	0.2	0.3

[5] OECD classifies food processing, textile, and footwear as low-tech sectors, non-metallic mineral products and prefabricated metal as mid-tech sectors, and electronic products, computers and optical products as a high-tech sector. However, such classification by product name is often misleading. Even within the same industry, required skill, technology, and knowledge are very different depending on which part of the global value chain (or the Smiling Curve) a nation specializes in. Viet Nam's assembly of smart phones and electronic components is hardly "high-tech" even though R&D and product design embody frontline technology.

Products from other non-metallic minerals (23)						
Total	86.7	32.5	-45.5	29.4	-53.5	9.9
Within effect	75.3	54.2	-20.8	30.7	-39.0	20.1
Shift effect	8.5	-27.6	-27.6	-1.1	-17.7	-13.1
Interaction effect	2.8	5.9	2.9	-0.3	3.1	2.9
Products from precast metals excl. machinery and equipment (25)						
Total	16.4	6.9	23.1	-0.7	42.9	17.7
Within effect	7.7	2.2	9.0	-3.2	30.0	9.1
Shift effect	8.3	4.9	12.9	2.6	10.6	7.9
Interaction effect	0.5	-0.1	1.2	-0.1	2.2	0.8
Electronic products, micro-machines, optical products (26)						
Total	42.4	26.5	15.6	63.2	136.8	56.9
Within effect	27.9	44.3	1.4	42.0	87.6	40.6
Shift effect	11.0	-31.0	13.9	13.4	33.7	8.2
Interaction effect	3.6	13.3	0.3	7.9	15.5	8.1

Source: adapted from Nguyen Thi Tue Anh et al. (2016) with re-formatting.

Contributions of three labor-intensive light manufacturing activities—food processing, textile, and shoes and leather—to overall manufacturing labor productivity during the sample period of 2009-12 were generally weak or even negative. Among the three, textile had the largest contribution of 10.6% per year. The within effect of these activities was positive but relatively small, which was insufficient to improve national productivity performance substantially. The "structural change," or the sum of the shift effect and the interaction effect, was negative for food processing and small positive for textile and shoes and leather. This indicates that these low-tech light manufacturing activities were not a large contributor to overall labor productivity through labor migration. Labor may have moved from agriculture to these activities, but if their labor productivity was stagnant or not so different from traditional farming, the shift effect would not be very large. Low value creation and resulting insufficient participation in global value chains are suspected as the principal cause of these weaknesses.

Products from other non-metallic minerals had a robust within effect of 20.1% which however was offset by the negative combined impact of the shift and interaction effects. Total contribution to overall manufacturing labor productivity was just half of the within effect, at 9.9% per year. Meanwhile, products from fabricated metal contributed more, at 17.7% per year, and this subsector's within, shift, and interactive effects were all positive. As demand for metal and non-metal materials and intermediate components rose with ongoing industrialization, these industries played an important role in the development of supporting industries in Viet Nam.

Manufacturing of electronic products, computers and optical products had the highest contribution among the six activities examined here, at 56.9% per year, driven by the strong within effect of 40.6%. The other two effects of "structural change" were also positive, at a combined impact of not-so-insignificant 16.3%. This was the leading subsector that accelerated Vietnamese industrialization during this period, by raising within-sector productivity as well as absorbing a large amount of surplus labor for productive works. The most prominent entry in this subsector was Samsung that invested in Viet Nam in 2009 to establish new global production sites for smart phones, coupled with many other electronic and computer-related projects before and during this period, most of which were from Japan and South Korea. Thus, it may be said that this subsector successfully avoided the pitfall that other light manufacturing activities, such as textile and footwear, had fallen. Even in this subsector, however, the initiators and managers of value creation remain mostly foreigners, and large value-added mainly belong to them rather than Vietnamese managers, engineers, or workers.

Two other subsectors, not listed in Table 3.4, are worthy of additional mention. Chemicals and chemical products, a capital-intensive subsector which constitutes a part of materials and supporting industries, contributed significantly to the growth of manufacturing labor productivity, especially after 2011, though its share of employment generation was only 2% of total manufacturing employment. In contrast, manufacturing of furniture, a traditional and more low-tech activity, tended to contribute more to job creation rather than to the growth of manufacturing labor productivity. The difference between the two may stem from the degree of integration into globally competitive and dynamic modern industries. The chemicals industry, as an essential upstream process, supplies many crucial inputs to downstream manufacturers and assemblers while furniture is consumer-oriented and has no deep industrial linkage.

The study by Nguyen Thi Tue Anh et al. (2016), though the period of 2008-12 was neither long nor up-to-date, revealed an important diversity among manufacturing subsectors in their contributions to overall productivity either through their own productivity gain or through labor mobility. Some traditional light manufacturing subsectors such as food processing, textile, footwear, and furniture do not show remarkable contribution even when they are operated by FDI. Meanwhile, electronic assembly, an activity equally or even more labor-intensive under strong foreign control, contributes greatly to overall productivity and has become the central pillar of Viet Nam's industrialization. As for upstream processes (i.e., supporting industries) such as metal, non-metal, and chemical subsectors, their contributions to overall manufacturing productivity are quite large, though not as striking as that of electronic assembly. Degrees of

global competitiveness and integration into global value chains seem to matter in producing these differences.

3.6 Concluding remarks

Findings in this chapter, based on two types of decomposition of labor productivity, were generally consistent with the facts and trends obtained in Chapter 2 for the whole economy as well as for key sectors and subsectors. The chapter provided additional insights and subsectoral details and variations.

The main driver of Viet Nam's labor productivity growth shifted, overall and gradually, from capital intensity to TFP (growth accounting decomposition). Capital efficiency, measured by ICOR, deteriorated significantly when heavy investment was driving growth in the late 1990s to 2000s, but it improved somewhat in recent years. It was also found that, from another angle, the driving force of labor productivity mainly came from the within effect, or productivity gain in individual subsectors, although the shift effect, or impact of labor migration, was dominant in the intervening period of 2001-10 (shift-share analysis decomposition). More recently, the shift effect has declined even though surplus labor with low productivity seems to remain in rural areas. The weakening of inter-sectoral labor migration is puzzling because Viet Nam is still at lower middle income with a long way to full industrialization with advanced technology. Some barriers to further labor mobility are suspected. Strong and dynamic interaction between the within effect and the shift effect must continue to take the economy to upper middle income and eventually to high income.

Manufacturing was the greatest contributor to economy-wide labor productivity while agriculture, forestry, and fisheries and wholesale, retail, and repair also made considerable contributions. The contribution of construction was less significant, and that of mining was volatile, especially in recent periods, which is difficult to interpret. Even with quantitative contribution, productivity performance of manufacturing was not strong enough to catapult Viet Nam onto a high productivity path and global competitiveness. The unwelcome stagnation of manufacturing labor productivity and weak performance of the FDI sector, fully discussed in Chapter 2, were also visible in subsector data.

Within manufacturing, some labor-intensive subsectors such as electronic assembly has become a strong driver of overall productivity while contribution of labor-intensive traditional manufacturing, such as food processing, textile, footwear, and furniture, to national productivity were small. Upstream subsectors that supply inputs to mechanical and electronic assemblers (known as supporting industries), such as metal, non-metal, and chemical products, also had

significant contributions. This diversity among manufacturing subsectors should be duly noted when policies to promote productivity and labor migration are formulated.

CHAPTER 4

VIET NAM'S LABOR PRODUCTIVITY IN THE INTERNATIONAL CONTEXT

In this section, using the Asian Productivity Organization (APO) data and industry classification, Viet Nam's labor productivity is compared with those of selected countries in Northeast and Southeast Asia—Japan, South Korea, China, Singapore, Thailand, Philippines, Malaysia, Indonesia, and Cambodia—at both overall economy level and sector level, to identify Viet Nam's position in the region. Using the shift-share analysis method, we also examine the relative importance of the within effect and the shift effect in Viet Nam and selected regional countries over time. Contribution of subsectors within manufacturing to overall labor productivity growth is additionally studied for each country.

4.1 Data

For international comparison, we use the APO Dataset 2017 which contains data up to 2015. GDP and sectoral value added are measured in constant 2011 price at purchasing power parity (PPP) exchange rates.

The advantage of using the APO Dataset is that both GDP and total employed persons of listed countries are divided into nine identical categories: (i) agriculture, hunting, forestry, and fishing; (ii) mining and quarrying; (iii) manufacturing; (iv) electricity, gas, and water supply; (v) construction; (vi) wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants; (vii) transport, storage and communications; (viii) financial intermediation, real estate, renting, and business activities; and (ix) community, social and personal services. Since GDP and labor input are categorized into these groups, economy-wide labor productivity can be calculated as a sum of per-worker GDP (labor productivity) of each industry weighted by the employment share of each industry.

However, as APO's statistics are collected from national accounts of reporting countries, national differences may arise in the precise definition and classification of the sectors or the way in which value added and employment are calculated. For this reason, labor productivity may not be exactly comparable across countries. This is a problem that researchers encounter in any attempt in international comparison. With this said, the APO Dataset should still be a useful data source for cross-country comparisons.

In the following part, labor productivity levels and growth rates of Viet Nam and other selected countries are shown at both economy and industry level. Furthermore, labor productivity

growth is decomposed into different factors related to labor movement to determine the source of growth in these countries.

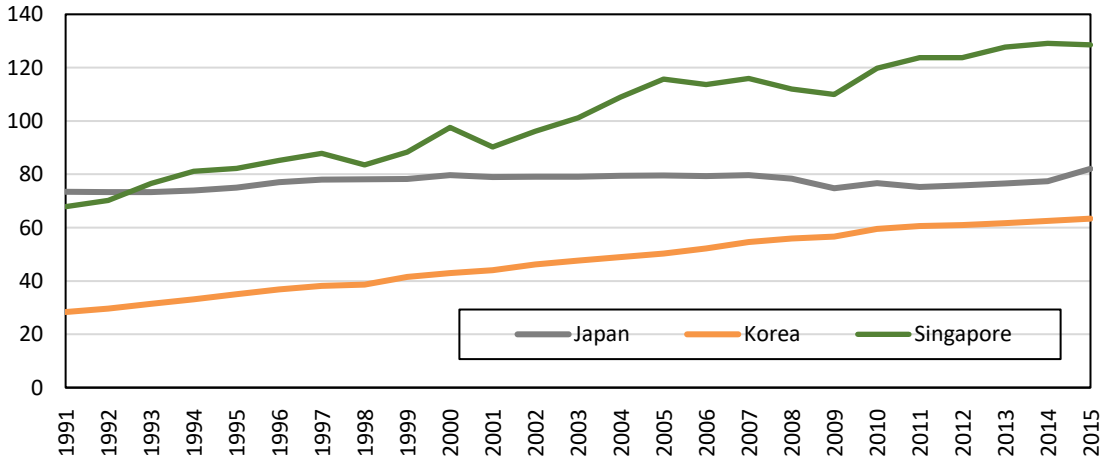
4.2 The level and growth of economy-wide labor productivity

In comparison with selected Northeast and Southeast Asian countries, the absolute level of Viet Nam's labor productivity is low even though its growth has been relatively high since 1991. Despite its upward trend, Viet Nam's labor productivity did not experience any significant spurt that could significantly raise its international standing among neighboring countries (Figure 4.1 and Table 4.1).

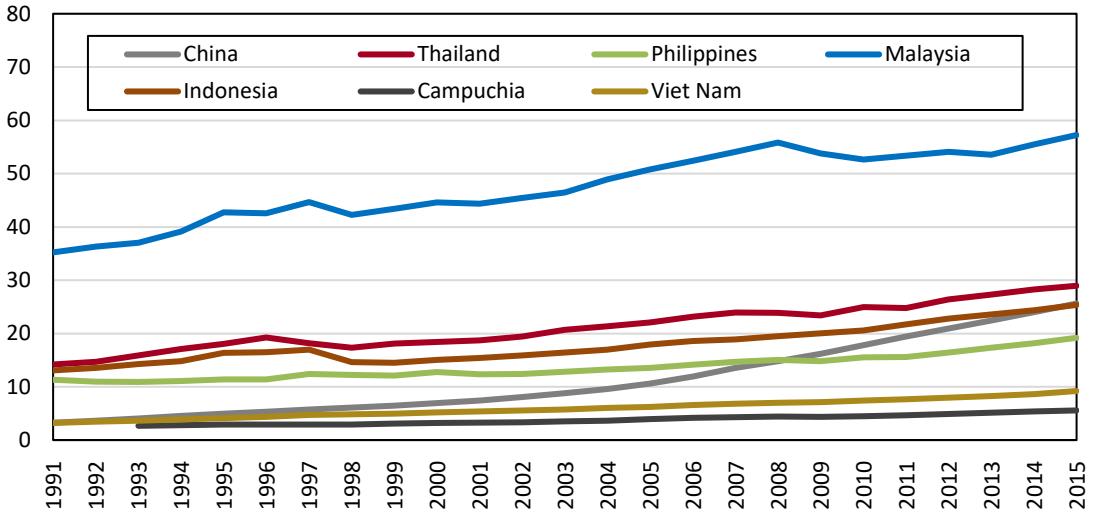
In 1991, measured in constant 2011 USD at purchasing power parity exchange rates, the per-worker labor productivity of Viet Nam was $3,219, close to China's $3,264. In the same year, the labor productivity levels of Japan and South Korea were respectively 20.8 times and 8.8 times higher than that of Viet Nam. ASEAN5 countries also had higher labor productivity than Viet Nam. Specifically, the labor productivity of Singapore and Malaysia was 21.1 times and 10.9 times higher, and Thailand, Philippines, and Indonesia were 4.4 times, 3.5 times and 4.1 times higher than that of Viet Nam, respectively.

Figure 4.1 Labor productivity of Viet Nam and selected countries

(a) High income economies



(b) Middle income economies



Note: expressed in thousand USD/worker in constant 2011 PPP dollars.
Source: author's calculation based on the statistics from APO

Table 4.1 Labor productivity growth in Viet Nam and selected countries

Country	1991-2000	2001-2010	2011-2015	1991-2015
Japan	0.91	-0.32	2.18	0.46
South Korea	4.74	3.40	1.15	3.41
China	8.75	10.19	7.13	8.96
Singapore	4.12	3.20	0.96	2.70
Thailand	2.92	3.26	3.97	3.02
Philippines	1.35	2.55	5.38	2.22
Malaysia	2.65	1.93	1.78	2.04
Indonesia	1.56	3.29	3.94	2.80
Cambodia	2.64	3.50	4.46	3.39
Viet Nam	5.48	3.54	4.79	4.67

Source: authors' calculation based on statistics from APO.

Furthermore, over time, Viet Nam's labor productivity growth remained low in comparison with high-performing economies in the region. As noted above, in 1991, the labor productivity of Viet Nam was similar to that of China. Thereafter, China attained a high average labor productivity growth of 8.96% during 1991-2015, and especially in the first decade of this century when its labor productivity growth surpassed 10% annually. As a result, China increased labor productivity by 7.8 times from 1991 to 2015 while Viet Nam's rose only 2.8 times. Viet Nam needs to accelerate labor productivity growth significantly, not just maintain its current pace, if it does not want to further lag behind other countries in the region.

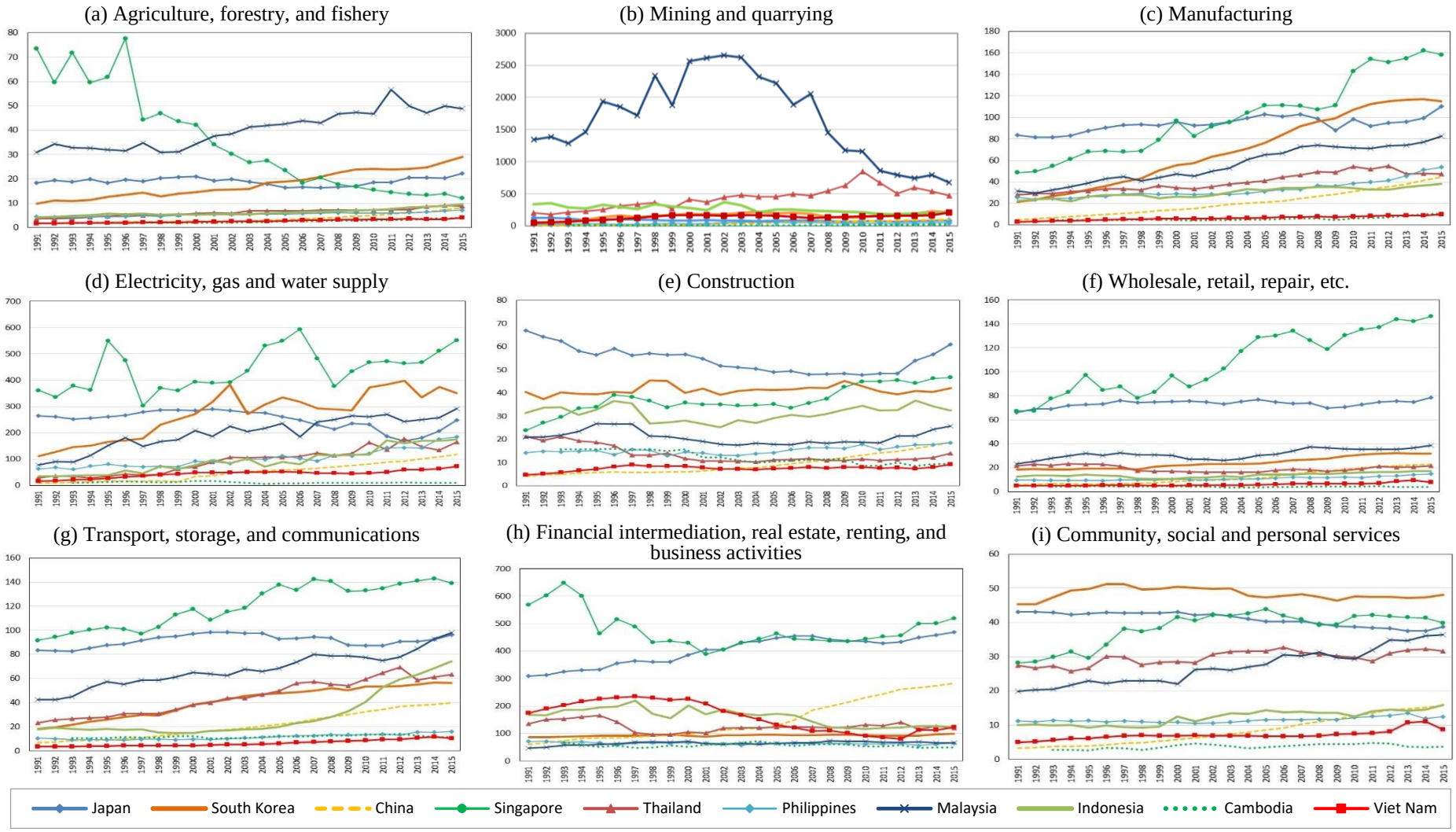
4.3 Labor productivity by sector in Viet Nam and selected countries

In this section, Viet Nam's labor productivity is compared with other selected countries for nine

sectors based on the APO industrial classification. Labor productivity in each sector is calculated as the ratio of value added to the number of employed persons in that sector.

The results show that, in 2015, the labor productivity of Viet Nam in almost all sectors was at the lowest range in comparison with the selected Northeast and Southeast Asian countries (Figure 4.2). Viet Nam's labor productivity was the lowest, even below Cambodia, in three sectors, namely manufacturing; construction; and transport, storage and communications. It was the second lowest, only above Cambodia, in agriculture, forestry, and fishery; electricity, gas, and water supply; and wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants. In contrast, Viet Nam had relatively high labor productivity in three sectors, including mining and quarrying; financial intermediation, real estate, renting and business activities; and community, social and personal services. The following subsections will examine more fully Viet Nam's standing in individual sectors.

Figure 4.2 Labor productivity by sector



Note: measured in thousand USD/worker in constant 2011 PPP dollars; Cambodia's data is from 1993.
Source: author's calculation based on the statistics from APO.

4.3.1 Agriculture, forestry and fishery

In 2015, Viet Nam's labor productivity in agriculture was approximately $4,115 per worker, only higher than that of Cambodia ($3,913) and 52% of that of China ($7,886). Malaysia's labor productivity in this industry was nearly 12 times higher than that of Viet Nam. Despite the relatively high average growth rate in the period from 1991 to 2015, Viet Nam's agricultural productivity continued to remain in the lowest rank compared with other countries in the region.

4.3.2 Mining and quarrying

Labor productivity of mining and quarrying depends greatly on the technology and features adopted in each mining country. In 2015, Viet Nam's labor productivity in this sector was higher than that of Cambodia (11.5 times), Philippines (4.3 times), Japan (2.5 times), and China (2 times).

4.3.3 Manufacturing

From 1991 to 2015, Viet Nam's labor productivity in manufacturing increased from $3,108 to $10,032 per worker with an average growth rate of 5.0% per year. China had manufacturing labor productivity growing at 9.7% per year in the same period to achieve the level 4.4 times higher than that of Viet Nam by 2015. Other countries that were far more productive than Viet Nam in 2015 include Singapore (15.8 times), South Korea (11.5 times), Japan (11.0 times), and Malaysia (8.2 times). Cambodia had a higher per-worker labor productivity than Viet Nam by $290 in 2015, but grew more slowly than Viet Nam in the whole period at 3.65% per year.

4.3.4 Electricity, gas and water supply

In 2015, Viet Nam's labor productivity in this sector reached $72,195 per worker with an average growth rate of 6.44% per year in the period 1991-2015 and 8.82% per year in the period 2011-2015. Labor productivity in this sector of Japan, South Korea, and China was 3.4 times, 4.9 times, and 1.6 times higher than that of Viet Nam, respectively. China experienced the most impressive growth among the compared countries, at 11.75% per year in the period 1991-2015, but grew at a slower pace at 7.34% per year compared to Viet Nam in the period 2011-2015. China's labor productivity was $117,560 per worker in 2015.

4.3.5 Construction

Similar to manufacturing, in 2015, Viet Nam's labor productivity in construction was $9,299 per worker which was lower than that of Cambodia, at $9,623 per worker. However, it

should be noted that Cambodia had far higher labor productivity in the past which gradually declined to near Viet Nam's level. The average growth rate of labor productivity in Viet Nam was 2.92% per year in the period 1991-2015 and 5.29% per year in the period 2011-2015. In this industry, China had the highest growth rate among the countries, at 6.55% per year in the period 1991-2015 and 7.34% per year in the period 2011-2015.

4.3.6 Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants

Labor productivity of this industry in Viet Nam reached $7,839 per worker in 2015, growing at an average rate of 2.12% per year in the period 1991-2015 and 3.9% per year in the period 2011-2015. Singapore's labor productivity was 18.7 times higher than that of Viet Nam. The ratio relative to Viet Nam was ten times for Japan, four times for Malaysia and Korea, and nearly three times for China in 2015. Viet Nam recorded a moderate growth rate of labor productivity in this industry. China had the highest growth rate at 5.82% per year in the period 1991-2015 and 3.78% per year in the period 2011-2015.

4.3.7 Transport, storage, and communications

Labor productivity of Viet Nam's transport, storage, and communications was the lowest among the selected countries. In 2015, Singapore's labor productivity was 13 times higher, and Japan and Malaysia were about nine times more productive than Viet Nam. In the period 1991-2015, Viet Nam had the fourth highest growth rate in this sector at 4.69% per year, behind China (7.56% per year), Indonesia (6.1% per year), and South Korea (4.76% per year).

4.3.8 Financial intermediation, real estate, renting, and business activities

In 2015, for this sector, Viet Nam had labor productivity 1.25 times higher than South Korea, 1.9 times higher than Malaysia and Philippines, and 2.5 times higher than Cambodia. This is somewhat surprising, but there are also countries that show far higher labor productivity than Viet Nam in this sector such as Singapore, Japan, and China. The reasons for this great variation and why Viet Nam is more productive than South Korea, for example, need investigation. They may reflect true differences or may arise due to differences in industry classification, data collection, or measurement of value added and labor input among these countries. More accurate evaluation will become possible when more disaggregated data becomes available. This warning is equally applicable to other sectors we examine in this section.

4.3.9 Community, social and personal services

In 2015, labor productivity in community, social and personal services of Viet Nam, at

$8,745 per worker, was superior only to that of Cambodia. Labor productivity of South Korea, Singapore, and Japan in this industry was respectively 5.5 times, 4.6 times, and 4.4 times higher than Viet Nam's. The average growth rate of labor productivity in Viet Nam was 2.4% per year in the period 1991-2015 and 3.43% per year in the period 2011-2015, ranking third after China and Malaysia during these periods.

In conclusion, the labor productivity of Viet Nam in almost all industries is at the lowest level in comparison with those of selected countries in the region. In agriculture, forestry and fishery, despite relatively high growth, Viet Nam's labor productivity was only higher than Cambodia's. In manufacturing labor productivity, there is a huge gap between Viet Nam's level and those of not only Northeast Asian countries but also other ASEAN members. In the service sector, Viet Nam has higher labor productivity than that of Cambodia but generally falls behind the rest.

4.4 Decomposition of labor productivity by shift-share analysis

As explained in Section 1.1, labor productivity growth can be decomposed into the *within effect*, which reflects labor productivity improvement within individual sectors, the *shift effect*, which captures labor movement across sectors with different labor productivity performance, and the *interaction effect*, which is the secondary impact generated by these two effects. This section compares the results of the shift-share analysis for selected Asian countries including Viet Nam.

4.4.1 Japan, South Korea, China, and Viet Nam

Labor productivity of Japan, South Korea, and China in their years of high growth was largely driven by the within effect (Figure 4.3).

In Japan, from 1971 to 1991, the within effect was always positive and contributed greatly to the growth of labor productivity with an average annual contribution share of 86.9%. The shift effect and the interaction effect contributed 13.0% and 0.1% each year, respectively, to labor productivity growth during this period. After 1991, the within effect remained mostly positive and contributed to the growth of labor productivity. Meanwhile, the shift effect had a negative impact in some years.

In South Korea, the within effect gradually dominated labor productivity growth. Since 1980, the labor productivity of individual sectors had improved and contributed 78.6% to the country's labor productivity growth. The shift effect continued to contribute positively at the rate of 26% while the interaction effect was mostly negative with annual contribution of -4.6%.

In China, the contribution of the shift effect was generally smaller than that of the within effect. Furthermore, China sustained a positive interaction effect, except 1984 and the period 1998-

2002, suggesting that Chinese labor generally migrated from sectors with stagnant labor productivity growth to those with rising labor productivity growth.

Thus, for Northeast Asian countries, the within effect has been the main driver of labor productivity growth with its contribution to overall labor productivity growth about 80% in each country. Observations in South Korea and China show that the contribution of the shift effect was relatively low compared to the within effect.

In Viet Nam, significant economic changes were generated in the post-Doi Moi period. The growth of labor productivity in the period 1991-2000 came mainly from the within effect with the contribution share of 94% while the shift effect and the interaction effect contributed 8% and -2%, respectively. In the next period from 2001 to 2010, considerable labor movement due to economic restructuring as well as the arrival of FDI enterprises in the manufacturing and processing sector led to the dominance of the shift effect contributing 89% to labor productivity growth. During this period, the within effect contributed only 17.8%. After 2010, the within effect gradually rose and surpassed the shift effect, accounting for 78% and 32% of labor productivity growth, respectively. These results are consistent with the results obtained from the national data (Chapter 3). The shift effect had a decreasing trend in recent years. Meanwhile, the interaction effect was mostly small and negative throughout the examined period.

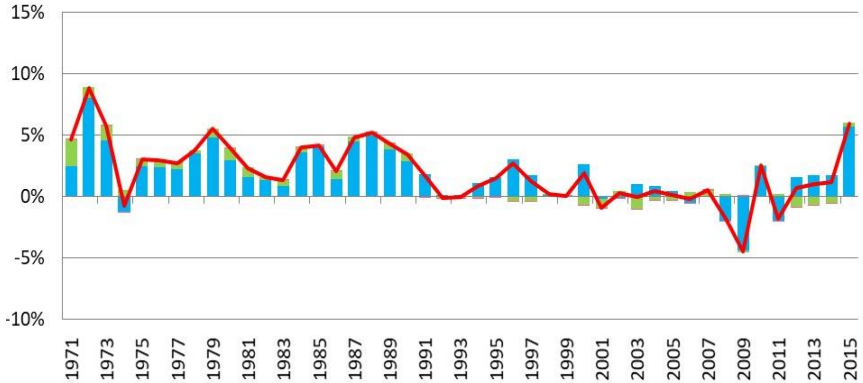
4.4.2 Selected ASEAN countries

In general, Southeast Asian countries relied on the shift effect in the early stage of development, then moved gradually to depend on the within effect. The within effect was positive in most economies in the period 1991-2015 (Figure 4.4). The shift effect supported labor productivity growth of both developing countries such as Thailand, Cambodia, and Philippines, and a developed country such as Singapore in its early development stage. Meanwhile, the interaction effect was mostly negative for ASEAN countries.

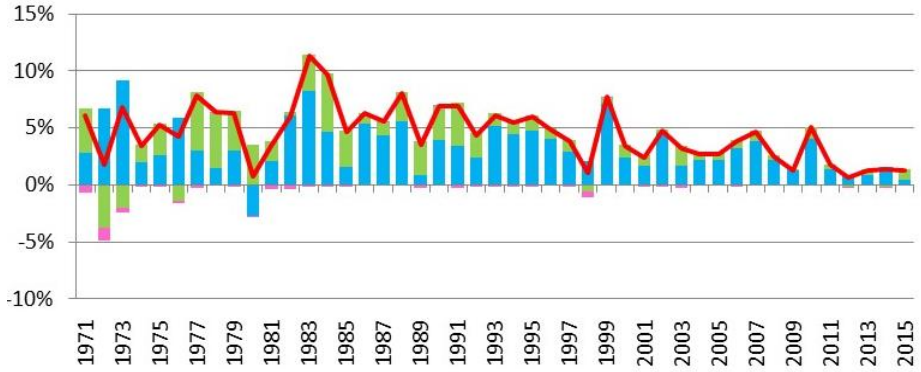
The general pattern of contribution shares of different growth components is clearly seen among the selected countries. In the ASEAN, Singapore is the country that has a very high contribution of the within effect, reaching over 80% after 1998. The contribution of the within effect was also quite high in Thailand, Indonesia, and Malaysia, and relatively stable in the case of the Philippines. Meanwhile, the shift effect still plays a significant role in Thailand, Philippines, and Malaysia. In the period 1994-2015, Cambodia had a pattern of contribution of these effects to labor productivity growth quite similar to Viet Nam.

Figure 4.3 Shift-share decomposition: Northeast Asia and Viet Nam

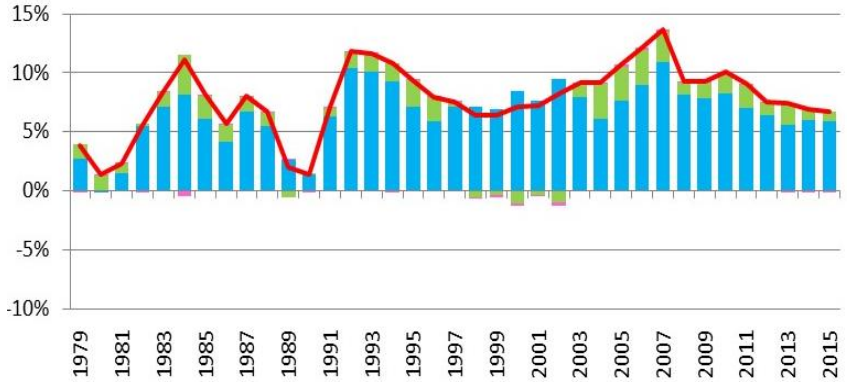
(a) Japan



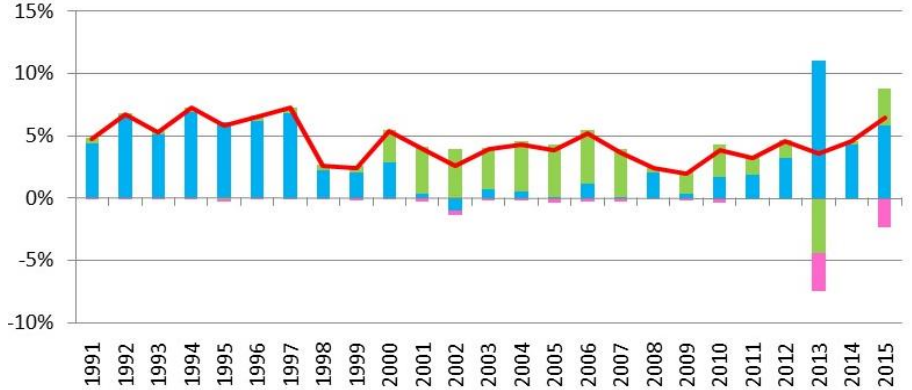
(b) South Korea

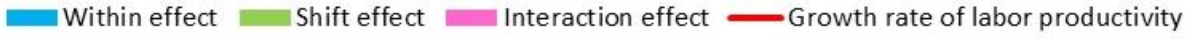


(c) China (from 1979)



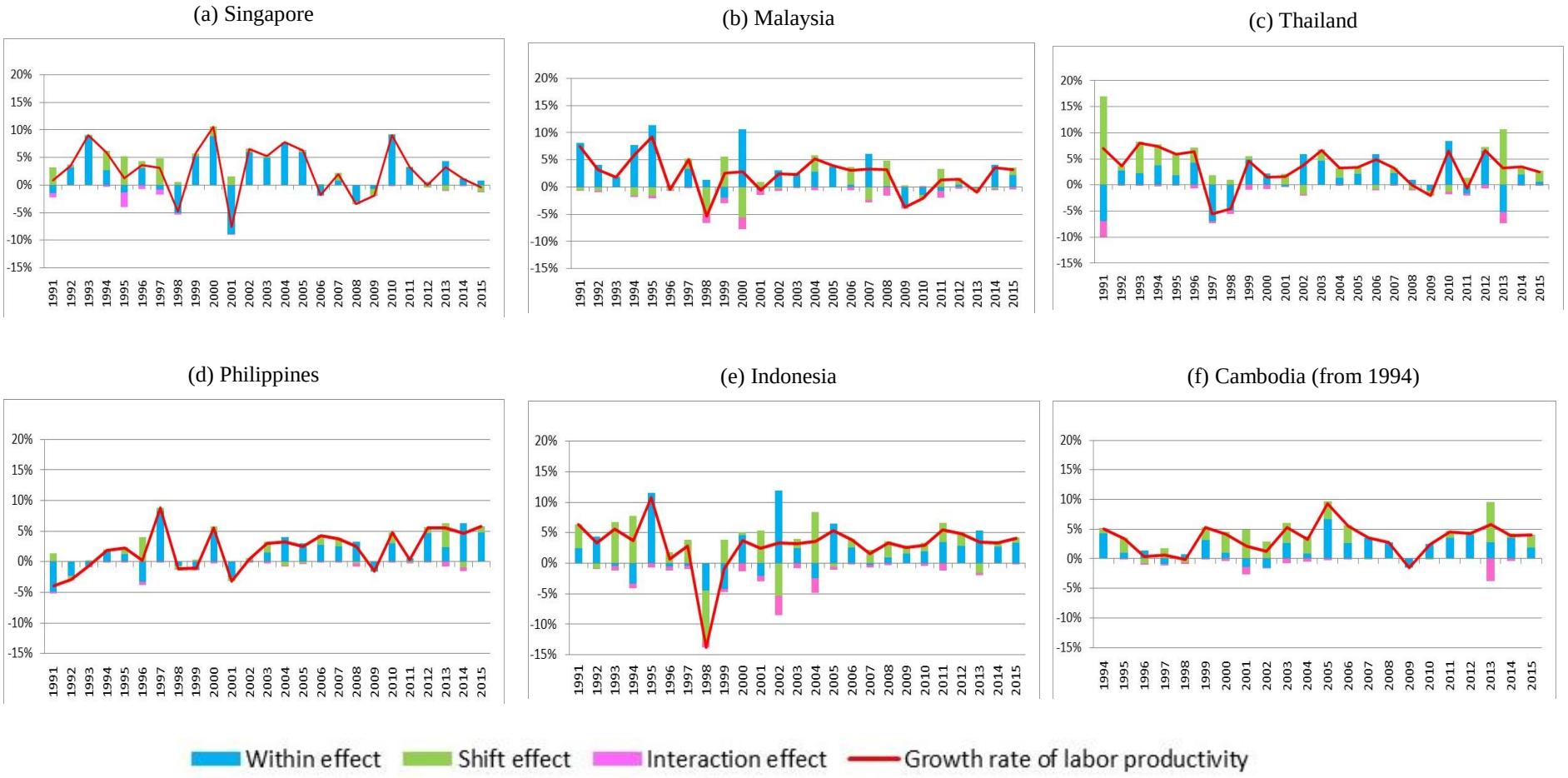
(d) Viet Nam (from 1991)





Source: VEPR's calculation based on the statistics of APO.

Figure 4.4 Shift-share decomposition: selected ASEAN countries



Source: author's calculation based on the statistics from APO. Cambodia's data begins from 1994.

4.5 Sectoral contribution to labor productivity growth

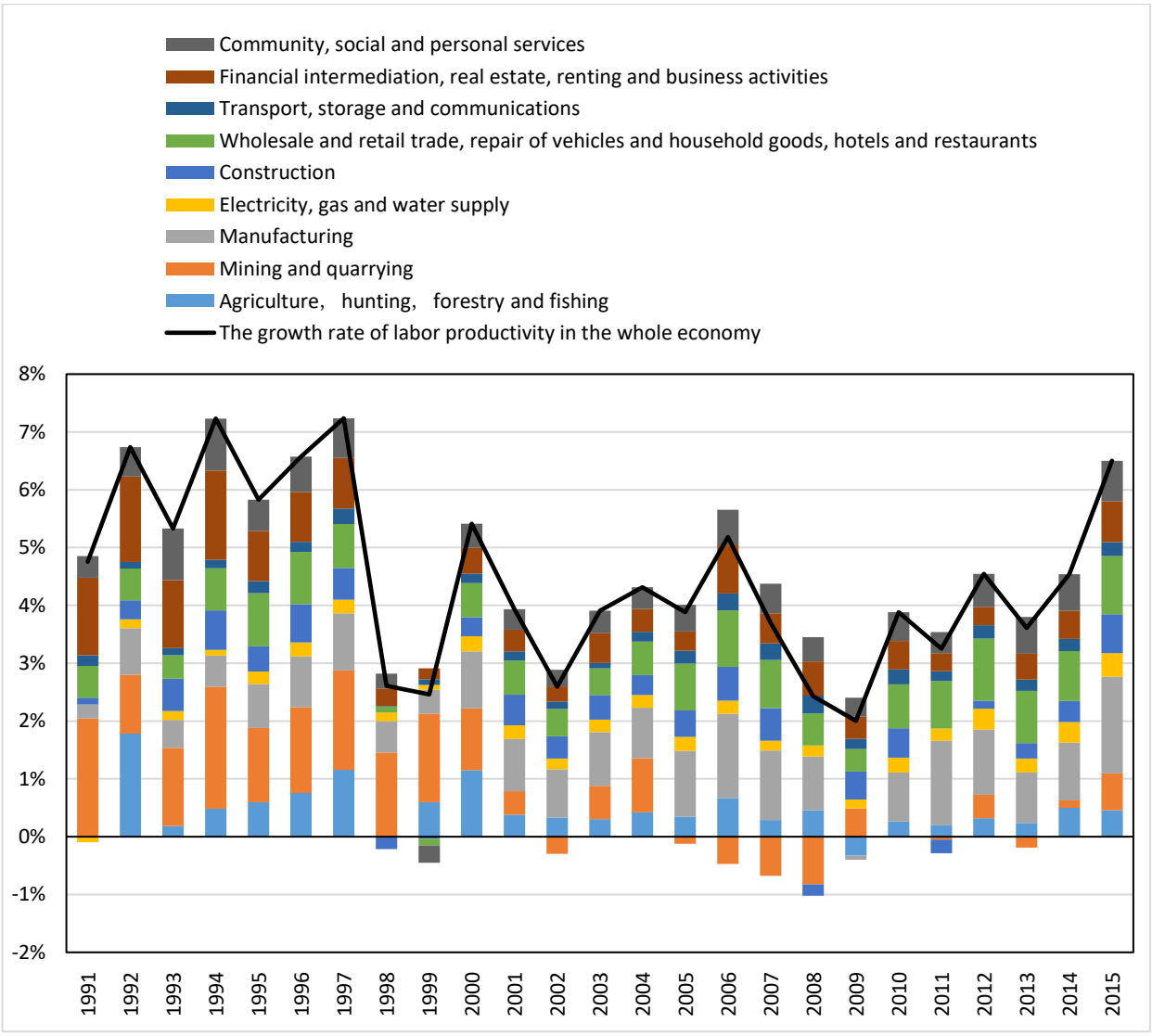
In this section, we deploy the APO dataset to calculate the contribution of economic sectors to labor productivity growth in Viet Nam for the following periods: 1971-1980, 1981-1990, 1991-2000, 2001-2010, and 2011-2015 (Figure 4.5). For comparison, sectoral contributions are also examined for selected Asian countries (Table 4.2).

In Viet Nam, mining and quarrying was the leading contributor to labor productivity growth in the 1990s when economy-wide labor productivity grew around 6%. Back then, labor productivity growth was also supported by such sectors as financial intermediation, real estate, renting and business activities; manufacturing; wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants; agriculture, forestry, and fishing; and construction. However, in 1998 and 1999, the labor productivity growth of the whole economy slightly declined due to the adverse impact of the Asian financial crisis which sharply reduced the contribution of a few service-related sectors.

In the period 2001-2010, labor productivity of the whole economy grew more slowly than the previous period. The contribution of the manufacturing sector gradually rose to replace the mining sector as the leading contributor to labor productivity growth in Viet Nam. The contribution of mining sharply deteriorated in certain years (2003, 2005-08 and 2013). Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants had a fairly stable contribution over the years while the contributions of agriculture; construction; and finance, real estate and business activities went down. In this period, no economic sectors made productivity breakthrough large enough to stir up the labor productivity of the whole economy to a higher trajectory, and the Vietnamese economy continued to grow but not at a spectacular rate.

Since 2011, the contributions of economic sectors gradually recovered and had a positive impact on labor productivity growth, although a remarkable leveling up of the growth process was again not observed. It is noteworthy that the manufacturing sector was the dominant driver of labor productivity growth in Japan, South Korea, and China during their high growth periods (Appendix 4). So far, such a manufacturing-based shift to high growth and high income has not been observed in Viet Nam.

Figure 4.5 Sectoral contribution to overall labor productivity growth



Source: authors' calculations based on data from APO.

Labor productivity growth in Japan, South Korea, and China was generated mainly by the manufacturing sector and certain service sectors such as financial intermediation, real estate, renting and business activities; and wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants (Table 4.2). Thailand also had a pattern similar to these countries. In China, Thailand, and Viet Nam, the contribution of agriculture to labor productivity growth is still significant in comparison with Japan and South Korea.

In Japan, the labor productivity growth of the whole economy in the period 1971-1980 came mostly from manufacturing as well as financial intermediation, real estate, renting and business activities. Manufacturing continued to expand in the next two periods before it turned to a downward trend in the period 2001-2010. The same tendency was observed for the financial intermediation, real estate, renting and business activities. Meanwhile, wholesale and retail trade,

repair of vehicles and household goods, hotels and restaurants continued to increase contribution to labor productivity growth.

In South Korea, sectors that contributed most to the growth of labor productivity in 1971-1980, 1981-1990, and 1991-2000 were financial intermediation, real estate, renting and business activities; community, social and personal services; and manufacturing. However, the relative contribution of manufacturing increased while those of the other two sectors decreased over time. Agriculture accounted for a very small proportion with diminishing contribution to labor productivity growth.

Regarding China, the contribution of manufacturing tended to decline but it was still the most important sector buttressing labor productivity growth of the whole economy, accounting for 32.6% in the period 2001-2010 and 36.3% in the period 2011-2015. Over time, contributions of construction; agriculture; and community, social and personal services fell sharply while the share of financial intermediation, real estate, renting and business activities increased significantly.

In Thailand, in 1971-1980 and 1981-1990, the manufacturing sector led the growth of economy-wide labor productivity despite its volatility in the rate of contribution in the following stage. Agriculture registered a large decline in the contribution to labor productivity growth. Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants and construction had a sharp increase in the proportion in 2001-2010 with the corresponding contribution of 43.5% and 33.5%. The construction sector's contribution grew particularly sharply in the period 2001-2010 but subsequently declined to 8.7% in the period of 2011-2015.

In Viet Nam, the manufacturing sector steadily rose to produce the largest contribution to labor productivity growth of about 30% in the period 2011-2015. The contribution of agriculture to the growth of economy-wide labor productivity decreased to 7.52% in the period of 2011-2015, equivalent to the contribution of agriculture to the labor productivity growth of China in the period 1991-2000. Mining and quarrying made dominant contribution to the labor productivity growth of Viet Nam in 1991-2000, but there was a sharp decline in the following periods. This result is different from the analysis obtained from the GSO data, which shows that mining and quarrying is still an important sector for labor productivity growth in Viet Nam. Financial intermediation, real estate, renting and business activities had a declining contribution unlike wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants; and community, social and personal services whose contributions rapidly increased. These three service sectors still explain much of Viet Nam's labor productivity growth, with a total contribution of 39.8% to economy-wide labor productivity growth in the period 2011-2015.

Table 4.2 Sectoral contribution to overall labor productivity growth: selected Asian countries (%)

Japan						
		1971-80	1981-90	1991-00	2001-10	2011-15
	Agriculture, hunting, forestry and fishing	-1.58	0.90	26.43	2.02	1.81
	Mining and quarrying	1.30	-0.60	1.66	-0.06	-0.05
	Manufacturing	26.21	27.03	149.20	40.12	36.15
	Electricity, gas and water supply	3.03	2.70	25.04	-0.43	8.10
	Construction	15.47	0.83	-12.25	-8.00	17.01
	Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants	18.70	16.11	-82.13	55.94	10.61
	Transport, storage and communications	-5.78	8.62	23.96	-6.62	12.94
	Financial intermediation, real estate, renting and business activities	25.13	26.01	-35.30	7.92	3.27
	Community, social and personal services	17.51	18.40	3.40	9.11	10.17
	Whole economy	100.00	100.00	100.00	100.00	100.00
Korea		1971-80	1981-90	1991-00	2001-10	2011-15
	Agriculture, hunting, forestry and fishing	-23.79	3.29	0.11	1.09	-2.56
	Mining and quarrying	-0.87	-0.79	-0.77	-0.21	-0.13
	Manufacturing	23.92	23.41	26.93	39.28	42.03
	Electricity, gas and water supply	1.74	2.27	3.53	2.95	1.78
	Construction	3.79	8.94	-5.60	2.18	-6.28
	Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants	12.20	15.08	6.80	3.77	14.40
	Transport, storage and communications	8.11	4.41	11.47	8.79	10.44
	Financial intermediation, real estate, renting and business activities	39.02	22.68	34.33	23.00	26.14
	Community, social and personal services	35.88	20.72	23.20	19.15	14.17
	Whole economy	100.00	100.00	100.00	100.00	100.00
China		1971-80	1981-90	1991-00	2001-10	2011-15
	Agriculture, hunting, forestry and fishing	NA	29.66	7.55	5.19	4.84
	Mining and quarrying	NA	2.23	4.99	6.06	1.27
	Manufacturing	NA	18.33	36.00	32.63	36.27
	Electricity, gas and water supply	NA	1.05	3.90	2.82	2.03
	Construction	NA	1.33	5.77	7.00	7.91
	Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants	NA	7.77	8.32	10.99	12.51
	Transport, storage and communications	NA	5.41	8.00	6.85	7.00
	Financial intermediation, real estate, renting and business activities	NA	23.89	9.80	12.25	12.54
	Community, social and personal services	NA	10.33	15.66	16.22	15.63
	Whole economy	…	100.00	100.00	100.00	100.00
Thailand		1971-80	1981-90	1991-00	2001-10	2011-15
	Agriculture, hunting, forestry and fishing	20.39	-2.67	8.12	-16.84	-16.49
	Mining and quarrying	6.11	7.77	3.08	-21.55	5.18
	Manufacturing	26.75	35.17	28.84	12.40	70.99
	Electricity, gas and water supply	-0.68	2.64	3.31	-10.32	3.06
	Construction	4.49	9.15	9.35	33.49	8.72

	Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants	22.98	16.49	13.96	43.49	13.93
	Transport, storage and communications	10.20	6.08	6.84	12.32	7.69
	Financial intermediation, real estate, renting and business activities	12.31	6.88	22.15	34.02	8.16
	Community, social and personal services	-2.56	18.49	4.34	12.99	-1.23
	Whole economy	100.00	100.00	100.00	100.00	100.00
Viet Nam		1971-80	1981-90	1991-00	2001-10	2011-15
from 1991	Agriculture, hunting, forestry and fishing	NA	NA	11.97	7.89	7.52
	Mining and quarrying	NA	NA	31.84	-0.48	2.96
	Manufacturing	NA	NA	12.96	24.57	28.35
	Electricity, gas and water supply	NA	NA	2.92	6.08	7.05
	Construction	NA	NA	4.91	11.46	4.29
	Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants	NA	NA	8.75	18.26	21.68
	Transport, storage and communications	NA	NA	2.75	6.27	4.82
	Financial intermediation, real estate, renting and business activities	NA	NA	16.12	13.66	10.09
	Community, social and personal services	NA	NA	7.79	12.29	13.23
	Whole economy	...	...	100.00	100.00	100.00

Source: VEPR's calculation from the APO dataset.

4.6 Conclusion

In comparison with some Northeast Asian countries and ASEAN member countries, Viet Nam has low labor productivity even though its growth was relatively high since the 1990s. Without a breakthrough into a high growth path, increase in Viet Nam's labor productivity was unable to greatly improve the nation's standing among neighboring countries.

In 2017, labor productivity of most of the nine industrial sectors of Viet Nam was at or just above the lowest level in regional comparison. Viet Nam's labor productivity was lowest among the compared countries, including Cambodia, in three sectors including manufacturing. It ranked the second from the bottom, just above Cambodia, in other three sectors including agriculture. Meanwhile, Viet Nam had better labor productivity than two or more comparator countries in the three remaining sectors only.

When decomposing labor productivity growth using the shift-share method, a clear pattern emerges. In Northeast Asian countries and Singapore, the within effect has been the main driving force of labor productivity with the contribution share of about 80% in each country. In South Korea and China, contribution of the shift effect was relatively small compared to the within effect. Viet Nam and other selected ASEAN countries relied on the shift effect in the early stage of their development, then moved gradually to depend on the within effect.

It should be recognized that the countries we compare are at different development stages. For global income convergence, latecomers need to exhibit negative correlation between

productivity level and growth—you need to grow faster at low income to catch up with high income achievers. China is still a middle income country, but it has grown very fast. South Korea already attained high income but it also grew fast until recently. But Viet Nam is only at lower-middle income and growing at an average pace. If this situation continues, Viet Nam will surely face a middle-income trap in the future as warned by some researchers.

CHAPTER 5

PRODUCTIVITY ENHANCEMENT POLICY IN THE DOI MOI PERIOD

This chapter has three purposes. First, the Vietnamese authority's perspective on the role of productivity is provided. Second, we will describe Viet Nam's efforts to improve productivity at the national and enterprise level. Lastly, the achievements and limitations of the government's efforts will be discussed[6].

5.1 The evolution of productivity policy

5.1.1 The early years

The awareness of importance of productivity in Viet Nam generally lagged behind those of other countries globally and even regionally. It was not until 1986 that Viet Nam officially decided to abandon inefficient central planning and adopted market mechanisms. After that, the vital role of productivity was increasingly recognized.

In the early years of Doi Moi, the term "productivity" was not mentioned very much. Nevertheless, agricultural liberalization spearheaded production enhancement. In 1988, the agricultural reform known as Resolution 10 (Resolution 10-NQ/TW 1988) was introduced, transferring production materials to farmers. Prior to that, agricultural production was stagnant, food production declined, hunger was prevalent, and Viet Nam had to import millions of tons of foodstuff every year. Resolution 10 immediately incentivized farmers, and within only two years of implementation, Viet Nam stopped importing food and started to become the world's leading rice exporter. In addition, changes in economic management mechanisms also raised Viet Nam's overall productivity and production capacity. During the 1990s, productivity improvement from the previous economic suppression was the main driver of economic growth. Roughly 40-60% of growth in this period can be explained by productivity catch-up and the rest can be attributed to revamped capital accumulation (World Bank, 2012).

5.1.2 The First Quality Decade 1996-2005

Viet Nam began to organize many productivity-related events and receive related cooperation projects. In 1995, the first Viet Nam Quality Conference was organized by the Directorate for Standards and Quality. In 1996, the Round-table Meeting on Productivity, with

[6] The authors would like to express gratitude to Ms. Nguyen Thi Le Hoa, Mr. Nguyen Dang Minh, and Ms. Nguyen Thi Tue Anh for valuable comments in the process of completing this chapter.

the participation of the Asian Productivity Organization (APO), and the ISO 9000 Forum were held in Hanoi. When Viet Nam joined the APO in 1996, Viet Nam's productivity movement can be said to have begun. The First Quality Decade 1996-2005 was launched by former Vice President Nguyen Thi Binh, which set the goal of encouraging organizations and enterprises to apply appropriate systems and tools to enhance productivity, quality, and competitiveness. The agenda of the First Quality Decade was influenced by the APO's philosophy that productivity and quality always went together. This orientation aimed to end the traditional notion of the central planning period that "quality must be sacrificed to improve productivity, and vice versa." As it turned out, Viet Nam then chose quality as the top priority.

The mid-1990s witnessed Viet Nam's great effort to reintegrate into the world. Viet Nam joined not only the APO but other international organizations such as the World Bank, the International Monetary Fund (IMF), and the Asian Development Bank (ADB). Diplomatic relation with the United States was also normalized. This wave of global reintegration led to the formation of Viet Nam's first specialized organization for productivity, the Viet Nam Productivity Center (VPC), in September 1997, which was later renamed to the Viet Nam Productivity Institute (VNPI). It became the center of the National Quality and Productivity Movement.

After joining the APO, in 1996, Minister of Science and Technology Mr. Nguyen Quan attended the APO summit for the first time. He realized that productivity improvement tools presented at the conference were urgently needed in Viet Nam, and a special agency to introduce these tools was also essential. The VPC (later VNPI) was thus created under the Directorate for Standards, Metrology, and Quality (STAMEQ) of the Ministry of Science and Technology (MOST). This structure imposed multiple layers of management over the VNPI, which was cumbersome and different from much simpler structure in other countries. The Japan Productivity Center (JPC) was directly under the Government of Japan, and the Malaysia Productivity Corporation (MPC) was under the management and financial support of the Ministry of International Trade and Industry. Placing a national productivity agency under multiple layers of management may impede its functions and effectiveness, as we see below.

One important activity in the First Quality Decade was the establishment of the Viet Nam Quality Award by the STAMEQ, which annually selected and rewarded enterprises exceling in quality and operational performance. The Award encouraged Vietnamese enterprises of all genres and sectors to improve operation and develop products with high quality and strong competitiveness.

Implementation of the First Quality Decade encouraged enterprises to adopt quality

management systems such as ISO 9000 and ISO 14000 and introduce productivity tools such as kaizen and 5S. These international standards in quality management, environment, safety, and social responsibility were applicable to all types of business. However, Vietnamese enterprises often did not produce or keep data on productivity and efficiency, making it difficult for managers to understand the current situation or take corrective measures. Due to slow application of new systems and tools, Vietnamese enterprises were slower to improve competitiveness than rival companies in the region and the world. This partially explains why Viet Nam's growth of 7-8% at that time was not accompanied by remarkable productivity improvement. In the second half of the First Quality Decade, the contribution of productivity to economic growth was only 15% while capital deepening was the main engine of growth.

5.1.3 The Second Quality Decade 2006-2015

Acknowledging this problem, in 2006, the issue of productivity improvement was formally and clearly stated for the first time in the Resolution of the Tenth Party Congress, which became one of the key pillars of the Socio-Economic Development Plan 2006-2010. Productivity targets were integrated into industrial and sectoral orientation, with almost every sector aiming at quality and productivity growth with great speed.

The Second Quality Decade was launched with the slogan "Quality and Productivity: Key and Integration" at the Sixth Viet Nam Quality Conference in 2005 (Ngu Hiep & Van Nguyen, 2015). The goal of the Second Quality Decade was less about the introduction of productivity enhancing systems and tools and more about their application to improve the competitiveness of domestically manufactured products against overseas products. Another important difference was that the previous emphasis on quality was replaced by the idea that quality and productivity should go together.

In May 2010, the Prime Minister officially approved the National Program on Improving Productivity and Quality of Products and Goods of Vietnamese Companies to 2020 (Program 712 for short). To administer this, the Program Executive Board was established under MOST which was tasked to organize and implement assigned projects. This was the first time that productivity became the key mission under a national action program.

At the Eleventh Party Congress in 2011, the central issue shifted to total factor productivity (TFP). The general goal of improving productivity and quality was now translated into a specific target variable. The Socio-economic Development Strategy 2011-2020 required "total factor productivity contributing to the growth of about 35%." The Second Quality Decade carried out a series of activities including (i) raising awareness of society about productivity; (ii)

completing the legal framework on the Quality Measurement Standards; (iii) guiding and supporting enterprises to improve productivity and quality; and (iv) strengthening technical infrastructure for productivity and quality improvement activities. However, many planned activities remained unimplemented. The movement's summary report acknowledged that the awareness raising campaign was random and not nationwide, there was little coordination among different policy measures, the legal documents in some sectors remained ambiguous, and only a small number of enterprises participated in the programs. Therefore, the movement did not generate a significant change in productivity and quality on the national scale.

In the final year of the Second Quality Decade, the International Labor Organization (ILO) published the report "ASEAN Community 2015: Managing Integration for Better Jobs and Shared Prosperity," in which Viet Nam's labor productivity was ranked lowest in the Asia-Pacific region. This shocking report produced many commentaries in the media, most of which expressing disappointment. Clearly, Viet Nam needed a strategic shift and more drastic action. Instead of launching the Third Quality Decade, Viet Nam began to look for its own model of productivity improvement.

5.1.4 A search for a national model

Productivity continued to be top priority in the Twelfth National Congress of the Communist Party in January 2016. One of the key missions in the new five-year plan was "focusing on implementing solutions to improve the quality of growth, labor productivity, and competitiveness of the economy." Concern shifted decisively from "productivity and quality" to "productivity." In the era of Industry 4.0, innovation was also added to the goal of improving productivity.

In November 2016, Resolution 05-NQ/TW of the Central Executive Committee publicized general guidelines and policies to renovate the growth model to improve the quality of growth, labor productivity, and competitiveness of the economy. It also set productivity targets for the 2016-2020 period, including (i) annual average productivity growth should be higher than 5.5%; (ii) The growth of within-industry productivity should contribute more than 60% to the increase in overall labor productivity by 2020; (iii) TFP should contribute 30-35% to the average growth in the period 2016-2020; and (iv) narrowing the competitiveness gap with the ASEAN4 countires (Malaysia, Thailand, Indonesia, and Philippines).

To concretize this policy, in February 2017, Resolution No. 27/NQ-CP of the Government issued the Action Program of the Government for policy innovation, growth model, improving labor quality and competitiveness for the economy. It assigned 16 major tasks and

120 specific tasks to ministries, sectors, and localities. The Ministry of Planning and Investment (MPI) was designated as the lead agency to facilitate the Action Program and report progress to the Government and Party organizations. MPI was also made responsible for monitoring relevant indicators including labor productivity, TFP, and contribution of within-industry productivity, which previously was carried out by the VNPI under MOST. In turn, MOST was given the task of building and operating a database to benchmark best productivity practices for enterprises.

However, progress so far has been limited. MPI was slow to issue implementation details. Designated ministries were also slow to elaborate annual working plans or report the results to MPI. By October 2018, after nearly two years of the Resolution, only 25.8% of the tasks had been implemented with clear results, 57.5% of the tasks had been implemented with only initial results, and 16.7% of the tasks were implemented "with delay."

Collaboration among implementing ministries was difficult. For any agency under a ministry to work with another agency under a different ministry, procedure must go through many management layers. For instance, when the General Statistics Office under MPI wants to consult the Viet Nam Productivity Institute under MOST, it must send an official letter to MPI, which is transferred to MOST, then STAMEQ, then VNPI. The rule that state agencies must act with the approval of higher authorities virtually frustrated any inter-ministerial cooperation. Meanwhile, the VNPI continues to provide support to local statistical offices in computing labor productivity. This may be understandable because MPI is not an organization to provide technical assistance on productivity.

In 2017 and 2018, the Government re-instructed related agencies to find a new direction for productivity, especially labor productivity. Many studies and workshops were organized and the Central Institute for Economic Management (CIEM) under MPI was now designated as the hub institute to preside over the state-level projects on productivity, which included the project on "Evaluating the contribution of industries and structural shift to labor productivity growth in Viet Nam" and the project on "Viet Nam's agricultural labor productivity growth: current situation and solutions."

In 2018, productivity was a burning topic in the National Assembly sessions (Bao Yen, 2018), asking why Viet Nam had been unable to define a suitable national model for productivity movement. Meanwhile, the Advisory Group of Prime Minister Nguyen Xuan Phuc recommended that the Government should establish the National Productivity Council to lead a productivity movement (Le Nguyen, 2018). The council was officially formed but it has not started its assigned activities as of the end of 2020.

In February 2020, the Prime Minister's Instruction for Solving National Labor

Productivity Enhancement (No.7 CT-TTg) was issued to accelerate productivity actions. It consists of 46 orders addressed to 15 categories of official bodies such as ministries, agencies, business and labor organizations, and local government units. These orders call for proposing, establishing, promoting, and coordinating various things, which are however broad, general, and without implementation or monitoring details. As such, the Instruction shares the same problem as past policy actions which lacked enthusiasm, incentives, and clear structure with concreteness and feasibility (see below), and thus may not generate visible results with wide impact.

Table 5.1 Evolution of Viet Nam's productivity movement

<table>
<tr><th></th><th colspan="3">First Quality Decade (1996-2005)</th><th colspan="3">Second Quality Decade (2006-2015)</th><th>From 2016</th></tr>
<tr><td>Context</td><td>Asian financial crisis</td><td>Deep integration into world economy</td><td>The economy continues to achieve high growth</td><td>Joining WTO</td><td>Global financial crisis</td><td>European public debt crisis; domestic economy recovers slowly</td><td>Industry 4.0</td></tr>
<tr><td>Major documents/ events</td><td colspan="3">First Viet Nam Quality Conference</td><td colspan="3">Sixth Viet Nam Quality Conference</td><td>Resolution No. 05-NQ /TW, Resolution No.27 / NQ-CP, Instruction No.7 / CT-TTg</td></tr>
<tr><td rowspan="2">Leading and implementing agencies</td><td colspan="3" rowspan="2">Ministry of Science and Technology (leading)</td><td colspan="3" rowspan="2">Ministry of Science and Technology (leading)</td><td>Ministry of Planning and Investment (leading)</td></tr>
<tr><td>Ministry of Science and Technology</td></tr>
<tr><td>Goal</td><td colspan="3">To promote and motivate organizations and enterprises to apply management systems and productivity improvement tools</td><td colspan="3">To create quality reputation, improve the competitiveness of "Made-in-Vietnam" goods</td><td>To innovate growth model, improve labor productivity and the economy's competitiveness</td></tr>
<tr><td>Main activities</td><td colspan="3">- Establishment of VNPI under Ministry of Science and Technology
- VNPI plays role in supporting and guiding productivity improvement tools for enterprises
- Establishment of Viet Nam Quality Award</td><td colspan="3">- VNPI: continuing to guide productivity improvement tools for enterprises and starting conducting research on productivity
- Continuing to maintain the Viet Nam Quality Award
- Launching Program 712 (Phase 1)</td><td>- VNPI: continuing tasks as in the previous period
- MPI is responsible for calculating and researching labor productivity
- Program 712 (Phase 2)</td></tr>
</table>

Source: illustration by the authors.

Viet Nam's past policy efforts are summarized in Table 5.1. In summary, it can be admitted that, despite two-and-half decades of the government's effort after joining the APO, Viet Nam has not yet been able to initiate a genuine productivity movement which is intensive, effective, and nationwide.

5.2 Key policy components

Below we will examine in detail the VNPI and Program 712, the two core institutional components of the current productivity policy of Viet Nam, with their strengths and weaknesses.

5.2.1 The Viet Nam Productivity Institute (VNPI)

VNPI was established in 1997 with the support of the APO. For this purpose, Japanese experts were dispatched from the Japan Productivity Center (JPC) and JICA. Since 2000, through JICA senior volunteer programs, about ten Japanese experts continued to assist the VNPI sequentially with various programs. Japanese cooperation took the form of joint projects such as Internship Program for Young Managers from Japanese Enterprises (2012-13), Productivity Consultancy Trainers Training in the Mekong Region with Socio-economic Focus (2015-16), and Workplace Improvement and Satisfaction of Employees (2016-18). At the end of 2018, VNPI had a total of 25 Vietnamese experts, of whom 15 had attended the two-year training program hosted by JPC in Viet Nam. In addition, most experts participated in short-term training courses in Japan through the annual APO program.

The VNPI has a president, a vice president, and seven departments. Besides that, two divisions are located in Ho Chi Minh and Da Nang. The VNPI's missions are (i) conducting research to propose national productivity policies and solutions; (ii) providing consulting services and organizing workshops on managerial skills and business development; and (iii) providing information on latest methods and international experiences (Table 5.2). Note that the research component (the first item) was added in 2010, which later included annual publication of the Viet Nam Productivity Report, from 2014. The methodology and framework of the VNPI's annual Viet Nam Productivity Report were adopted from the APO. It provides data on labor productivity, TFP, and the current state of productivity of the entire economy, economic sectors, and individual industries. It also analyzes factors affecting productivity, and compares Viet Nam's performance with those of selected Asian countries.

The VNPI implemented such projects as the creation of productivity indicators, provincial productivity studies, proposals for manufacturing and service sectors, measurement of TFP of the industrial sector, policy proposals, and development of the "One Village, One Product" and other models. By the end of 2018, the VNPI had also provided consultation to more

Table 5.2 VNPI's functions and activities

Conducting research to propose policies and solution to bolster national productivity
▪ Researching and proposing strategies, policies, mechanisms. ▪ Researching, calculating and publishing periodic report. ▪ Researching and building model for systematic methods and solution to promote productivity and quality. ▪ Developing human resource and constructing scholar network. ▪ Disseminating information and knowledge related to productivity.

Providing consulting services and organizing workshops on managerial skills and business development
▪ Training courses: applying solutions to improve productivity; developing the quality of experts and productivity enhancing personnel; improving managerial skills for senior managers. ▪ Consulting services: building a management system following international standards; applying models and solutions to improve productivity; providing a management system integrated with indicators and solutions; calculating, evaluating productivity; providing excellent operating models. ▪ Assessment and issuing certificates: assessing firms and issuing certificate for Good Executive Plan of 5S, Lean, TPM in order to encourage companies to sustain and regularly innovate these methods.

Engaging in international cooperation to research and apply solutions to improve productivity for sustainable development
▪ Cooperation with APO and other national productivity organizations to perform research, develop experts in productivity improvement and build models to promote productivity. ▪ Participating in research, calculation and making comparison on national productivity indicators. ▪ Organizing international conferences, conducting field trips, publishing productivity enhancement materials, to facilitate knowledge transfer and accumulation of experience.

Source: VNPI.

than 5,000 organizations, trained over 100,000 participants in domestic and international workshops, conferences, and field trips, and produced over 200,000 copies of newsletters, 90,000 copies of books, and hundreds of posters, videos, and CDs for productivity awareness.

The VNPI was expected to become a competent and effective national productivity agency. However, with its current position in the system of many agencies related to productivity under MOST, the VNPI has not fully fulfilled its expected role. The VNPI's problems include (i) weak support and commitment from top national leaders, (ii) the absence of strong national

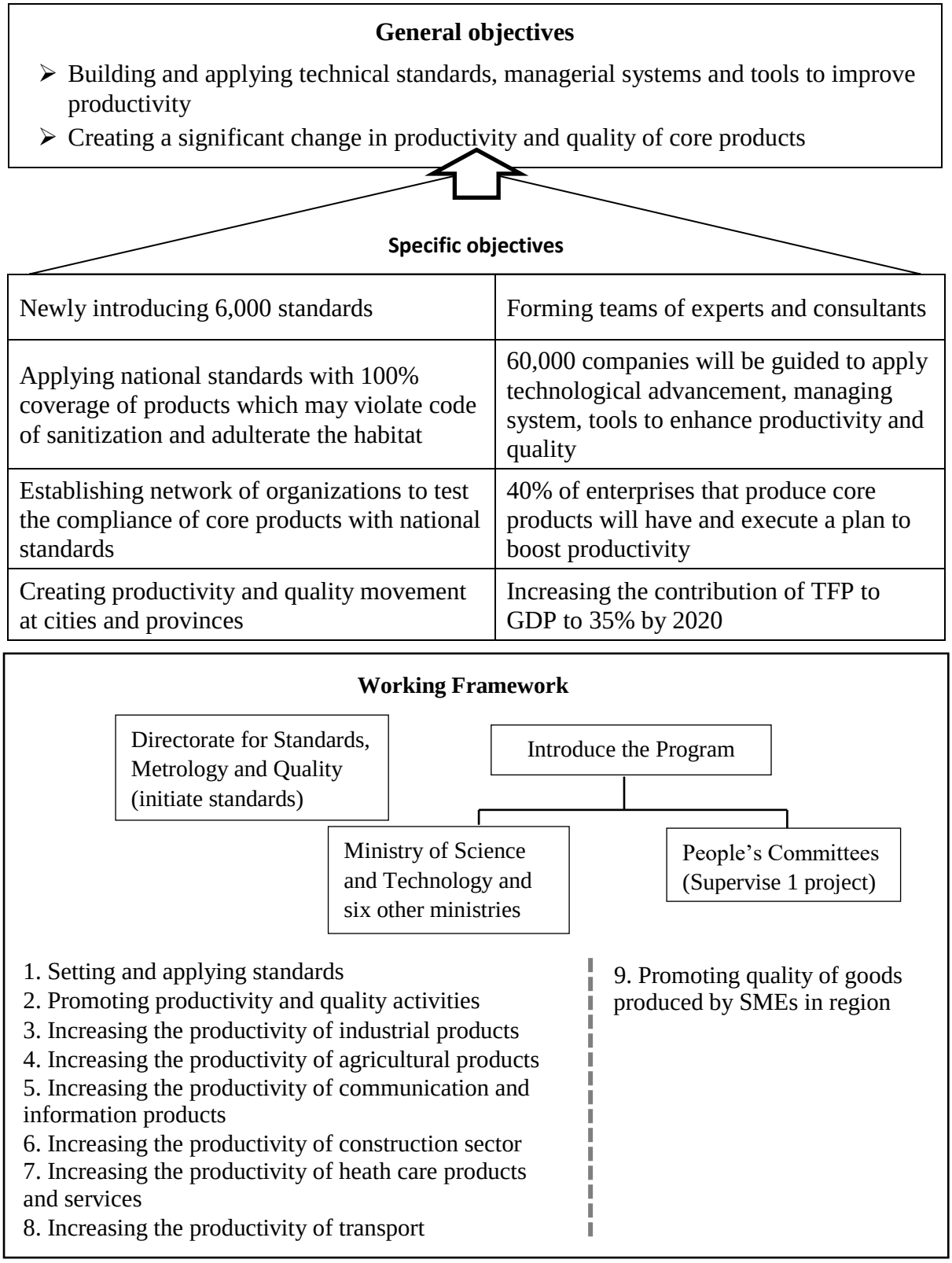
productivity movement which it is supposed to manage, and (iii) limited visibility, budget, and staffing.

5.2.2 National Program 712

The Government introduced Program 712, whose full name was "Improving Productivity and Quality of Products and Goods of Vietnamese Companies to 2020," as the first national program for productivity and as part of the Second Decade of Quality, approved under Decision No. 712/Qd-TTg of May 2010. It is a collection of missions and solutions to reform the legal framework, policy mechanisms, organizations, and human resource. To coordinate activities under Program 712, MOST formed the Program Executive Board chaired by its Minister, with Vice Minister and the Director of the Directorate for Standards, Metrology, and Quality serving as vice chairpersons. Other members were representatives from various ministries and the Vietnam Chamber of Commerce and Industry (VCCI). Program 712 carried out nine projects, of which eight were managed by MOST and other ministries, and one was directed by the People's Committee of each province and first-tier cities (Figure 5.1).

In the first phase 2010-15, Program 712 met general objectives but the quality of results was problematic. The Program's summary report stated that the number of national standards established exceeded the target and other general goals were also met. But the report also admitted several drawbacks. First, there was delay in procedure and approval of certain projects. Second, authorities and provinces adopted different methods which made cooperation among them difficult. Third, many companies and individuals participating in the Program were without enthusiasm. Fourth, the network of consultants and managers who supported the Program was insufficient. Fifth, there was a shortage of budget resources. Sixth, instructions and the regulatory framework issued by the Program Executive Board were neither consistent nor effective.

Figure 5.1 The structure of National Program 712



Source: collected by authors from Decision No.712/QĐ-TTg in May 21, 2010.

5.3 Methods to improve enterprise productivity

To improve national productivity, enterprise productivity is first priority. Many measures and actions have been adopted for this purpose. This section describes institutes, centers, and consultative businesses that train enterprises as well as the models and tools they utilize.

5.3.1 Supporting organizations

As mentioned above, Program 712 aims at supporting Vietnamese enterprises to improve productivity and quality. To attain the goal of guiding 60,000 enterprises, relevant ministries and the People's Committees of provinces and major cities were to create action programs for agencies under their authorities.

For example, under the project of "Improving the productivity and quality of industrial products," the Ministry of Industry and Trade (MOIT) developed the "Business Support Program" for the period 2017-18, which contained seven tasks and seven targets. For the task of "Support training and transforming the environmental management system to the new version of ISO14001:2015 for industrial enterprises" under this program, MOIT conducted three activities: (i) five training courses on the new environmental management system (ISO14001:2015); (ii) consultation and guidance on the conversion of ISO14001:2004 to ISO14001:2015 for 22 enterprises; and (iii) issuing certificates for enterprises applying ISO14001:2015.

Training courses on productivity improvement tools were announced to the business community. Lecturers were invited to teach according to the requirements set by each ministry and local government. These lecturers came from agencies under the Directorate for Standards, Metrology, and Quality (most frequently from the VNPI), private consultant firms, or foreign organizations[7]. Enterprises participating in training courses received financial support up to 70% of the course fee in the case of MoIT.

5.3.2 Tools and methods

Enterprise productivity is influenced by many factors. Among them, three factors are considered to be the most fundamental, namely, (i) workers as the source of improvement, (ii) leaders eager to engage in and support improvement activities, and (iii) technology and process management (Nguyen Anh Tuan & Le Hoa, 2013). Productivity improvement methods and

[7] Public sector supporting organizations include the VNPI, the Quality Assurance and Testing Center (QUATEST), the SME Development Support Center (SMEDEC), the Quality Training Center (QTC), the Vietnam Certification Center (QUACERT), and the Vietnam-Germany Technology Training and Transfer Centre (HwC). Private sector supporting organizations include GKM Vietnam Company, Masypic Productivity & Quality Consulting JSC, P&Q Solutions, Qpc Productivity & Quality Consulting Company Limited, M-Talent Human Resources Management JSC, EPRO Consulting JSC, Nawasa Academy, and others.

models are introduced to solve one or two of these three factors, or even all three. As a latecomer nation, Viet Nam must learn models and tools for enterprise productivity improvement from foreign sources, especially from those that are famous for their productivity movements such as Japan, Singapore, Western countries, and international organizations.

Basic productivity tools for productivity improvement of businesses include (i) the standard management system of the International Organization for Standardization (ISO), (ii) the recommendation system and the standard benchmark and learning from the best method from the West, and (iii) a variety of tools such as 5S, kaizen, QCC, TQM, JIT, lean production system, seven tools of quality control, TPM, etc. from Japan. Among these, the ISO management system, 5S and TPM are the most popular tools in Viet Nam. The ISO management system is the first tool that most enterprises apply (at different levels). If enterprises additionally meet the requirements of 5S, lean production, or TPM, they will be rewarded a prize or a certificate of good practice.

5.4 Summary: achievements and limitations

Based on the discussion in this section, let us summarize Viet Nam's productivity efforts up to now, with its achievements and limitations.

5.4.1 Achievements

Even though the awareness raising process of productivity has been slow in Viet Nam in comparison with other countries in Southeast Asia, Viet Nam has prepared basic conditions to initiate a future national productivity movement, with the support of Japanese experts and the APO from the mid-1990s to the present.

The trade-off between productivity and quality, which was the concern of policymakers in the days of central economic planning, has been dissolved. The First Decade of Quality 1996-2005 introduced a number of new methods to Vietnamese enterprises, with the aim of improving productivity while ensuring quality. The Second Decade of Quality 2006-2015 expanded various prototyped models to improve productivity for businesses. Program 712 was implemented with the goal of raising TFP's contribution to GDP growth to 35% by 2020. This particular goal has already been achieved with better productivity performance in recent years; according to the GSO data, the contribution of TFP to GDP growth was 43.5% in 2018.

After two decades of productivity enhancing efforts, policy planning and enforcement mechanisms are now in place. Relevant agencies have accumulated experience in productivity improvement, and many workers are well trained to promote technology transfer. These are a solid foundation for Viet Nam to implement new productivity policies in the future.

5.4.2 Limitations

Our review of past and present productivity policies shows that Viet Nam's productivity movement lacks breadth and depth. Policies so far focused only on the business sector, while the problem of productivity is pervasive in the government, businesses, educational institutions, and households. Moreover, as the initial productivity policies were concerned with the quality aspect, other aspects of productivity such as labor productivity were largely neglected. As a result, the 2015 ILO Report ranked Viet Nam at the lowest in the Asia-Pacific region, far below the peer countries in Southeast Asia. Besides that, the Vietnamese mindset regarding productivity is still marred by traditional top-down plan thinking rather than the bottom-up approach driven by individual firms and organizations.

In designing and implementing policies, communication and coordination among support organizations are hampered or delayed due to scattered authority and multiple management layers of many ministries. To overcome this perennial problem, a proposal was made to establish an independent agency, such as the National Productivity Council, directly under the Government to preside over various programs and support organizations. This proposal has been formally adopted, but an active use of this mechanism requires continued commitment of the top leaders as well as sufficient mandate, staffing, and budget allocated to this Council and its secretariat.

Regarding methodology and models to improve productivity for enterprises, Viet Nam has received technical and financial support from many countries, especially Japan, and a number of international organizations. International cooperation has produced reasonable results so far, but foreign models must in the long run be converted to a genuine homemade model. Productivity enhancement requires both technical and administrative support. Application of successful foreign models usually solves the technical problem, but administrative procedure and institution must be re-invented to suit the reality of Viet Nam. Otherwise, most tools will work only to a certain level without taking deep root in the Vietnamese society. Vietnamese businesses need a model of productivity improvement that is truly "Made in Vietnam."

Viet Nam has worked on productivity for many decades, and there have been a series of high-level resolutions. The Party Congress and the Government are seriously concerned about productivity. Even so, the results of many policies remain ineffective due to serious weaknesses in Viet Nam's policy making process. They include (i) the lack of continued commitment and support by national leadership, (ii) the lack of incentives for firms, workers, and individuals to participate, (iii) in implementing concrete projects, the lack of detail design—only broad

directions are given—and proper mechanisms, staffing, and budgets, (iv) government and ministerial bureaucracy which causes deadlocks and delays, and (v) insufficient international support. The productivity movement of Viet Nam has so far been small, scattered, and only partially implemented. It neither transformed national mindset nor produced visible results.

PART II

JAPANESE PRODUCTIVITY ENHANCING MEASURES AND THE POSSIBILITY OF THEIR ADOPTION IN VIET NAM

CHAPTER 6

SELECTIVELY ADOPTING JAPANESE PRODUCTIVITY TOOLS

The productivity movement in Viet Nam has been small and fragmented, and it has not reached the threshold where national mindset is dramatically transformed and visible results are produced. Viet Nam needs a policy reform which contains clear policy targets and design, institution building, incentives and resource mobilization, productivity-promoting projects and events, bottom-up initiative, smooth labor mobility, strong support organizations, better business environment—and a sustained national productivity movement that executes these activities and lasts at least for several years.

In revitalizing the national productivity movement, international cooperation is of great help provided that Viet Nam retains policy ownership and knows how to use such cooperation effectively for economic development. In Part II of this Report, ten productivity methods originating in Japan and introduced to many countries are described in concrete detail. In so doing, the context and experience of Viet Nam and other Asian nations in adopting these Japanese models are carefully and extensively explained. This will assist Viet Nam to learn and modify foreign productivity methods with appropriate selectivity and adjustment to fit Viet Nam's reality, and also to avoid obvious pitfalls.

Japan is not the only country from which Viet Nam can learn productivity. Nevertheless, Japan is a great source of productivity improvement, especially in manufacturing, and has a long and rich experience in systematically transferring its methods to other nations through METI, JICA, JETRO, JPC, AOTS, etc. Moreover, the Japanese government and Japanese FDI firms in Viet Nam have expressed their willingness to continue to cooperate with Viet Nam for industrial purposes. The detailed accounts of Japanese productivity methods given below should serve as basic information to facilitate mutual understanding and industrial cooperation between Viet Nam and Japan. This chapter discusses general principles in learning foreign models while the next chapter will present ten Japanese methods in full detail.

6.1 Learning from Japan

Japan's catchup process began in the late nineteenth century when the Tokugawa samurai government opened up the nation to the powerful and advanced West. Since then, Japan has developed many productivity tools for industrial catchup which are unique to Japan. Some of

them go back more than a century, many were created in the post-World War II high growth era of the 1950s and 60s, and others were introduced more recently. By now, many of these productivity tools have been taught and emulated in the rest of the world, especially in Asia where Japanese FDI has large presence, but also in Europe, North America, Latin America, and Africa with the assistance of Japanese firms, government, NPOs as well as private consultants. Basic tools such as 5S and quality control circles (QCCs) have become a standard learning package around the world. Some countries have graduated from Japanese assistance and carry out productivity actions by themselves. There are even countries, such as Singapore and India, that have mastered Japanese productivity tools in their own ways and started to teach other countries (the case of Singapore will be examined in detail in Section 6.3).

In the process of global dissemination, Japanese productivity tools have proved effective in all societies and cultures, not just in countries which share the same national features as Japanese such as teamwork, long-term orientation, and manufacturing dexterity. In fact, there are very few nations in the world who resemble Japanese in their life and work style. Even so, kaizen works effectively in India, Argentina, and Ethiopia where popular cultures are very different from Japanese. Basic work disciplines such as keeping the factory neat and clean, being punctual, reducing muda (waste), and reporting problems immediately are culture-free advice which can improve productivity in any country.

Another important point is that, in importing Japanese productivity tools, each country must select and modify the original model to suit domestic society. Mindless copying-and-pasting is unadvisable. Because each society is different, foreign ideas and systems must be adjusted to fit the reality of the home country without losing the intended core function. When Maruti Suzuki taught efficiency to Indian automotive engineers, the latter spontaneously created an inter-firm network of kaizen experts to exchange information and teach and help new recruits, a phenomenon unseen in Japan. When Thailand introduced *shindan*, training curriculum was simplified, and official certification was not issued unlike the Japanese original model. Ethiopia learned 5S from the Japan International Cooperation Agency (JICA), but it created a standard dissemination procedure unique to Ethiopia for speed and volume, and began to coach entire cities consisting of many public and private entities and schools, which is very different from the Japanese way of customizing guidance to each individual firm.

Viet Nam opened up to the Western world more than a quarter century ago, and since then has received many Japanese business investments and cooperation projects. Bilateral human exchange has greatly increased. But Viet Nam has not embraced any of the Japanese productivity tools in a deep way. Individual Japanese firms, JICA experts and senior volunteers, the Japan

Productivity Center (JPC), and other institutions have implemented many productivity programs in Viet Nam, but these were random and mutually unrelated, and the scale was usually small (Chapter 5). These have not been integrated into Viet Nam's national productivity movement for internalization, scale-up, and sustainability. Productivity programs conducted by the Japanese side alone are insufficient, and impact often evaporates when the program ends[8]. In order to promote productivity in greater scale for visible results, Viet Nam should launch a national productivity movement under close cooperation among the Party, the Government, and the business community.

This Report proposes that Viet Nam should adopt Japanese productivity tools intensely and consistently, with appropriate selectivity and adjustments, to overcome a future middle income trap and continue to climb to high-income status. In so doing, Viet Nam should exercise strong ownership and commitment instead of being a passive receiver of international support. In Chapter 7, standard Japanese productivity programs which are practiced in Japan and taught in many countries are explained. They can also be introduced to Viet Nam if both countries have strong commitments. The actual speed and depth of learning depends on the will and capacity on the Vietnamese side as well as the amount of resources Japan can mobilize in both financial and human terms.

Needless to say, foreign models do not have to be confined to Japanese. Viet Nam is free to choose any foreign models for productivity enhancement. But Japan is the leading source of concrete productivity measures in the world and there are already thousands of Japanese firms operating in Viet Nam. Moreover, Japanese firms and government are generally willing to cooperate with Viet Nam. For these reasons, we recommend that Viet Nam start with Japanese productivity tools. Table 6.1 is the preview of ten Japanese productivity tools discussed in Chapter 7.

[8] In principle, any industrial project in any country should proceed in the following sequence to maximize impact (certain overlapping of different stages is admissible): (i) a small-scale pilot project (often with international support), (ii) establishment of a national model with proper local adjustments, (iii) training of domestic experts and consultants, (iv) creation of a national institutional mechanism with sufficient mandate, staffing, and budget, (v) full nationwide implementation, and (vi) privatization, where government recedes and the private sector takes over the movement. Foreign-supported industrial projects in Viet Nam often end at stage (i) without proceeding to other steps.

Table 6.1 Japanese productivity tools for domestic adoption and dissemination abroad

	Tool	Key feature	Existing or related programs
1	Mindset change	Proper mindset must be inculcated before productivity enhancement is attempted. Some countries have transformed national mindset fully or partially. A national productivity movement requires mobilization of multiple tools and actions for at least several years under the top leader's strong commitment.	Some nations adopted national productivity movements with varying degrees of success. Singapore and Ethiopia launched such national campaign with Japanese help. In Viet Nam, no systematic national effort has been introduced.
2	5S and kaizen	Kaizen is a philosophy with a set of concrete tools for eliminating *muda* (any wasteful action or thing) from the workplace. 5S is the most basic practice for implementing kaizen. The teaching method is standardized but variation exists across different firms and experts.	Japanese FDI, JICA, Japan Productivity Center, and private consultants have taught 5S and kaizen in many countries with visible improvements. In Viet Nam, efforts exist but they are not yet widespread or integrated.
3	Handholding	A customized and comprehensive support for selected SMEs for 2-3 years with a clear target, covering management, marketing, technology, product development, finance, etc. as needed (not just kaizen).	In Japan, JETRO and local governments routinely provide handholding support to SMEs. Similar support is also available in Taiwan, Korea, Malaysia, etc. Not yet practiced in Viet Nam.
4	Shindan	A state-certified SME consultant system with standardized training, tests, and renewal. Shindan experts (shindanshi) can be officials or private citizens. They actively assist SMEs often at relatively low fees.	Japan has 27,000 shindanshi who work at home and abroad. JICA has introduced shindan in many Southeast Asian nations including Thailand, Indonesia, and Malaysia, with some difficulties.
5	TVET-industry linkage	TVET institutions in Japan not only teach skills to students but work closely and constantly with hiring firms to improve programs and facilitate internship and job placement of students. Graduating students are highly demanded by industry.	This linkage formation is a standard content in Japanese cooperation for TVET institutions. JICA assisted Hanoi University of Industry, Industrial University of HCM, and other schools for linkage formation (Kosen below also contains linkage elements).
6	Kosen	Kosen is a Japanese education system for producing engineers with practical skills and proper attitude. The Vietnamese kosen model is defined as TVET institutions teaching technical knowledge and skills, proper mindset and creativity as well as supporting students for	JICA Kosen Project (2013-2018) created pilot kosen schools at Industrial University of HCM, Cao Thang Technical College (HCMC), Hue Industrial College and Phuc Yen College of Industry (Vinh Phuc, now renamed to College of Industry and Trade). Kosen Kiko

		internship and employment.	will continue support.
7	Mobilization of gino jisshusei (technical interns in Japan)	Gino jisshusei are foreign workers learning technical skills at specific firms in Japan for three years. Japan is revising this system to receive more workers in broader sectors and for longer periods. Returning workers should be actively mobilized for fatherland's industrialization, but this is often not happening.	Viet Nam sends the largest number of gino jisshusei to Japan. Japanese SMEs are generally impressed with their attitude and skill learning. Japan and Viet Nam are working to strengthen monitoring and eliminate improper receiving firms and labor brokers.
8	Kosetsushi (technical support centers for SMEs)	Kosetsushi are local technical centers with official technical experts and analytical equipment. They provide various technical service such as testing, analysis, certification, product development, processing, problem finding, etc. to SMEs at subsidized cost.	Japan has a long history of kosetsushi with at least one in every prefecture. Some nations have similar technical centers, but often only at central level. Vietnamese MOIT is studying the possibility of setting up kosetsushi with Korean help, visits to Japan, etc.
9	FDI-domestic firm linkage	Support for FDI to find local firms for part procurement or long-term partnership. Direct official support such as trade fairs, matching events, database, and individual firm assistance, as well as subsidizing private effort, are commonly used. Meanwhile, forced linkage against firms' will usually does not work.	Thai BUILD/BOI conducts matching services. Malaysia tried VDP and ILP in the past. Viet Nam has trade fairs, databases, and matching events but produced little result due to the scattered nature of these activities and the lack of local firm capacity.
10	Revitalizing supporting industry programs	Integrated support for management, technology, and finance should be given to candidate firms. In latecomer nations, policy should start with direct technical support and move to indirect private guidance as domestic capacity rises. Transparent and easy-to-use incentives and linkage formation support should also be offered.	Japan, Thailand, and Malaysia promoted supporting industries each in its own way. Viet Nam's current system is primitive, cumbersome, and highly limited in scope. For broader impact, it should be significantly reformed by selective adoption of international best practices.

6.2 Three issues in learning productivity policy

In this section, three issues that must be considered in introducing productivity methods from Japan and elsewhere are presented: (i) policy organization, (ii) features and instruments of a national productivity movement, and (iii) distinction between direct policy support and indirect guidance and incentives.

6.2.1 Policy organization

If productivity is to become the top national priority, a proper policy mechanism must be established to conduct a comprehensive national productivity movement. How this mechanism should be best arranged depends on the nature of politics, administrative capacity, private dynamism, social structure, popular mindset, and other unique features of each nation.

In some countries, national productivity movements are driven by the private sector. In other countries, they are launched and carried out by the government. Japan's productivity movement which started in the late 1950s was driven by the business community although public policy also played a supportive role. Three NPOs—the Japan Productivity Center (JPC), the Union of Japanese Scientists and Engineers (JUSE), and the Japan Management Association (JMA)—facilitated learning from the United States and Europe, adjusting foreign models to Japanese reality, and disseminating the modified model to all firms (Kikuchi, 2014). In India, the kaizen movement is carried out mostly by private organizations such as Maruti Suzuki (car assembler) and the Confederation of Indian Industry and the Automotive Component Manufacturers Association (business associations). In contrast, national productivity movements in Singapore in the 1980s and Ethiopia in the 2010s were executed as top-down policy with the Prime Minister as principal promoter. Initial results were rolled out to a wide range of workplaces through official agencies in each country. Given the present circumstances of Viet Nam, where the private sector as a whole is not strongly pursuing or requesting productivity actions, the Vietnamese government must be the initiator of a national productivity movement.

During the long process of industrialization, Japan has developed a thick layer of enterprise supporting organizations. The current situation can be described as follows. At the policy level, the Ministry of Economy, Trade and Industry (METI) is the responsible ministry and the SME Agency under METI is in charge of national SME policy formulation. For implementation, the Organization for SME and Regional Innovation, Japan (SMRJ) under METI is the key executing agency at the national level. There are also many local support mechanisms at prefectures (provinces) and municipalities which coordinate with national agencies. Moreover, there are numerous non-government players that help SMEs and supporting industries such as local banks, credit unions, industrial associations, business NPOs, universities, and research institutions. Japan also has many experienced (but aging) industrial experts willing to work for public purpose at low fees.

It is difficult for Viet Nam to build a full policy mechanism like Japan's in the short run. It should create a simpler mechanism at first and gradually introduce additional functions as

experience is gained and budget becomes available. At the very minimum, a high-level policy organization that directs and monitors productivity enhancing policies must be created. The National Productivity Council was officially established in 2019 and Deputy Prime Minister Vu Duc Dam was appointed as chairperson. This mechanism should be strengthened through political leadership, sufficient mandate, and active use for policy making purposes.

On the implementation side, Viet Nam needs a competent and dynamic agency to implement and monitor the policies decided by the National Productivity Council. There are different options for this. The first is to strengthen and upgrade the existing Viet Nam Productivity Institute (VNPI), currently under the Ministry of Science and Technology (MOST), to be the executing agency of the national productivity movement. This requires significant strengthening of the VNPI's capacity and elevating the official status of the VNPI to the level above ministries. The second is to create a new agency directly under the Prime Minister to replace (and absorb the current functions of) the VNPI. The third is to create a new agency under a ministry (which ministry needs to be carefully examined) but having sufficient authority to execute a nationwide movement and coordinate relevant ministries and agencies, with a strong backing of the top leaders of the Party and the Government.

Another important task is to train and produce competent Vietnamese industrial experts who have deep knowledge of international best practices as well as Viet Nam's reality, and who can effectively teach Vietnamese firms, workers, and new experts on the ground. Trained experts must be properly incentivized to engage in tasks contributing to Viet Nam's industrialization for a long time.

For creating these necessary institutions and human resources, cooperation of Japanese organizations such as JICA, JPC, and the Japan SME Management Consultant Association (J-SMECA), as well as a study of existing productivity models in Singapore, Taiwan, Korea, Malaysia, Thailand, and other Asian economies will be highly useful.

6.2.2 Features and instruments of a national productivity movement

The GRIPS Development Forum has studied the past experiences of national productivity movements in various countries. Singapore, Ethiopia, Botswana, India, and Mauritius were actually visited for meetings with core organizations and experts. Japan, Korea, Tunisia, Argentina, and other countries were studied through records, documents, and interviews with responsible experts. Some countries brilliantly succeeded in achieving national productivity goals while others produced less remarkable results or could not sustain the movement for long. Some movements were driven by private initiative while others were carried out by government

order or demand from FDI firms. Some countries selected focus areas such as manufacturing or the automotive sector while others targeted more broadly to cover factories, services, offices, agriculture, schools, and government offices. Despite these differences, there are certain general lessons to be gained as well as common methods and instruments for success (JICA & GRIPS Development Forum, 2011). General lessons include the following.

First, a national productivity movement is not just one or two projects that last for a few years. It must be a comprehensive program package with many components that require continued effort for several years or more. The movement must start with awareness raising and mindset change, which is the first and usually the most difficult stage. This elevates popular mindset toward efficiency, discipline, and good planning, and convince all citizens of the crucial importance of productivity for themselves as well as for the nation. This stage is followed by on-site productivity improvement guidance at factories and other workplaces by international experts and the learning of this practical skill by domestic experts. When the number of domestic practitioners of productivity improvement increases greatly to cover all sectors and regions, when the nation can sustain the movement without foreign help, and when it even starts to teach other nations, the national productivity movement can come to a successful completion.

Second, the top national leader's strong commitment and involvement, usually at the level of the president or the prime minister, is essential. Singapore's movement was driven by Prime Minister Lee Kuan Yew. Ethiopia's movement was personally commanded and supervised by Prime Minister Meles Zenawi, and subsequently and equally enthusiastically by Prime Minister Hailemariam Desalegn. A national productivity movement is a complex policy mix which inevitably encounters political, administrative, financial, and technical problems along the way. These cannot be solved unless the top leader personally oversees the progress. Leaders at the ministerial or lower level are unable to overcome difficulties that require inter-ministry cooperation.

Third, in addition to the top leader's commitment, national passion for excellence which engulfs government officials, entrepreneurs, engineers, workers, students, and ordinary citizens is critical for propelling productivity widely and ceaselessly to achieve a national goal, as well as for forging a social compact in which everyone actively participates in and benefits from the productivity movement with no one left behind. Spirit and emotion, not just technical methods, must be the driving force.

Fourth, sufficient economic incentives are needed to broaden the base of the productivity movement. Some people work very hard for national development and/or psychological satisfaction but most others need higher salaries, bonuses, promise of promotion, and other

material paybacks to sustain the movement for a long time. This applies to all stakeholders including public servants, experts, teachers, managers, engineers, and workers. Without such incentives, the national movement will be reduced to a small-scale affair driven by a few passionate patriots.

Fifth, several support functions for policy design and implementation must be created and granted with sufficient mandate, staff, and budget to guide and execute the national movement in all stages and functions. These functions can be performed by the productivity implementing agency discussed above, or they can be outsourced to separate institutes and centers. Support functions should include providing useful information and analysis for the creation of a national model and standards; producing standard textbooks, programs, and other materials (see below); organizing a massive mindset campaign, worker and teacher training programs, productivity awards and outreach to all sectors and regions; productivity certification; inter-agency coordination; receiving international cooperation; and developing the capacity of the private sector.

Sixth, a large number of practical instruments and materials must be created. This is to be done by learning various international best practices, then producing a new model most suitable for domestic reality by selecting, adjusting, and combining foreign components. Commonly used instruments and materials for a national productivity movement include the following.

(i) Slogans, symbols, mascots, posters, etc. for popular awareness-raising. Singapore adopted a bee as a visual symbol of productivity and teamwork, and "Together We Work Better" as a national slogan. The idea that productivity benefits everyone—firms, workers, and government—was repeatedly broadcast. In Mauritius, "Make Mauritius Work Together" was propagated. In Ethiopia, kaizen songs and dances were created.

(ii) Creation of standardized teaching materials which include curriculum, courses, textbooks, manuals, visual aids, e-contents, TV programs, movies, and stories describing successful nations, firms, and individuals. These can be translated from foreign sources or newly created by national experts, and made available to public through various media, publications, and a web portal site.

(iii) An education and training system at central and local levels which teach both theory and practice to managers, workers, students, etc. and a higher training system for their trainers.

(iv) Seminars, lectures, symposiums, ceremonies, and other publicity events conducted by national and regional leaders as well as productivity experts.

(v) Competition for productivity awards at the national, regional, sectoral, and even firm level to recognize and promote excellent people and actions. How to organize such competition can be learned from Japan and other nations which regularly hold such events.

(vi) Creation of Productivity Month in which productivity-related events such as the prime minister's address to the nation, kaizen rallies, award-giving ceremonies, seminar series, TV and radio programs, etc. are organized. November was the Productivity Month in Japan and Singapore, and September is the Kaizen Month in Ethiopia.

(vii) Mobilization of experienced foreign advisers through international cooperation or national budget. They can assist with the detailed design of a national productivity movement as well as its execution.

6.2.3 Direct policy involvement versus indirect guidance and incentives

For any industrial policy, government can support the private sector either directly, by providing various services by government officials and facilities, or indirectly, by setting goals, directions, rules, etc. and guiding firms through incentives and subsidies. A country with limited private capacity and dynamism normally starts with direct support measures, and gradually shifts to indirect ones as the private sector expands and becomes more competitive. However, it is common that government itself often lacks capacity, and therefore must seriously learn policy methods before it can assist the private sector. This is a two-step strengthening of domestic capacity, and the speed and depth of government learning determines how fast and far the nation rises in industrialization (Oqubay and Ohno, 2019).

Meiji Japan began industrialization by importing and installing the exact replicas of Western machines and factories through official turnkey projects commissioned to British, French, and other foreign teams. Japan's first railroad, national mint, steel mills, shipyards, lighthouses, modern mines, technology university, etc. were built this way mostly in the 1870s. But in 1880, government decided to privatize most of these projects (except military and public utility facilities) to emerging zaibatsu such as Mitsui, Sumitomo, and Mitsubishi through competitive bidding. These zaibatsu quickly transformed former loss-making government projects into profitable businesses. Japan's transition from official involvement to private action was very quick, and the Japanese government has ever since supported the private sector mainly through indirect means.

Since the late 1980s, supporting industry promotion in Thailand also moved from direct support to indirect support (item 10 of Chapter 7). At first, the Thai government created the Machinery Industries Development Institute (MIDI) with JICA technical cooperation, and MIDI officials visited firms for managerial and technical guidance. Then the Bureau of Supporting Industries Development (BSID), upgraded from MIDI, coached firms to form industrial associations for mutual help and receiving policy support. Now industrial policy and cooperation are implemented through these private associations and their summit organization. Similarly, a shindan system introduced from Japan to Thailand was gradually privatized so Thai shindan support is now conducted mostly by private shindanshi (experts and consultants).

Even at a high income level, government should play an important role in encouraging, assisting, and coordinating private activities. This is done indirectly by policy guidance (direction setting) as well as incentives and subsidies (financial privileges). It should be pointed out that, in most countries, providing these privileges generates an internal fight between the Ministry of Industry, which wants to promote domestic industry, and the Ministry of Finance, which opposes generosity for budgetary reasons. Clear leadership, a sense of proper balance, and prioritization are needed to solve this perpetual conundrum. A strong national leader who can rule over different ministerial interests can offer a solution. Otherwise, an inter-ministerial mechanism must be established to decide on the exact position a country should take between industrial promotion and fiscal soundness. In some countries, the parliament is the place where such policy debate takes place.

The art of offering incentives and subsidies must be learned by comparing international best practices. The standard methods include time-bound reduction and/or exemption of corporate income tax, import duties, (special) sales tax, and other tax obligations as well as provision of soft loans and direct subsidies, provided that firms satisfy certain conditions such as investment, training, technology, export, or ICT. In some countries, privileges are administered professionally and carefully to produce great outcomes. In others, they are given incompetently with no results. Policy details must be learned well to avoid the latter situation.

In Malaysia, the Small and Medium Industry Development Corporation (SMIDEC) during its operating years of 1995-2007 offered various grants, soft loans, and incentives to manufacturing SMEs which fulfilled preset conditions concerning ownership, size, value added, or rural contribution. “Concept Papers” clearly specified eligible actions for support such as strengthening industrial linkage, logistic services, overseas marketing, business planning, product and process improvement, obtaining quality certification, etc. The list of eligible actions was very long. Company actions were monitored after three, six, and twelve months and benefits

were withdrawn if non-implementation was detected. This was an example of well-designed SME support incentive policy with transparent and concrete conditions.

In some cases, financial privileges can be offered without any loss of fiscal revenue. In Singapore, the Skills Development Fund was founded in 1978 as an employer-based mechanism to provide incentives for staff training. Under this system, all employers must pay a Skills Development Levy for each worker they employ for up to the first S$4,500 of gross monthly remuneration at the levy rate of 0.25%, or S$2 per worker, whichever is higher. The government then provides subsidies to employers who invest in upgrading the skills of their employees. Employers can receive course fee subsidies of up to 90% with the amount of subsidies varying with course type and content. Other possible external funds are international cooperation and private donations, but this requires the existence of convincing policy visions and proposals.

6.3 Singapore's productivity movement with Japanese cooperation

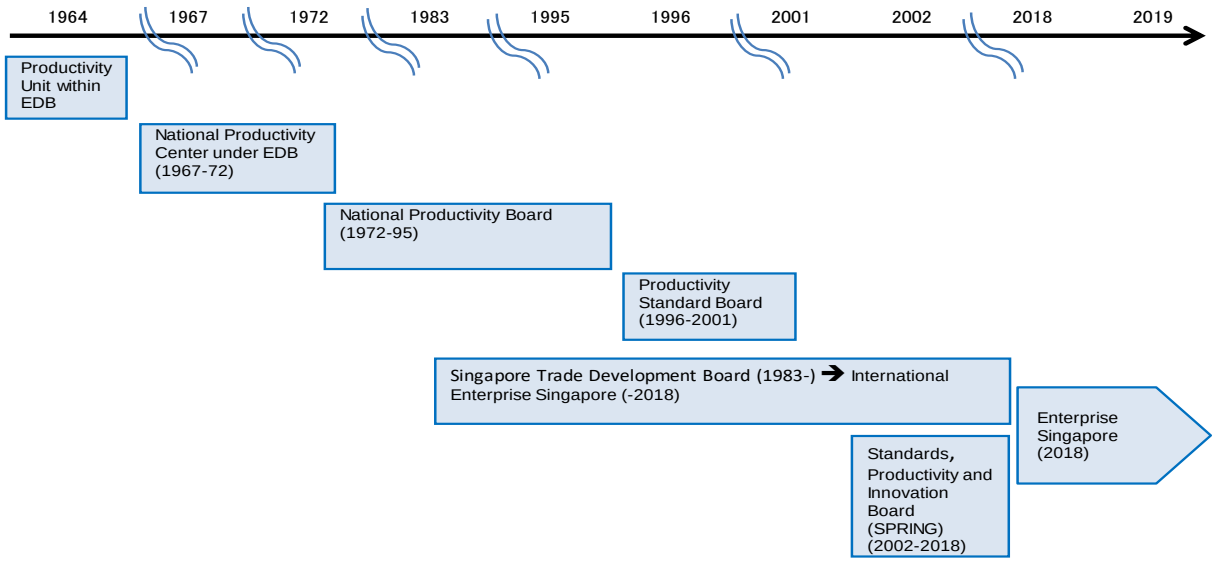
As a prime example of how Japanese productivity methods are taught and learned, let us examine more closely the case of Singapore. Productivity movement in Singapore was a government-led initiative under the strong guidance of Prime Minister Lee Kuan Yew, in which Japanese support was effectively used, especially in the 1980s.

6.3.1 Historical background

The need to enhance productivity was already keenly felt even before Singapore's independence in 1965. In the 1960s, Singapore promoted export-oriented labor-intensive industries through FDI attraction. To execute this strategy, the Productivity Unit was created in 1964 under the Economic Development Board (EDB), an organization established in 1961 to support the manufacturing sector. In 1967, the National Productivity Center was created under EDB, which was later upgraded to a more autonomous agency, the National Productivity Board (NPB), in 1972 (Figure 6.1). In early days, the Singaporean concept of productivity was strongly influenced by Western—especially British—thinking, which placed emphasis on logic, rationality, and results rather than practice and process.

By the second half of the 1970s, as neighboring countries also started to adopt labor-intensive industries, Singapore had to graduate from labor-intensive production to the use of higher skills, which further increased the importance of developing industrial human resource. Prime Minister Lee Kuan Yew frequently visited Tokyo to learn the secret of Japan's success in advancing productivity as well as met Japanese managers in Singapore to discuss Japanese-style work attitude and labor-management relations. The Japanese model was more practical and very different from the Western model. In 1981, Prime Minister Lee Kuan Yew met Mr. Kohei Goshi,

Figure 6.1 Singapore: evolution of productivity supporting organizations



Source: compiled by Mitsubishi UFJ Research and Consulting (MURC) from various materials.

the founder of the Japan Productivity Center (JPC), who stressed three principles that must be observed in improving productivity. They were (i) maintenance or even expansion of employment, (ii) harmonious relation between labor and management through consultation, and (iii) fair distribution of outcomes. These principles were in turn derived from the fundamental idea that "humans are the basis of productivity" (JICA, 2016). These principles were copied as the guiding principles of the Productivity Movement in Singapore.

6.3.2 Japanese cooperation in the 1980s

In the 1980s, Singapore began full-fledged productivity promotion with Japanese cooperation. At the same time, its industrial goals were upgraded to achieve global competitiveness; becoming a regional business hub; and promotion of advanced technology, high value added, R&D, and professional services. In 1981, the Singaporean government launched the new Productivity Movement, and the National Productivity Council (NPC) was established as its policy formulation and monitoring organization whose members came from government, businesses, labor, and academia.

JICA's technical cooperation termed the Productivity Development Project (PDP), lasting seven years from 1983 to 1990, provided a crucial pillar of Singapore's Productivity Movement. Singapore was the first country to receive comprehensive productivity support from JICA. The PDP's achievements included the following: (i) approximately 200 Singaporeans were trained in Japan, (ii) about 4,000 Singaporeans received domestic training using materials

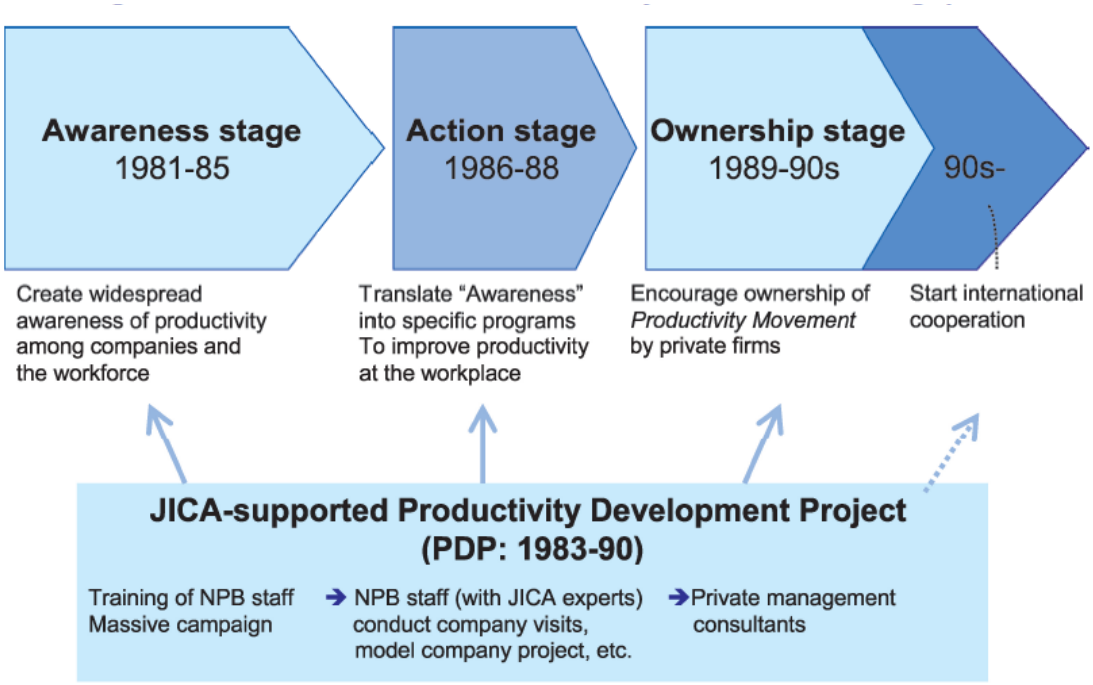
developed in Singapore, (iii) a total of 200 Japanese experts served as lecturers, (iv) Japanese experts and consultants guided more than 200 companies in Singapore for productivity improvement, and (v) some 100 companies adopted 5S with guidance from NPB (JICA, 2016).

With the support from JPC, the guiding idea of the Productivity Movement was given in three principles, namely, (i) productivity improvement should increase employment in the long run, (ii) government, employers, and workers must work together to implement productivity measures, and (iii) fruits of improved productivity must be distributed fairly among management, labor, and consumers (JICA and GRIPS Development Forum, 2011).

Singapore's Productivity Movement evolved in three phases: Phase I (awareness, 1981-1985), Phase II (action, 1986-1988), and Phase III (ownership, 1989-1990s). Phase I spread the awareness of importance of productivity among firms and workers featuring flexible thinking, positive attitude, and teamwork. Phase II performed concrete productivity improving guidance to selected firms targeting both managers and workers. Phase III shifted the main role of sustaining and expanding the productivity movement to private hands (Figure 6.2).

Initially, there was difficulty for Singaporean officials and managers, who were comfortable with Western management style, to learn and adopt the Japanese productivity model.

Figure 6.2 Singapore: evolution of Productivity Movement



Source: JICA and GRIPS Development Forum (2011).

Overcoming this took nearly entire Phase I. In time, however, the Japanese way gradually penetrated the Singaporean mind. The Productivity Movement supported by Japan and deeply committed by Prime Minister Lee Kuan Yew became very active, and the domestic system to sustain productivity improvement was installed. In the 1990s, with Japanese support and introduction, Singapore even began to offer international cooperation to developing countries in Asia and Africa to share its experience in productivity development.

The factors contributing to the success of Singapore's productivity advancement included (i) strong commitment and effective oversight by the highest national leader, (ii) a comprehensive and integrated strategy with many internal linkages, (iii) strong collaboration among government, private firms, labor unions, industrial associations, and educational and professional institutions, (iv) vigorous learning from best practices, especially from Japan, through international cooperation, (v) the support of workers who understood the need to change and embrace a productivity culture, and (vi) the idea that an ambitious goal could only be achieved through an effective combination of sound policies and strategic institutional design, emphasizing cross-sectoral collaboration and sustained efforts (Vu Minh Khuong, 2014).

6.3.3 Continued effort

Singapore continues to improve productivity even beyond the Japan-assisted Productivity Movement in the 1980s. The Singaporean policy formulation generally and always starts with establishment of a time-bound and issue-specific ad hoc committee consisting of government, labor, business, and academic representatives, to develop strategies from broad direction to concrete implementation details in proper steps. A vision, quantitative targets, and concrete strategies are specified with effective mutual linkage.

In 2010, the Economic Strategies Committee (ESC) launched the vision of "high skilled people, innovative economy, distinctive global city," set quantitative targets of attaining productivity growth of 2-3% and GDP growth of 3-5% per year, and defined seven key strategies for achieving these targets covering (i) skills and innovation, (ii) a global-Asia hub, (iii) a vibrant and diverse corporate ecosystem, (iv) innovation and commercialization of R&D, (v) a smart energy economy, (vi) enhanced land productivity, and (vii) building a distinctive global city and an endearing home.

Subsequently, the Committee on the Future Economy was formed in 2016 to follow up on the ESC's work and chart a new growth direction. It admitted that productivity was low in Singapore's domestically-oriented sectors even though overall productivity grew by 2.5% per year in 2009-2016. In 2017, the Committee announced the new vision of being "the pioneers of

the next generation," the target of "growing 2-3% per year on average to exceed the performance of most advanced economies," and proposed six key strategies of (i) deepen and diversify international connections, (ii) acquire and utilize deep skills, (iii) strengthen enterprise capabilities to innovate and scale up, (iv) build strong digital capabilities, (v) develop a vibrant and connected city of opportunity, and (vi) develop and implement "industry transformation maps," each with specified actions. Strategies (iii) and (iv) particularly stressed the need to foster SMEs. These strategies were to respond to significant shifts in the external environment such as the sluggish global economy and changing global value chains with the rise of China and other rival nations.

In 2018, the Enterprise Singapore, a statutory board under the Ministry of Trade and Industry, was created by merging the International Enterprise Singapore, which had helped enterprises to develop overseas markets, and the Standards, Productivity and Innovation Board (SPRING), which had supported innovation of startups and SMEs. It became the new one-stop agency to promote SME development, facilitating innovation, new technologies, overseas market development, and training of management leadership.

CHAPTER 7

JAPANESE PRODUCTIVITY METHODS IN THE VIETNAMESE CONTEXT

This chapter explains Japanese productivity methods in detail, with some overlaps across sections, as well as how other countries learned from Japanese models and how Japan teaches them abroad. These cases are offered to the Vietnamese government and people for studying the possibility of adoption in Viet Nam with proper selectivity and modification.

7.1 Mindset change

It is observed in many developing countries that, even when productivity tools such as 5S, kaizen, and shindan (see below) are introduced, impact is small and short-lived. If workers, engineers, managers, and responsible government officials do not possess the right attitude and dedication to absorb new knowledge and work hard for improving efficiency, any productivity tool will prove useless because it is learned only superficially and soon forgotten. Learners must have a strong internal urge to adopt new tools. Japanese experts can teach productivity tools to anyone, but they cannot transform the mindset of Vietnamese people because mindset is deeper than techniques. Vietnamese and Japanese working cultures are different. Japanese experts must fully understand Viet Nam's culture and social structure before asking workers and managers to change their behavior. Mindset change is hardly possible if Japanese experts know little about Viet Nam and must speak through interpreters. Mindset change should properly be initiated and carried out by Vietnamese people themselves.

National characters unfit for economic growth are many. They include short-termism, selfishness, excessive bureaucracy, inattention to details, lack of persistence and resolution, lack of upward mobility, excessive materialism, corruption, extreme individualism which rejects teamwork, and disregard of laws, rules, and contracts. Vietnamese people and government currently exhibit these symptoms in varying degrees. Viet Nam as a nation must transform its mindset greatly before learning productivity tools listed in the remainder of this chapter. This is why productivity enhancement must begin with a national awareness campaign.

Weak mindset is a problem not unique to Viet Nam. In his book The Malay Dilemma (1970), Malaysian Prime Minister Mahathir bin Mohammad lamented that indigenous Malays were burdened with fatalism, formality, and lack of interest in material excellence, which was unfit for industrialization unlike economically very active Chinese Malays. Since then, Malaysia has introduced various affirmative actions for ethnic Malays and encouraged them to be more

dynamic, yet their relative lack of energy still remains.

In Sri Lanka, the apparel industry emerged in the late 1970s and young rural labor was recruited to work in Katunayake Export Processing Zone (EPZ) near Colombo, which was the first EPZ in Sri Lanka. Young female workers then knew nothing about money, work ethic, or city life, and some of them, dubbed "Juki girls," lost decency and caused social problems. Subsequently, EPZs were built across the country so rural workers no longer had to migrate to cities to work. More importantly, leading Sri Lankan garment firms such as MAS and Brandix systematically trained and transformed rural Sri Lankans to become one of the most productive garment workers in the world. However, great achievement in labor attitude and efficiency in Sri Lankan apparel did not spread to other industrial sectors.

In Ethiopia, Prime Minister Meles Zenawi asked the Japanese policy dialogue mission, "I have studied East Asian policies and our industrial policy has improved in the last several years. Why do my people continue to pour money into property speculation and not manufacturing? Why do they not build more factories? Please tell us how East Asian governments transformed people's mindset to invest and learn more." In response, the Japanese delegate suggested initiation of a national kaizen movement.

Compared with these peoples, the mindsets of Japanese, Korean, and Chinese (including overseas Chinese) are quite different. They are naturally dynamic in both commerce and manufacturing. They can learn, produce, invest, and innovate even without official assistance, and can do these things more effectively if proper official support is rendered. They do not have to be told to be economically active by the government. Japan, Korea, and overseas Chinese economies such as Singapore and Taiwan already belong to the high income group, and mainland China is catching up rapidly since the 1990s. This points to intrinsic differences in national character which are the results of diverse history as well as domestic and external conditions. We must start with the premise that different nations are good at different things, and some nations must start industrialization with mindset change while others need not.

Changing national mindset is far more difficult than introducing a new machine or technology, but there are countries that attempted—and even succeeded in—this feat. Singapore is a prime example (Chapter 6). In 1980, Prime Minister Lee Kuan Yew requested Japan to teach productivity, and this led to the first comprehensive productivity support to any foreign country by the Japan International Cooperation Agency (JICA). Cooperation was conducted throughout the 1980s in three phases. Phase I (awareness, 1981-85) implemented a series of national campaigns to hammer the importance of productivity into the minds of all citizens until even taxi drivers became aware. This was the most difficult phase in which Singaporeans had to be

convinced, Japanese had to adjust, and trust had to be built before any action could be introduced. In Phase II (action, 1986-88), a number of Singaporean firms were improved using the Japanese method. Japanese experts coached firms, and accompanying Singaporeans learned how to do this. In Phase III (ownership, 1989 onward), Singaporeans became able to continue the productivity movement without Japanese assistance, and they even started teaching other countries (with Japanese intermediation). These three phases are standard for executing a national productivity movement with Japanese cooperation.

One may argue that Singapore is an exception because it is a small city state with dominant Chinese population. It is no wonder that it learned productivity relatively easily and fast. But many other countries with large rural population also tried national productivity movements, with or without Japanese assistance, with varying degrees of success[9]. The list of students is a long one that includes Korea, Thailand, India, Hungary, Brazil, Argentina, Paraguay, El Salvador, Costa Rica, Tunisia, Egypt, Ethiopia, Tanzania, Zambia, Ghana, Botswana, Mauritius, and Burkina Faso.

Ethiopia, a low income African nation, asked Japan to teach kaizen in 2008. A JICA kaizen project, now in its third phase, has been implemented since 2009. Prime Minister Meles Zenawi (in office 1995-2012) and Prime Minister Hailemariam Desalegn (in office 2012-2018) were both personally and strongly committed to application of kaizen in Ethiopia, not just as a set of convenient tools but more importantly as a life and work philosophy to transform the national mindset. Industrial policy dialogue with Japan was conducted regularly[10], the Ethiopian Kaizen Institute was established with sufficient budget and staff, kaizen awards were created, September was designated as the Kaizen Month, citywide kaizen movements were launched, and Ethiopia began to teach kaizen to other African nations and the African Union. Taxi drivers in Addis Ababa now know kaizen.

In Viet Nam, mindset change has been tried in scattered occasions including in-house training at Japanese FDI[11], *Keiei Juku* (business executive courses managed by Foreign Trade University supported by JICA), and training programs at some labor exporting companies for

[9] Apart from JICA cooperation, Japanese-style productivity tools and movement can be learned via the Ministry of Economy, Trade and Industry (METI), the Asia Productivity Organization (APO), the Japan Productivity Center (JPC), the Association for Overseas Technical Cooperation and Sustainable Partnerships (AOTS), the Kaizen Institute (private consultant group), Japanese private consultants and retired engineers, as well as World Bank and ADB projects funded by Japan. Moreover, many countries which mastered kaizen, such as Singapore, India, and Thailand, can also teach Japanese-style productivity methods to others.

[10] GRIPS was designated by Prime Minister Meles as the Japanese counterpart of this industrial policy dialogue, and Prof. Kenichi Ohno has served as the policy dialogue leader on the Japanese side since 2008.

[11] Many Japanese firms, especially large ones like Toyota, Honda, Denso, Yamaha, Canon, Kyocera, Daikin, Komatsu, etc., have internal programs to train and re-train their new and existing workers for safety, efficiency, technology, customer service, and proper work ethic in Japan and abroad.

Vietnamese workers before dispatching them to Japan (*gino jisshusei*—see below). But these remain small and local in scope. There has been no systematic effort to change the mindset of an entire nation like Singapore or Ethiopia.

Outside government, an interesting mindset-change program for Vietnamese people is being developed by GKM Lean Management Institute, a private consultant firm, in Hanoi. Dr. Nguyen Dang Minh, its executive, is an automotive engineer who had a working experience at the Production Technology Department of Toyota Headquarters in Aichi, Japan for seven years before returning to Viet Nam. He not only stresses the importance of mindset (TÂM THẾ, in his terminology) but also teaches individual firms with a practical and concrete program for transforming company-wide mindset. His method consists of securing full mandate and commitment from the general director, intensive discussion with the heads of all departments, drafting of standard operation manuals by all departments under his supervision, and isolation of workers who do not cooperate. Details are the business secret of GKM Lean Management Institute. Since 2015, Dr. Minh has successfully transformed the mindsets of several Vietnamese firms including Truong Hai Auto Corporation (Thaco).

7.2 Five S and kaizen

Kaizen is a Japanese word for improvement. In Japanese management, kaizen means continuous and participatory improvement in quality and productivity involving the entire company from top management to middle managers and production line workers. It aims to install a permanent process of eliminating *muda* (waste)[12] and maximizing the use of existing human and nonhuman resources within a firm. It is a continuous bottom-up effort for improving efficiency without requiring additional investment, in sharp contrast to other methods that involve purchase of new machinery or adoption of frontline technology with a considerable expenditure (GRIPS Development Forum, 2009).

The origin of Japan's kaizen movement was the statistical control method imported from the United States in the late 1950s. Japanese firms—especially SMEs—at that time did not have sufficient funds and was seeking methods to improve operation without large investment[13]. The

[12] According to Toyota Production System, *muda*—defined as any thing or action that does not add value—is classified into seven types: (i) waste of processing, (ii) waste of inventory, (iii) waste of over-production, (iv) waste of waiting, (v) waste of motion, (vi) waste of transportation, and (vii) waste of making defects. Kaizen may be construed as an endless effort to identify and eliminate these muda.

[13] Another method used by Japanese firms from the late 1950s onwards, with official promotion, was *rationalization*, or replacing outdated machines and processes with latest ones to improve productivity. Large manufacturing firms in steel, chemicals, and other industrial materials embraced this method to achieve competitiveness. However, such investments were costly and only those firms which had accumulated sufficient funds during the Korean War boom (1950-55) could afford this strategy. Most manufacturing SMEs had to resort to other methods which required less money.

management theories and lectures of Professors W. E. Deming and J. M. Juran were particularly influential. Japan quickly absorbed this imported technique and modified it to its own management practice which became uniquely Japanese. The result was remarkable efficiency improvement which even surpassed the performance of American manufacturers. Compared with the original American model which was top-down, theoretical, and highly statistical, the modified Japanese method emphasized process orientation, bottom-up worker participation, and hands-on pragmatism. This method, which came to be known as kaizen, spread rapidly among Japanese firms, both large and small, to form the core of Japanese *monozukuri* (manufacturing) spirit. This was a private sector-led effort assisted by three non-profit organizations—the Union of Japan Scientists and Engineers (JUSE), the Japan Productivity Center (JPC), and the Japan Management Association (JMA)—which sponsored lectures, seminars, foreign missions, productivity and quality awards, and other supporting mechanisms (Kikuchi, 2014).

From the 1980s onward, kaizen spread abroad as Japanese manufacturing firms expanded their production base to the rest of the world. The introduction of basic kaizen tools became a standard package of Japanese technical cooperation in developing countries. Such a package (normally called the "quality and productivity enhancement project") is implemented by both private and public hands. Many Japanese firms teach their own workers at overseas plants and partner supplier firms through classroom and on-site training, dispatch of Japanese technicians, training at the mother factory in Japan, and organizing skills competition among engineers and workers. There is also fee-based kaizen instruction by private consulting firms such as the Kaizen Institute. Kaizen is also promoted strongly by official agencies such as JICA, AOTS[14], and APO in addition to the three NPOs named above. JICA's selected kaizen cooperation is listed in Table 7.1. While kaizen is most popular in East and Southeast Asia where Japanese manufacturing firms have a strong presence, it is also taught and practiced in other regions including South Asia, Europe, North America, Latin America, and Africa.

Kaizen is a philosophy equipped with concrete tools to realize it. The kaizen philosophy inculcates a proactive mindset to endlessly pursue efficiency and improve one's life and work with creativity and ownership. A large number of tools are available in the kaizen toolkit including 5S, quality control circles (QCCs), *mieruka* (visualization), efficient equipment layout, *heijunka* (leveled production), *jidoka* (automation with human intelligence), *kanban*, Just-in-

[14] The new AOTS was renamed in 2017 from the Overseas Human Resources and Industry Development Association (HIDA), an organization created in 2012 by merging the Association for Overseas Technical Scholarship (original AOTS), which invites foreign managers, engineers, and workers to Japan for training, and the Japan Overseas Development Corporation (JODC), which dispatches Japanese experts abroad.

Table 7.1 JICA's productivity cooperation

(Relatively large projects with institution-building content)

Country	Project name	Duration			Counterpart organization	JICA support component				
		Start	Completion	Planned until		Expert dispatch	Training abroad	Equipment provision	Local expenses	Other
Singapore	Productivity Development Project	1983	1987		National Productivity Board	●	●			
Thailand	Productivity Development Project	1994	2001		Foundation of Thailand Productivity Institute, Ministry of Industry	●	●	●	●	
Brazil	Brazilian Institute of Quality and Productivity Project	1995	2003		Brazilian Service for the Support of Micro and Small Enterprises; Brazilian Institute of Quality and Productivity	●	●	●		
Costa Rica	Productivity Improvement for Enterprises	2001	2006		Technical Instructor and Personnel Training Center	●	●	●	●	
Tunisia	The Study on Master plan of Quality/Productivity Improvement	2005	2008		Ministry of Industry, Energy and SMEs	●				
Egypt	Productivity and Quality Improvement Center	2007	2011		Productivity and Quality Improvement Center, Ministry of Trade and Industry	●	●	●		
Ethiopia	The study on quality and productivity improvement (KAIZEN) in the Federal Democratic Republic of Ethiopia	2009	2011		Ministry of Trade and Industry	●	●	●		
Costa Rica	Capacity Building of Facilitators on Improving Productivity and Quality for Small and Medium Enterprise in Central America and Caribbean Region	2009	2013		Center for Quality and Productivity, National Technology University (UTN-CEFOF)	●	●	●	●	
Tunisia	Quality/Productivity Improvement	2009	2012		Unite de gestion programme qualite	●	●	●	●	
Jordan	Dissemination of Quality/Productivity Improvement (Kaizen) Practices for Small and Medium Enterprises	2010	2013		Jordan Enterprise Development Corporation(JEDCO)	●				
Ethiopia	Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)	2011	2014		Ethiopian KAIZEN Institute, Ministry of Industry	●	●	●	●	
Ghana	Formulating a Strategic Model for Quality/Productivity Improvement through Strengthening BDS for MSEs	2012	2015		National Board for Small Scale Industries	●	●	●		●
Kenya	Productivity Improvement in the Republic of Kenya	2012	2014		National Productivity and Competitiveness Center	●	●	●	●	●
Tanzania	Strengthening Manufacturing Enterprises through Quality and Productivity Improvement (KAIZEN)	2013	2016		Ministry of Industry and Trade	●	●	●	●	●
Zambia	National KAIZEN Project	2014	2016		Zambia Development Agency; KAIZEN Institute of Zambia	●	●	●		
Ethiopia	Capacity Development for KAIZEN Implementation for Quality and Productivity Improvement and Competitiveness Enhancement	2015		2020	Ethiopian KAIZEN Institute	●	●	●	●	
Ghana	National KAIZEN Project	2015		2018	National Board for Small Scale Industries	●	●	●	●	
Cameroon	Quality and Productivity Improvement (KAIZEN) for SMEs	2015	2017		SME Promotion Agency, Ministry of Small and Medium-sized Enterprises, Social Economy and Handicraft	●	●			
El Salvador	Capacity Strengthening of Support Personnel for Micro, Small and Medium Enterprises focusing on the Improvement of Enterprise Administration, Quality and Productivity	2016		2019	National Commission of Micro and Small Enterprises	●	●	●		
Tunisia	Quality/Productivity Improvement Phase 2	2015		2019	Unit of Management of National Program of the Quality Promotion	●	●	●	●	
Dominican Republic	Improvement of Quality and Productivity of SMEs	2016		2019	National Institute of Technical and Vocational Training	●	●	●		
Malaysia	Productivity Improvement	2016		2018	Malaysia Productivity Corporation	●				
Malaysia	Enhancement of Productivity and Competitiveness through TQM and KAIZEN Approach for African Countries	2016		2018	Malaysia Productivity Corporation	●				
Argentina	KAIZEN Technical Assistance Network for Global Opportunities (KAIZEN TANGO)	2017		2022	National Institute of Industrial Technology	●	●	●		
Zambia	National KAIZEN Project Phase2	2017		2020	KAIZEN Institute of Zambia, Limited	●	●	●		
Tanzania	Strengthening Manufacturing Enterprises through Quality and Productivity Improvement (The KAIZEN Project Phase Two)	2017		2020	Ministry of Industry and Trade	●	●	●	●	●
Honduras	Assistance for Capacity Developing of Facilitators on Improving Productivity and Quality for Small and Medium Enterprise in Honduras	2018		2022	National System of Quality, Technical Secretariat of Planning and External Cooperation	●			●	

Source: selected from JICA Knowledge Site (gwweb.jica.go.jp/km/km_frame.nsf), accessed on November 22, 2018.

Note: this table shows JICA's selected projects for introducing kaizen and strengthening its executing agency which are relatively large, in long duration, and containing institution-building components. JICA additionally provides numerous kaizen services in many projects without institutionalization.

Time (JIT), suggestion system, total quality control (TQC), total quality management (TQM), total productive maintenance (TPM), Toyota Production System (TPS), and so on. The precise definition and boundary of kaizen is somewhat vague. Different experts and organizations use the term kaizen with different scopes and nuances, which sometimes causes confusion.

Nevertheless, in any firm or country, the adoption of kaizen must begin with 5S which is made up of five "S" words: *Seiri*, *Seiton*, *Seiso*, *Seiketsu*, and *Shitsuke* (translated imperfectly as Sort, Straighten, Shine, Systematize, and Standardize; other English renditions also exist)[15]. These are practical actions for enhancing order, efficiency, and discipline in the workplace, which are considered so fundamental that all firms must practice them as the first step toward improvement. *Seiri* means removing all unnecessary things from the workplace. *Seiton* means placing remaining things in marked positions for easy pickup. *Seiso* means sweeping and cleaning. *Seiketsu* means maintenance of cleanliness. *Shitsuke* means spontaneous implementation of these good practices (ownership rather than coercion). These ideas may seem simple and mundane, and they require no high academic degrees to understand, but are very difficult to actually sustain daily and forever. Kohei Goshi, former chairman of JPC, said that kaizen "is like a marathon with no finish line." Even Toyota, the leader of Japanese productivity movement, tries to perfect kaizen daily and forever. Factories and offices that implement kaizen look very neat and orderly. Japanese firms do not consider doing business with local supplier firms unless they introduce 5S (or at least the first two or three S even in a crude form).

In many cases, workers in developing countries must begin with even more basic things than 5S such as punctuality, smile, not stealing, morning greetings, clear voice, proper attire, and Ho-Ren-So (Report, Communicate, and Consult which means don't ignore a problem when you see it but report to your boss immediately). Safety education, in which workers experience artificially created dangerous situations to understand the importance of safety rules, is another essential ingredient of worker training.

In developing countries, kaizen at workplace is normally taught by an experienced expert who makes frequent visits to the factory for three to six months. Initially, classroom courses are usually organized to give basic information and screen candidate firms with proper mindset and potentiality. The general director is interviewed for his or her business vision and willingness to learn. Then an internal team is formed at each targeted firm to implement kaizen in one or two production lines which will later be rolled out to the entire factory. Japanese experts do not offer ready answers and solutions. The team is asked to think, identify problems, and suggest solutions

[15] In Viet Nam, they are often translated as Sàng lọc, Sắp xếp, Sạch sẽ, Săn sóc, and Sẵn sang.

with hints provided by the kaizen expert. Weekly homework is given for this purpose. In training of trainers, local officials should accompany a Japanese expert to learn how kaizen is taught on the ground. Kaizen is considered successful if the firm internalizes the process and can sustain kaizen activities permanently after the expert leaves.

Two questions commonly raised about kaizen are transferability across cultures and complementarity with Western methods. Some question the validity of kaizen in countries where low literacy, short-term orientation, top-down management, and inattention to details prevail. If strong hierarchical structure is dominant, workers may hesitate to bring their ideas to supervisors. While these arguments are theoretically plausible, experience of numerous kaizen teachings around the world shows that there is no society in which kaizen fails to improve quality and productivity. Improvements are immediate and clearly visible in cost reduction even though the number of best performers may vary across countries. As to the compatibility between kaizen and other methods such as benchmarking and business process re-engineering, the two should in principle be complementary. The Japanese method internalizes gradual improvement while Western methods aim to create a jump in performance. However, it is not clear whether bottom-up processes required by the former can co-exist with top-down decisions assumed by the latter. Another practical concern is over-burdening of managers and workers when two methods are introduced simultaneously in a company.

Most Japanese manufacturers operating abroad teach and enforce kaizen in their own overseas factories and their local suppliers. This is also true in Viet Nam. Visiting any Japanese factory in Viet Nam, one can see how workplace is organized and how workers are continuously trained for discipline and efficiency. Kaizen is implemented not only at Toyota, Denso, Honda, Yamaha, Panasonic, Canon, Kyocera, Fujitsu, Lixil, and Daikin but also at virtually all Japanese manufacturing SMEs in Viet Nam.

From 2012 to 2015, JICA mobilized “senior volunteers” (experienced industrial experts) to improve more than 100 Vietnamese supporting industry firms (component suppliers) by 5S and QCC method. Firms achieving good results were listed in the supporting industry database of the Japan External Trade Organization (JETRO). However, this project was implemented by Japanese experts only with no participation or learning by Vietnamese officials or experts. The activities ended when senior volunteers returned to Japan. It is odd that Viet Nam, which has received a large amount of Japanese FDI in the last quarter century, has not launched a nationwide productivity movement. Productivity promotion by the Viet Nam Productivity Institute (VNPI) is still very small in scale (Chapter 5). As a consequence, kaizen practice in Viet Nam remains random, scattered, and spontaneous.

By contrast, many nations try to internalize and institutionalize kaizen (or kaizen-equivalent by any other name) by creating a national productivity agency and training domestic experts (JICA and GRIPS Development Forum, 2011). Taiwan, Korea, China, and India have learned kaizen mainly through private channels. Meanwhile, systematic JICA support was offered to Singapore in the 1980s. These countries no longer need Japanese help to sustain kaizen. Most ASEAN countries, including Thailand and Malaysia, were also assisted by JICA. In Africa, JICA supports kaizen in Tunisia, Ethiopia, Kenya, Tanzania, Zambia, Ghana, Egypt, and Cameroon as well as the African Union and the New Partnership for Africa's Development (NEPAD). Mauritius, Botswana, and Burkina Faso studied kaizen from other (non-JICA) sources. Among African countries, Ethiopia is most active and serious in learning and internalizing kaizen. The Ethiopian Kaizen Institute provides kaizen instructions to firms, offices, public servants, and even an entire city. September is designated as Ethiopia's Kaizen Month when many awards and events are held and the kaizen song and dance are presented. Also, Ethiopia is beginning to teach kaizen to other African countries.

7.3 Handholding

Kaizen, when properly implemented, greatly improves efficiency in any workplace. But the firm's competitiveness depends on many other factors besides efficiency. A firm may weaken if management lacks vision, if marketing is ineffective, if technology is outdated, if labor management is defective, and for many other reasons. Handholding (also known as hands-on or *yorisoi* support) is an assistance program which is customized and multi-dimensional for a handful of firms that show willingness and potentiality to face challenge and produce excellence. SME assistance is divided into (i) general support open to any firm on request basis and (ii) customized by-invitation-only support in which chosen firms are given necessary assistance by an expert team until a pre-set goal is attained. Handholding is of the second type. It is widely practiced in East Asia, as explained below, but some Western economists criticize it as too selective and benefiting only a few.

More precisely, handholding is an official program in which SMEs are supported with low or no cost to them. It is not high fee-based advice by MBA-holding consultants. For handholding, there must be a screening process to identify eligible firms[16]. For each selected firm, the general director is interviewed for proper mindset and capability; the firm is diagnosed

[16] In most Japanese prefectures and cities, local government officials in charge of SME support know the features of individual firms they regularly visit, consult, and support in their jurisdiction. They can readily produce a list of firms with good management and high potential without conducting any additional survey. In such a case, selection of candidate firms for handholding is easy and requires no formal process.

managerially, technically, and financially; one business goal is set[17]; then a multiple assistance package is rendered to achieve the goal. An expert team is organized for each firm, usually consisting of a government official, a private business consultant, and technical or other expert(s) as required. Customized and intensive support is offered to each firm for two to three years with an expectation of a high success rate. Handholding support is usually non-renewable. It is a very labor-intensive and costly program that requires mobilization of many experts as well as good rapport between the firm and the government.

In Japan, the Japan External Trade Organization (JETRO) assists approximately 150-200 Japanese SMEs to export every year. Manufacturing SMEs wanting to export directly (not through a trading house) to a new market are supported. Eligible sectors include machinery and components, environment and energy industries, agricultural and fishery products, traditional items, household goods and fashion, and others. Firms with "Only One" (unique and excellent) technology or products are prioritized. Firm selection is conducted by (i) informal screening based on daily contacts, expert views, visits, and reports from other organizations; (ii) filing of an application form by the firm; (iii) interview with the general director; and (iv) evaluation and approval by the JETRO headquarters selection committee. The support team consists of one to a few experts who have special knowledge required for handholding and one JETRO official who provides JETRO-related services and monitors and coordinates expert activities. Depending on the firm, a support package may include export strategy formulation, gathering of market information as well as guidance in trade fair participation, business negotiation, signing contracts, account settlement, etc. After a certain preparation period, assistance is provided for two years which is non-renewable. An export goal is considered as attained when the firm exports to the same foreign buyer three times or more, or sells to a foreign agent with payments received. If the firm develops two new markets successfully, support is terminated even before two years. About 30% of supported firms "succeed" three years after the end of support. Even without "success," most firms make progress.

Since 2012, JETRO has also supported Japanese SMEs to invest abroad. This has become a very important function of JETRO (as well as JICA) because the Japanese government nowadays strongly promotes overseas expansion of SMEs. Thousands of SMEs have been assisted to go abroad. *Chuken* (medium-sized and excellent) firms as well as SMEs seriously interested in investing abroad are targeted. For destination, developing countries (recipients of Japanese ODA) are preferred. One JETRO official and a few external experts (a business

[17] For handholding, only one goal is set for each firm. It may be a goal related to product development, commercialization of R&D, improving product quality, penetration of a foreign market, or investing abroad.

consultant and an expert with knowledge of the industry or the targeted foreign market, for example) form a team to coach a firm. Duration of support is negotiated with the firm but should not exceed two years. The firm is asked to appoint one key person for this project, pay the cost of their own foreign travel and establishing a company abroad, and submit progress reports. JETRO pays all expert fees and their travel costs, and provides necessary information and coordination. In some cases, the expert team may even suggest the firm to stay in Japan instead of going abroad. JETRO argues that joint support by a JETRO official who has a broad network and information and external experts who have specialized knowledge is essential.

Japanese local governments—prefectures and cities—are also very active in supporting SMEs as one of their key mandates. For instance, Kobe, a port city with a population of 1.45 million, began to strongly support overseas investment of SMEs in 2011. The Kobe Asian Business Support Center was established. Guided by a professor who had previously worked at Panasonic, the city conducted surveys to find that Kobe SMEs were increasingly eager to go abroad, and the most popular destinations were Viet Nam, Thailand, and Indonesia. Information on these three countries was collected, and study tours were organized to them. Four city officials and 95 external experts were assigned at the Center to offer *yorisoi* (handholding) support. A group of experts, accompanied by a city official, are dispatched to each firm. Consultation is free of charge up to 10 times a year. Seminars and study meetings are held, overseas missions are organized, and cooperation with other support organizations is activated.

The reason why JETRO and other Japanese public agencies and local governments can provide large-scale handholding support is because Japan has a large pool of active or retired business and industrial experts willing to work for public purposes at relatively low fees. Some are shindanshi and others are former managers or engineers at large manufacturing firms. Moreover, JETRO has a branch in every prefecture in Japan and can serve SMEs in any location.

Handholding is also practiced in other Asian countries. The Korea Trade-Investment Promotion Agency (KOTRA) offers multiple services to SMEs planning to export. Its services are broader and more generous than JETRO's. The screening process includes (i) application filed by firms, (ii) evaluation and selection by KOTRA's overseas offices, (iii) service fee payment by the firm and signing of contract agreement, (iv) service provision by the KOTRA overseas office, and (v) evaluation and follow-up by the KOTRA overseas office. KOTRA's overseas branches act as local sales representatives of individual Korean SMEs by giving advice, collecting market information, identifying potential buyers, business matchmaking, etc. Duration of support is one year which is renewable up to three years for firms unable to obtain results quickly. Service fees differ depending on the destination country. In the case of exporting to

Japan, firms must pay about $2,500-3,500. Roughly 50-60 firms are supported annually by the KOTRA office in Japan alone. At extra cost, firms can receive additional marketing support, recruitment of local sales staff, and office space rental service.

In Malaysia, the Malaysia External Trade Development Cooperation (MATRADE) provides handholding to SMEs new to exporting, though at a much smaller scale[18]. Eligibility is limited to women, youth, and Bumiputra (ethnic Malay) entrepreneurs only. This program has a social aim of advancing disadvantaged groups with currently low levels of foreign market penetration. Support lasts for three years, which is non-renewable, and covers (i) customized and intensive coaching by one experienced expert and a MATRADE official, (ii) export skills seminars, workshops, and symposiums organized by MATRADE on a quarterly basis, (iii) participation in international trade fairs and export missions for selected SMEs, (iv) allocation of exhibition space for 12 months at the Malaysia Export Exhibition Centre inside the MATRADE headquarters, (v) networking and mentoring sessions between SMEs and large companies, and (vi) leadership and entrepreneurship training. MATRADE provides all these services free of charge, including the cost of foreign travel, unlike the cases of JETRO or KOTRA. The firm screening process uses both internal information (MATRADE SME database and SME Corp information) as well as actual visits to companies.

In Taiwan, the SME Administration (SMEA) has since 1989 operated the One Town One Product project (Taiwan OTOP), copied from Japan's One Village One Product program, which creates high-value, high-image local cultural products for tourist and export markets. This can be regarded as collective handholding for SMEs in one particular community. SMEA dispatches a group of experts for three years to (i) identify local needs and missing factors, (ii) build communal consensus, (iii) conduct training, (iv) strengthen business capacity and develop new products, and (v) sustain growth under community ownership. Support includes R&D, re-making of traditional products, workflow re-engineering, branding, packaging, store display, linkage creation with tourism, and marketing through OTOP shops, website, media, ads, and trade shows. Hundreds of towns have been successfully coached to develop high-quality local products.

Viet Nam has no systematic nationwide handholding mechanism for SMEs. It should build necessary conditions for effective handholding in appropriate speed and scope. As is clear from the cases in Japan, Korea, Malaysia, and Taiwan, the success of handholding depends much on the availability of a large supply of experienced business and industrial experts as well as highly dedicated SME promotion officials. Viet Nam must foster such human resources step by

[18] 24 SMEs were chosen annually for support at the time of our Malaysia policy mission in June 2013.

step. When a sufficient number of experts and officials are trained, handholding in a simple form may be started, for example, with a limited focus on management strategy, technology, and kaizen only. Japanese firms and government can assist in this process.

7.4 Shindan (SME consultancy)

In Japanese, *shindan* means diagnosis and *shindanshi* is a certified person who practices this. Japan's shindan system (more precisely, the SME enterprise management consultant system) dates back to the late 1940s after the defeat in World War II. Under occupation by the American forces (1945-1952), devastated Japan tried to boost production and rebuild industries. Realizing the importance of SMEs in this process, the government established the SME Agency in 1948 to promote finance, re-organization, and diagnosis of SMEs. For diagnosis, the government drafted basic diagnostic manuals and tried to mobilize private industrial experts with deep knowledge and experience.

In 1952, the Ministry of International Trade and Industry (MITI) began to certify outstanding experts and actively use them in policy implementation. These experts were given state recognition and registration numbers. In 1954, the Japan SME Management Consultants Association (J-SMECA) was founded as a nationwide association of shindanshi. Headquartered in Tokyo, it had a branch in every prefecture to promote awareness, use, research, quality improvement, and international cooperation in shindan services.

Over time, shindan became quite effective in upgrading SMEs and was highly appreciated. From the outset, government supported shindan through legislation, facilitation, and supporting organizations, but operation gradually shifted from the public realm to the hands of the private sector and NPOs. Administrative and financial support by the government was limited from the beginning.

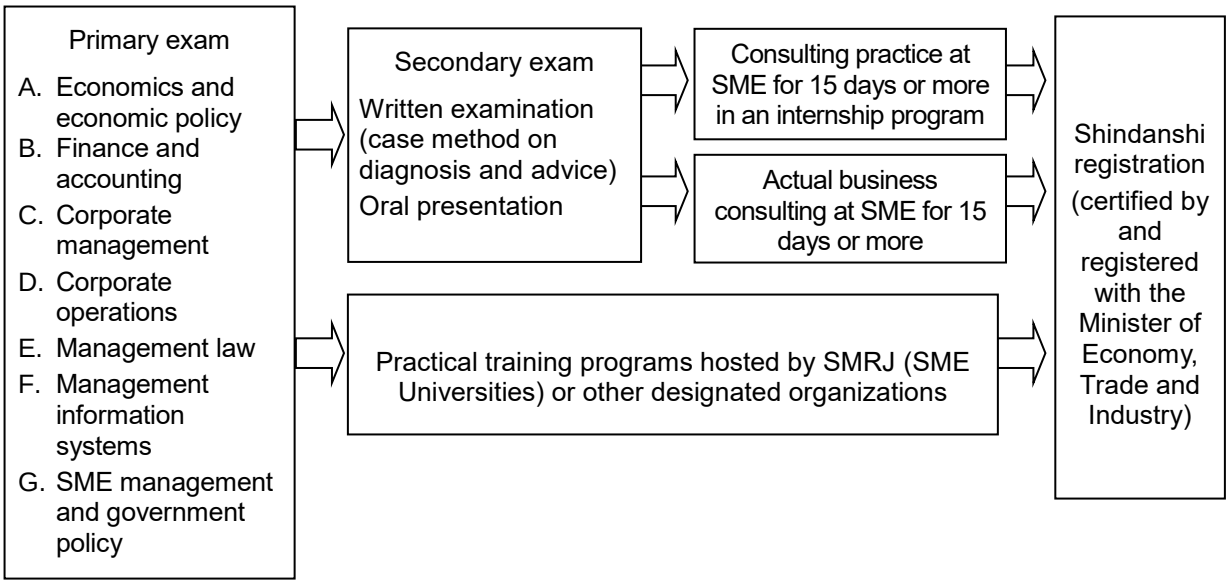
The SME Basic Act, originally issued in 1963, was amended in 1999. A new law, the SME Support Act, was enacted in 2000. These new laws increased private sector involvement; enhanced the role of J-SMECA in shindanshi training, exams, and certification; and expanded the scope of shindan to include business re-engineering and credit assessment. In 2004, through merger, activities of the Japan SME Corporation were transferred to the Organization for SME and Regional Innovation, Japan (SMRJ), which now is the nationwide apex agency responsible for SME policy implementation. In 2006, further revisions were made in exams and registration, which emphasized sufficient practice of shindan as the requirement for certificate renewal.

The number of registered shindanshi is steadily increasing and stands at 27,000 in 2019. There are primary and secondary shindanshi exams (Figure 7.1). There are two tracks for

becoming shindanshi. The first is to pass both primary and secondary exams and the second is to pass the primary exam then successfully complete all courses at the SME University. Each year, roughly 20,000 apply for the primary exam and about 900 pass both exams. Besides this, a few hundred applicants pass the primary exam and graduate from the SME University. Shindanshi certificate must be renewed every five years. At least five training sessions must be attended to update knowledge and at least 30 days of actual SME shindan consultation must be practiced before each renewal.

The SME University under SMRJ is the most important organization for training shindanshi. It educates new candidates as well as updates knowledge of registered shindanshi and the staff of shindan support organizations. Tokyo SME University, its flagship campus, was founded in 1962 and eight more regional campuses were created in the 1980s and 90s. The SME University disseminates practical knowledge needed in actual business operations but does not confer academic degrees. Students must study a wide range of subjects instead of specializing in one or a few business areas. As mentioned above, all applicants seeking shindanshi certification must pass the primary exam, then choose to either take the secondary exam or study at the SME University. The six-month course at SME University is divided into two parts (Table 7.2). In the first part (Business Consulting I), students learn specific management subjects. In the second part (Business Consulting II), practical diagnostic and advisory skills on companywide issues are obtained.

Figure 7.1 Shindanshi exam and registration scheme



Source: J-SMECA.

Table 7.2 Curriculum for shindanshi training at Tokyo SME University

< Business Consulting I >

Theory	
Management strategy	To acquire diagnostic and advisory skills in drawing up management strategies and plans, and executing these strategies and plans.
Marketing and sales management	To acquire diagnostic and advisory skills in marketing and sales management, and realizing such strategies and plans.
Human resources management	To acquire skills for identifying problems pertaining to human resources management, together with diagnostic and advisory skills on solving them, in order to realize the business strategy.
Advice theory	To acquire diagnostic and advisory skills by participating in the corporate problem identifying and solving process, and earning trust from assisted companies, in order for them to achieve their organizational objectives and goals.
Finance and accounting	To acquire diagnostic and advisory skills with regard to corporate financial positions through analysis and assessment of current conditions of assisted companies, and evaluation of their future plans from a financial perspective.
Information technology	To acquire diagnostic and advisory skills centering on IT planning, by understanding key steps toward introduction of IT systems and adopting IT systems consistent with the management strategy.
Production management	To acquire the skills for identifying problems pertaining to production management, together with guidance and advisory skills for solving them in order to realize the management strategy.
Retail shop management	To acquire diagnostic and advisory skills with regard to retail shop and store management through an efficient floor and shelf layout in accordance with the management strategy.
Practice	
Manufacturing industry business consulting practice	To develop the ability for identifying management problems by comprehensively understanding the circumstances surrounding the operations of small and medium-sized manufacturers, and to acquire the skills for drawing up management improvement plans to solve these problems.
Trade and distribution business consulting practice	To develop the ability for identifying management problems by comprehensively understanding circumstances surrounding the operations of small and medium-sized traders and distributors, and to acquire the skills for drawing up management improvement plans to solve these problems.

< Business Consulting II >

Theory	
Integrated management	To acquire necessary perspective for solving companywide management problems in order to formulate corporate strategies. To develop comprehensive strategic thinking through discussion-centered training.
Integrated trade and distribution business	To conduct various business analyses of small and medium-sized traders and distributors for proposing overall business strategies, and to acquire diagnostic and advisory skills with regard to fully utilizing management resources and proposing implementation measures.
Integrated manufacturing industry	To conduct various business analyses of small and medium-sized manufacturers for proposing overall business strategies, and to acquire diagnostic and advisory skills with regard to fully utilizing management resources and proposing implementation measures.
Business start-ups and venture business	Support of business model building: to acquire diagnostic and advisory skills tailored to assisted companies through training centering on discussions on problems and success factors pertaining to the establishment of business models.
Management innovation	Development of advisory skills: to acquire comprehensive diagnostic and advisory skills by proposing support measures for a large number of actual cases brought to SME consultation organizations.
Corporate rehabilitation	To acquire diagnostic and advisory skills with regard to corporate rehabilitation through training centering on discussions on corporate rehabilitation laws and the design process of rehabilitation plans.
Business alliance	To propose strategies to corporations endeavoring to form business alliances across sectors and regions, and to acquire diagnostic and advisory skills with regard to fully utilizing management resources and proposing implementation measures.
Internationalization strategy	To acquire diagnostic and advisory skills with regard to full utilization of management resources through training centering on discussions on case studies in which corporations expanded into or withdrew from overseas markets.
Practice	
Management strategy and strategic plan design practice	To acquire skills for clarifying management strategies for SME operations, and formulating concrete and practical execution programs to realize strategic management.
Management strategy and strategic plan design practice II	
Seminar	
Seminars	To acquire practical skills through on-site, small-group theoretical training and practice, with the aim of deepening the knowledge and skills in areas of specialization of individual students.

Source: Business Support Department, SMRJ.

Business Clinic, a website managed by J-SMECA which boasts 9,000 shindanshi as members, provides matching service between J-SMECA member consultants and SMEs free of charge. Fees arising from individual consultation contracts must separately be agreed and settled by the two parties. Shindanshi usually work closely with financial institutions that consider lending to SMEs. The diagnosis and advice offered by shindanshi is extremely useful information for financial institutions to evaluate loan applications of SMEs. The Japan Finance Corporation (JFC), a large state-run financial institution with 152 branches nationwide, plays a vital role in providing loans to SMEs, micro enterprises, and individual proprietors. Shindanshi reports on the business plan and expected profitability of SMEs are an important consideration for JFC and other financial institutions in approving SME loans.

The Japanese shindan system is highly sophisticated and difficult to transfer in its entirety to other developing countries. Its features include (i) long history with constant evolution in response to changing social needs; (ii) adequate official involvement and support especially in early years; (iii) standardized training curriculum and state-authorized exams, registration, and renewal processes; (iv) existence of a wide variety of competent public and private support organizations including METI, SME Agency, SMRJ, SME University, JFC, and J-SMECA; and (v) diverse and effective activities performed by shindanshi as government officials, experts at firms and banks, individual consultants, consultant firm professionals, and JICA experts abroad.

There are developing countries that try to import a Japanese-style SME support system in a simplified or modified way for the purpose of strengthening domestic SMEs in general and supporting industries in particular. In ASEAN, all such policy efforts were assisted by Japanese official cooperation. Some countries succeeded in creating a system similar to shindan through trial-and-error, but others failed.

In 1999, JICA implemented a five-year program to introduce a shindan system in Thailand and produced about 450 Thai shindanshi. Since then, the Thai private sector and universities have taken over the role of providing various training programs for shindanshi. In Indonesia, Japan's industrial support program was initiated in 2003 which included an introduction of a shindan system. Consultants were trained, and a study was conducted for institutionalizing a training program and a state certification scheme, and responsible offices at local levels were also founded. The Indonesian Shindan System was inaugurated in 2006 and about 300 shindanshi were certified. However, the system evaporated due to the lack of political will and appropriate incentive. In Malaysia, as part of technical cooperation following the Japan-Malaysia Economic Partnership Agreement in 2005, Japanese experts conducted training courses for Malaysian officials for two-and-half years and produced 68 "SME counselors."

Similarly, when the Japan-Philippines Economic Partnership Agreement was signed in 2006, Japan agreed to help the Philippines to develop a shindan system and pilot projects were launched in five provinces.

In Viet Nam, no serious policy effort has been made to transplant the shindan system from Japan with appropriate simplification and adjustments. Shindanshi, or competent Vietnamese experts by any other name, who can diagnose and advice SMEs on broad issues are needed in large number to develop SMEs and supporting industries in Viet Nam. The Vietnamese government should formulate a concrete plan to educate, incentivize, and fully mobilize Vietnamese shindanshi as soon as possible.

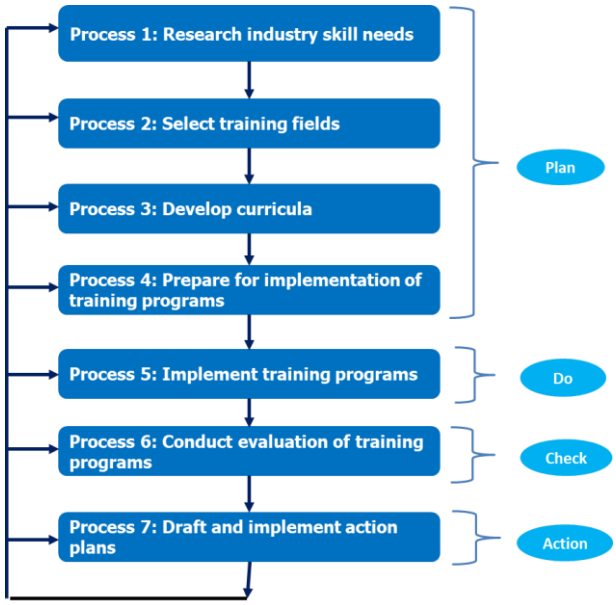
7.5 TVET-industry linkage[19]

Skilled workforce is produced not only by internal training of firms but also by education and training institutions. Universities, colleges, and the Technical and Vocational Education and Training (TVET) institutions can develop strong linkage with targeted industries, first by keeping abreast with the current and future skill demand of firms and updating curricula accordingly, and second by assisting their students to obtain jobs where they can fully utilize acquired skills and earn adequate income. Japan has an education system to do these things. Public polytechnic universities, colleges, and centers under the Ministry of Health, Labor and Welfare have systems of training process management and employment support that can effectively incorporate skill needs of the industry into their training programs and ensure appropriate job placement of their students. More specifically, Japanese polytechnic universities provide four-year bachelor courses, two-year master courses, and various short-term courses to train TVET instructors. Japanese polytechnic colleges provide two-year diploma courses for high school graduates to produce competent technicians and engineers. Polytechnic centers provide a wide range of short-term courses for job seekers (Ministry of Health Labor and Welfare, 2018). In Section 7.6, *kosen*, a five-year technical education program under the Ministry of Education, Culture, Sports, Science and Technology, will be separately discussed.

Training process management, featuring the PDCA (Plan, Do, Check, Action) cycle, enables TVET institutions to understand and analyze industry skill needs in seven steps: (i) research of industry skill needs; (ii) selection of training fields; (iii) curriculum development; (iv) preparation for training program implementation; (v) implementation; (vi) evaluation; and (vii) formulation and implementation of action plans (Figure 7.2).

[19] This section is based on JICA (2014) and Mori et al. (2013).

Figure 7.2 Training process management

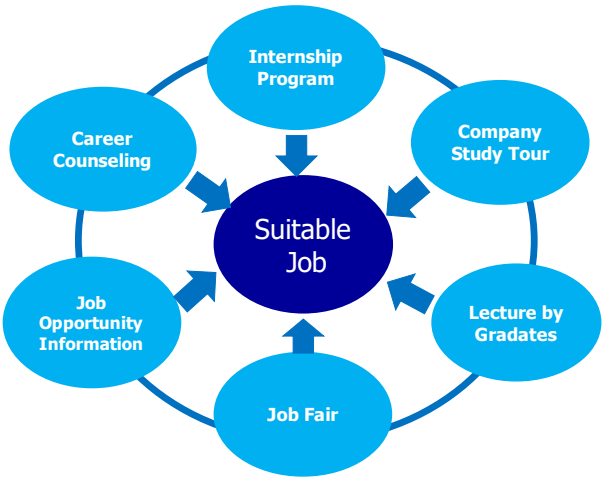


Source: Inagawa (2013) and Mori et al. (2013).

Execution of this cycle requires direct and constant interaction with industry. By visiting firms that have employed their graduates or firms that may recruit their students in the future, TVET institutions can collect information on current and future skill needs to design optimal curricula. This also generates mutual trust between two parties, which makes employers more willing to provide information. Furthermore, proactive approaches by TVET institutions encourage firms to think ahead and anticipate future or latent skill needs. Finally, feedback from employers on the institute's courses and graduates is a valuable input to the evaluation of training courses and the development of action plans.

Close contact with industry is essential also in developing an effective employment support system. Students are provided with information on business trends as well as specific firms and skill needs. Meanwhile, recruiting firms are able to identify appropriate candidates. Components of this system are (i) internship; (ii) company study tours; (iii) lectures by TVET graduates; (iv) job fairs; (v) collection and circulation of job opportunity information; and (vi) career counseling (Figure 7.3). All of these activities must be conducted in an integrated and complementary way because implementing just one or a few of them is not effective. Internship is very useful to students in enhancing their practical skills and working attitudes as well as learning about firms. Company study tours and lectures by TVET graduates provide students with valuable information in choosing firms for internship or job application. Lectures by TVET

Figure 7.3 Employment support system



Source: Mori et al. (2013).

graduates are often organized at job fairs, where TVET institutions can also collect job opportunity information which is essential for conducting effective career counseling for students. With information obtained from these various activities, lecturers can guide students to select most suitable firms for internship or recruitment.

The employment support system additionally informs TVET institutions about students' interests in skills learning and future careers. By comparing students' interests and industry needs, TVET institutions must come up with realistic organizational strategies. In reality, students' interests often do not match employers' skill expectations, partly because students lack sufficient information but also because students look to long-term career development while firms focus on immediate needs to fill vacancies or carry out a short-term business plan. Training programs must balance these two needs.

In Viet Nam, a pilot project was conducted at the Hanoi University of Industry (HaUI), which runs both higher education and TVET courses, with the technical assistance of JICA. HaUI installed the two critical systems of training process management and employment support, and successfully strengthened relations with hiring firms. From 2010 to 2013, HaUI lecturers and staff visited a total of 233 enterprises to find out employers' skill needs. Firms in Viet Nam are often reluctant to receive visitors from TVET institutions, not so much because of their insufficient technical knowledge but mostly because of their unprofessional behavior. Firms complain that the purpose of visit is unclear, that appointment request is made at a very short notice, and that TVET people sometimes arrive in inappropriate attire. With JICA support, HaUI lecturers and staff learned the proper way to contact firms and convince them of benefits of

meeting them. HaUI also invited firms to visit the campus, which helped to develop mutual understanding. HaUI lecturers learned much from on-site advice by company experts, while employers could better understand HaUI's training programs and facilities. During the JICA's project period, two-way visits between HaUI and industry gradually developed, with a total of 175 enterprises coming to observe the HaUI campus.

HaUI used information from firms to create new courses or improve existing ones. The PDCA cycle of training process management enabled it to design a short-term course on machinery maintenance. New curriculum and training materials were developed through discussions with the focused company group. In 2012, HaUI organized four rounds of courses in mechanical maintenance and electric system maintenance which attracted 76 external participants from 17 firms, both Japanese and Vietnamese. After these courses, an evaluation survey was conducted and action plans to improve the courses were drafted. Besides this, HaUI developed a new short-term course in quality control, and improved existing courses in mechanical drawing, programmable logic control, and micro controllers.

With JICA technical assistance, HaUI also improved its employment support system. The Vietnam-Japan Center (VJC) within HaUI developed an internship program which combined classroom lectures with structured on-the-job training in partnership with several Japanese mold and die manufacturers. VJC selected students and provided them with prior briefing, and closely monitored their internship performance in cooperation with receiving firms.

Additionally, HaUI overhauled its company study tour program which now runs as follows: (i) a proposal clearly stating objectives and expected outputs with information from hosting enterprises; (ii) a briefing for students on the firm profile, instruction for dress code, expected behavior, and study points; (iii) obligation for each student to ask at least one question following the tour; (iv) a follow-up workshop where students summarize their findings through group work and presentation; (v) a report submitted by each student; and (vi) sharing of the collective report with the enterprise. After this program was introduced, many firms became willing to host a comprehensive student tour which included company overview, factory visit, and Q&A session with the participation of company management and HaUI graduates. During the JICA project period of 2010-2013, HaUI managed to organize 17 study tours in which a total of 273 students and 82 lecturers participated.

To maintain strong linkage with industry, the organizational and operational mechanism of TVET institutions must also be renovated. In 2014, HaUI established the Center for Enterprise Partnership and Vocational Skill Assessment to assist all faculties and centers of the university to continue to identify and develop partnership with firms and organize various employment

support activities even after JICA left.

Support by provincial governments is also important. Considering regional diversity in industrial structure and skill needs, local initiative may produce better outcome than top-down central instruction. In Japan, for example, the Monozukuri Business Center Osaka (MOBIO) promotes partnership between manufacturing SMEs and TVET and higher education institutions in a way most suitable for the Osaka region (MOBIO, 2018). In Viet Nam, the Dong Nai Industrial Zone Authority (DIZA) hosts a consortium of Lac Hong University, Dong Nai Vocational College of High Technology, and Japanese component suppliers to improve courses on 5S and occupational health and safety with technical assistance from JICA, METI, and various organizations from Osaka Prefecture (also see next section).

7.6 Kosen (technical and vocational schools)

Koto Senmon Gakko (kosen) is a technical and vocational higher education system in Japan, at the level of college, which was approved and legalized in 1961. It aims to produce practical and creative engineers in industrial and technology sectors. It offers a five-year program to post-middle school students aged 15 to 19, combining general education and specialized courses with the latter's weight increasing as curriculum progresses[20]. TVET-industry linkage formation (Section 7.5 above) is one of the core functions of kosen. At present, Japan has 57 kosen, of which 51 are state-run, three are operated by local governments, and the remaining three are private. All prefectures in Japan (there are 47 of them) have at least one kosen or kosen-equivalent (some kosen have been converted to universities). In kosen education, theory and practice are integrated. Moreover, kosen not only teaches theories and technical skills but also inculcates proper mindset, creativity, problem-solving attitude, and communication skills. Factory visits, firm internship, and graduation studies are essential ingredients of kosen education. Roughly 10,000 students enter and graduate from kosen each year with a total student body of about 50,000 at any time. About 500 of them are foreign students.

JICA implemented a pilot project to introduce kosen to Viet Nam from 2013 to 2018, not as a formal education system but as a practical model that could be applied to any existing universities, colleges, and TVET centers. The project was first implemented at the Industrial University of Ho Chi Minh City (IUH) and later rolled out to three other institutions (see below). Because kosen was a new concept in Viet Nam and also because initial conditions in Viet Nam

[20] General education covers math, physics, chemistry, Japanese, English, geography, politics and economics, history, art and music, and gymnastics. Specialized courses include mechanical engineering, materials, electrical and electronics, IT, bio-chemistry, construction, architecture, commercial navigation, and others, from which each student chooses one.

were quite different from Japan, the Japanese kosen model had to be adjusted to fit the reality of Viet Nam without losing the main thrusts of kosen education.

Specifically, the kosen model in Viet Nam established through the JICA project consists of five essential components, namely, (i) technical education in knowledge and skill, (ii) teaching proper attitude and mindset, (iii) creativity (just doing what is told is not acceptable), (iv) comprehensive assistance in students' job search and placement, and (v) the college's own capacity building to offer these services[21]. Vietnamese Kosen is defined as any education system that satisfies all of these components. They are regularly practiced by all kosen in Japan. In Viet Nam, technical colleges teach knowledge and skills (component (i)), but do not offer components (ii) to (v). These must be added for Vietnamese technical colleges to become kosen.

Proper mindset such as 5S and kaizen philosophy must be taught explicitly in Viet Nam. Students must be encouraged to identify problems and work on solutions themselves rather than passively waiting for a teacher's instruction. The college must actively contact firms for curriculum setting, arranging factory visits and internship, receiving job opening information, and requesting student interviews with firms. Based on industry needs, the college must improve its programs, staff, and organization so that graduating students are equipped with skills truly demanded by industry. These are the missing elements in Viet Nam's current education system that must be newly supplied.

Japanese firms at home and abroad teach firm-specific knowledge and skills to new employees through on-the-job training after they are recruited. Therefore, they do not want universities and colleges to teach specific technical skills, but need students with proper attitude, basic knowledge, and communication skills. Because Vietnamese universities and colleges teach specialized theories and techniques but not such basics, there is a mismatch between what Japanese FDI wants and what technical institutions in Viet Nam teach. Introduction of kosen is one way to fill this gap.

In Japan, kosen is a legally defined system based on law. In Viet Nam, kosen is a concept which can be adopted at different levels of education including universities, colleges, and TVET centers, provided that the five kosen components noted above are ensured. We do not advise creating a new and separate legal school entity in Viet Nam. Instead, Viet Nam should view kosen as a functional model to be adopted by any educational institute regardless of its legal status. As long as the five components are properly executed, Viet Nam can achieve the same positive effects in practical and creative engineering education as Japanese kosen.

[21] The JICA project also produced a long list of sub-items and concrete actions that need to be implemented in Viet Nam under each of these five components.

The JICA project at IUH was successfully concluded and highly evaluated. From 2015, its results began to be rolled out to other institutions, to Cao Thang Technical College (Ho Chi Minh City), Hue Industrial College (Thua Thien-Hue) and Phuc Yen College of Industry (Vinh Phuc, now renamed to the College of Industry and Trade). These three colleges, all under the Ministry of Industry and Trade (MOIT), are enthusiastic about introducing kosen and exchanging information with one another. One teacher each from Cao Thang and Phuc Yen was dispatched to Ube Kosen and Tokuyama Kosen, respectively, in Japan for further learning and establishing relationship with Japanese kosen for future cooperation.

The JICA project is over but Kosen Kiko (meaning Kosen Organization but its official English name is the National Institute of Technology), a summit organization for Japanese kosen, currently assists Viet Nam, Thailand, and Mongolia. In Viet Nam, Kosen support directly follows up on the finished JICA assistance. It supports the three JICA-assisted schools, namely, College of Industry and Trade (Vinh Phuc, partnered with Hakodate Kosen), Hue Industrial College (partnered with Tsuruoka and Gifu Kosen), and Cao Thang Technical College (HCMC, partnered with Ariake Kosen) to create Model Core Curriculum in one chosen course at each school. Ube Kosen supervises and supports all activities.

Due to the recent administrative reform of the Vietnamese government, responsibility for kosen was transferred from MOIT to the Ministry of Labor, Invalid and Social Affairs (MOLISA). It is essential for Viet Nam to establish a national policy and mechanism for disseminating the Vietnamese kosen model to technical training institutions all over Viet Nam at all levels, with necessary adjustments to each local context. MOLISA and MOIT need to cooperate effectively to realize this objective. One serious issue that needs to be coped with is a general decline of interest among young Vietnamese people in technical college education[22]. This trend must be reversed if Viet Nam is to achieve manufacturing excellence.

Another bilateral TVET cooperation worthy of mention is found in Dong Nai, in a project conducted by the Pacific Resource Exchange Center (PREX), an Osaka NPO that trains middle managers in developing countries. From 2014 to 2017, with the funding of JICA and later by METI and the Association for Overseas Technical Cooperation and Sustainable Partnerships (AOTS), the project installed new courses on 3S and workplace safety (Section 7.2) at Lac Hong University and Dong Nai Vocational College of High Technology (formerly Long Thanh-Nhon

[22] In Northern Viet Nam, around 2015, the number of young people applying to technical colleges declined suddenly and significantly. This was due to an acute labor shortage and the desire by factories to hire as many new workers as possible. High school graduates decided to go to work immediately to make money instead of going to college to acquire technical skills. This does not bode well for Viet Nam's future.

Trach Vocational College) with the guidance of industrial experts from the Kansai area of Japan. Detailed curriculums and textbooks suitable for Viet Nam were produced by Vietnamese lecturers, which were not mere translation of Japanese manuals[23]. Japanese firms and experts were impressed with the originally created Vietnamese teaching materials. With an upgraded program, the two model schools began to approach Japanese firms in Viet Nam and send their graduating students to them. Some Japanese firms in Viet Nam also want to send their employees to these schools for training. In the second phase, from 2018 to 2020, PREX and DIZA plan to establish the Dong Nai Monozukuri Core Human Resources Development Instructor Training Academy (DoMOTA), a school for Vietnamese teachers at the model schools to teach other teachers. This is to expand the good results obtained in the two model schools to other schools. An excellent program such as this, which promotes linkage between FDI firms and Vietnamese students, should be rolled out not just in Dong Nai but to the entire country.

7.7 Mobilization of technical interns dispatched to Japan (gino jisshusei)

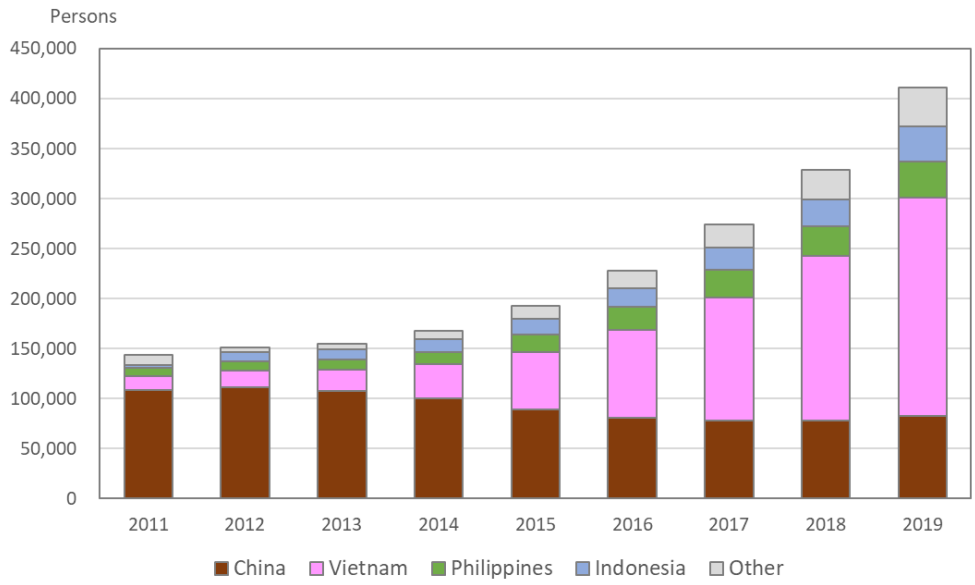
Gino jisshusei (technical internship) is a system of inviting young foreign workers, mainly from Asia, to Japan to work at Japanese firms and learn suitable mindset and skills through on-the-job training before returning to their homeland. Acceptance of foreign trainees into Japan began in the 1960s and the program was legalized in the 1980s under the Immigration Control and Refugee Recognition Act. In 1991, the Japan International Training Cooperation Organization (JITCO) was created to provide support to stakeholders as well as monitor their performance. In 1997, the staying period of three years was stipulated for technical interns. As of 2020, sectors designated for technical internship include agriculture, fishery, construction, food processing, garment production, mechanical and metal processing, and others (which include many supporting industries). When properly managed, this program greatly enhances the technical capacity of young workers of each sending country. On the Japanese side, this program provides relatively cheap temporary labor to SMEs that face an acute shortage of manufacturing labor. Many positive cases are reported in which Japanese SME general managers are so impressed with the working attitude and skill learning of technical interns that they decide to hire them permanently or invest in their homeland by appointing former technical interns as production managers. But this system also generates problems as explained below.

The gino jisshusei system is particularly important for Japan and Viet Nam because the number of Vietnamese technical interns in Japan is rising sharply in recent years, from 13,789

[23] In Japan, 3S and safety are widely taught to TVET students and new factory recruits, but they are so common and obvious they require no textbooks. Dong Nai lecturers have created such textbooks to teach Vietnamese students.

persons in 2011 to 218,727 persons in 2019 (information provided by JITCO). Viet Nam has overtaken China as the top sending country to Japan (Figure 7.4). In the departure lounge of Noi

Figure 7.4 Gino Jisshusei (technical interns) in Japan



Source: Japan International Training Cooperation Organization.

Bai Airport, one can often spot new Vietnamese technical interns bound for Japan wearing the same uniform.

The increasing number of Vietnamese technical interns in Japan poses a great opportunity for deepening human ties and industrial cooperation between the two countries. For Japanese SMEs, Viet Nam is the most popular country for hiring foreign workers as well as for investing abroad. Japanese firms that receive Vietnamese technical interns are generally satisfied with their quality, attitude, and perseverance. A plant equipment manufacturing and installation company in Amagasaki (Hyogo Prefecture) built a new factory in Dong Nai in 2010 because Vietnamese workers it hired were excellent. Another precision metal working company in Higashiosaka (Osaka Prefecture) invested in Ho Chi Minh City in 2017 after receiving Vietnamese technical interns who turned out to be very skillful and diligent. The technical intern system not only supplies temporary labor for three years in Japan but also facilitates Japanese SMEs to invest in Viet Nam.

According to the JICA survey conducted by the Viet Nam Institute for Economic and Policy Research (VEPR), the average profile of Vietnamese technical interns in Japan is as follows (JICA, 2017a). They are from countryside and recruited by brokers or word-of-mouth.

They must study Japanese language and culture for six months before going to Japan (the quality of such courses varies greatly depending on the sending company). Dispatching organizations in Viet Nam and supervisory organizations in Japan take care of them. On average, a technical intern pays $5,300 to a broker and/or dispatching organization in Viet Nam and carries debt of $4,700 upon arrival in Japan. He or she earns $44,500 over three years (if successful) and brings home $23,000 after deducting living cost and debt repayment. Vietnamese technical interns feel the initial cost is too high, but they do not know Japanese firms also incur high cost to hire them.

However, this system also has problems. First, Vietnamese workers wanting to go to Japan as technical intern do not have sufficient or accurate information which leads to the choice of wrong brokers and misunderstanding of rules, costs, and risks. Second, there are low-quality intermediary organizations on both sides, in Viet Nam and Japan, that exploit workers without adequate training or support. Third, some Japanese firms—even large ones—regard technical interns as just temporary cheap labor and do not train them or assign workers to meaningful tasks, and sometimes even mistreat or underpay them. Fourth, faced with such problems, some technical interns suffer from a mental problem under pressure, disappear from the workplace, or commit crime in Japan. These have become one of the largest bilateral problems between Viet Nam and Japan.

In response, the two governments have started to correct the situation. Main responsible organizations are JITCO on the Japanese side and the Department of Overseas Labor (DOLAB) under MOLISA on the Vietnamese side. A ranking system of Vietnamese sending companies has been introduced by the Vietnamese Association of Manpower Supply (VAMAS), and best sending companies are officially recognized and promoted (see below). Guiding and monitoring of Japanese firms and Japanese receiving organizations has been strengthened under the new Gino Jisshu Act of 2017. The impact of these policies will decide whether this system will continue to receive popular support in both countries.

The Japanese government under Prime Minister Abe has another agenda regarding this system. Faced with severe and structural labor shortage, the Japanese government has decided to rapidly expand the scope, sectors, and duration of gino jisshusei and also to introduce a new labor importing mechanism. The Immigration Control Act was revised in December 2018 and enacted in April 2019. The staying period of gino jisshusei was extended from three to five years, new eligible sectors such as old age care, shipbuilding, and hostelry were added, and skilled foreign workers are now granted a longer stay in Japan under certain conditions. This new policy may partially solve the problem of labor shortage in Japan even though its hasty introduction is causing delay and confusion even after one year. Meanwhile, its consequence on Viet Nam is

uncertain because more Vietnamese workers may remain in Japan rather than coming back to Viet Nam. The rights, living conditions, and social and health insurance for foreign workers and their families must also be secured before inviting them under the new rule.

The COVIT pandemic of 2020, which affected virtually all activities of the world, was particularly disruptive to the gino jisshusei program as travel between the two countries was suspended, Japanese host firms faced collapsing demand and financial difficulty, and Vietnamese workers were stuck in Japan without training or financial support. Workers who came to Japan for realizing their dreams are now confronted with enormous uncertainty and hardship. This problem must be overcome before the program can resume its essential functions.

For Viet Nam's industrialization, the most serious issue regarding gino jisshusei is the lack of proper mindset and job opportunities of trained Vietnamese workers after they return to Viet Nam. Many workers regard going to Japan merely as a chance to earn money and do not think deeply about using acquired skills for their future career or national development. After returning, they often go back to the village or take up jobs unrelated to learned skills which is a great loss to the country. This is partly a mindset problem of the workers and partly due to insufficient information and matching service for linking these workers to suitable jobs at Japanese FDI firms and other workplaces in Viet Nam. To make the best of the gino jisshusei system, the two governments should not only cope with the problem of improper brokers and host firms in the short run, but also promote effective utilization of returnees for Viet Nam's industrialization in the medium to long run.

One of the things that can be done for this purpose is to strongly support excellent sending companies in Viet Nam while eliminating low-quality brokers, and supply information on the quality and ranking of various sending companies to all workers considering going to Japan. This is already started by VAMAS. Two labor sending companies below have been recognized as excellent and variously supported by the Japanese embassy and JICA.

Esuhai Company in Ho Chi Minh City is founded by Mr. Lê Long Sơn who studied engineering in Japan. Based on his strong belief, he trains gino jisshusei applicants with great discipline before dispatching them to Japan. They are taught on manners, attitudes, Japanese thinking, 5S, and Japanese language. They are carefully monitored during and after their stay in Japan. Workers are encouraged to use acquired skills for future. Esuhai also does matching between returning workers and Japanese FDI in Viet Nam.

Hai Phong JSC, a Hanoi labor exporting firm, was established by Mr. Nguyễn Xuân Tuyến who was himself a gino jisshusei in Shizuoka Prefecture. Like Esuhai, his company teaches attitudes, 5S, skills, and Japanese language. Hard physical exercise, military style

discipline, and declaration of purpose in front of many people before going to Japan are part of the pre-dispatch training. Hai Phong's "Dong Du Moi" (New Eastern Study) program encourages technical interns to go to Japan not for quick money but for realizing a great life dream. Strong will, long-term thinking, skill development, and business startup support after returning to Viet Nam are emphasized. Both Esuhai and Hai Phong cooperate with MOLISA to improve Viet Nam's labor exporting policy.

7.8 Kosetsushi (technical support centers)

Kosetsushi is short for *Kosetsu Shiken Kenkyu Kikan* (Public Testing and Research Organizations) which are technical support centers for SMEs and venture companies, operated or supervised by local governments. It performs testing, research, training, technological support, and advice for enterprises based in each targeted prefecture or city. Historically, there were different types of kosetsushi such as industrial centers, handicraft centers, agricultural centers, dairy farming centers, fishery centers, and forestry centers. There are different organizational forms and backgrounds. Many kosetsushi date back to a century ago or more. Some were originally established by central or local governments and were later transferred to NPOs or the private sector, while others were set up by various NPOs under the supervision and support by local governments. Because Japan is a manufacturing country, most kosetsushi targets the manufacturing sector. Under recent administrative reform in Japan, some centers were integrated, and some became more independent from governments.

There is at least one industrial kosetsushi in each prefecture (Japan consists of 47 prefectures), and some prefectures have two or three industrial kosetsushi. In addition, some large cities also operate industrial kosetsushi. Besides these, a large number of specialized kosetsushi have been set up by industrial and business NPOs all over Japan. This is counting industrial kosetsushi only. There are also agricultural, fishery, and other kosetsushi.

Kosetsushi provides services in response to demands of the private sector. Local governments usually subsidize kosetsushi operation, and SMEs are charged low fees for most services. Some services, such as initial consultation, are free of charge. Some kosetsushi can self-finance the purchase of latest equipment but others face financial constraints as collected fees are not enough to upgrade machines. At most kosetsushi, technical staff are highly competent but receive the salary based on the local government pay schedule. They are happy to help enterprises in their hometowns with relatively low salaries. Because demand for technical support by SMEs is high and the number of technical staff at kosetsushi is limited, kosetsushi

technical staff are usually very busy in providing various services daily[24].

Kosetsushi provides technical service to SMEs which plan to develop new products, must submit technical certificates to customers, need special treatment for certain components, or want to investigate the cause of product failure, but cannot afford expensive equipment for just one or a few uses. At kosetsushi, they can rent equipment and technical expertise of the staff cheaply. Available services differ from kosetsushi to kosetsushi but normally include the following.

(i) Commissioned or joint research—commissioned research is done by kosetsushi at the request of an SME for technical innovation, trouble-shooting, or commercialization of new technology. Joint research is done by kosetsushi and an SME together.

(ii) Testing and analysis—various tests, analyses, measurements, and special treatment of materials and components are performed in response to SMEs' requests, and test results are certified in official documents.

(iii) Use of machinery and equipment—SMEs can rent machinery and equipment at kosetsushi for product development or overcoming technical difficulties. Each kosetsushi publicizes available equipment in the website. Libraries are also open to SME users for reviewing Japanese Industrial Standards (JIS), past research results, and results in other prefectures.

(iv) Technical consultation and advice—SMEs can consult with kosetsushi experts regarding any technical problem in products, production process, or product development.

(v) Technical training and seminars—in order to enhance the capability of engineers engaged in R&D at SMEs, training and seminars are offered using kosetsushi's classrooms and equipment. Details of programs can be viewed in the website.

(vi) Dissemination of technological information—seminars on latest technology and information useful for overcoming technical problems or developing new products are offered at technology workshops. Some kosetsushi send e-newsletters to interested SMEs.

Kosetsushi specializes in technical support only and does not offer consultation in

[24] As of June 2018, the Saitama Industrial Technology Center (SAITEC), one of the two kosetsushi in Saitama Prefecture (population 7.3 million), had 100 technical experts whose legal status was regular prefectural officials. Annually, they execute 48,500 requested events (consultations, tests, projects, equipment uses, etc.) plus ten SAITEC-initiated R&D projects and 30 externally commissioned projects. At the Technical Support Center of Higashiosaka City, which is a smaller center at the municipal level (population 240,000), five senior technical staff execute about 4,000 requested technical events per year (no R&D is conducted due to small budget). These five technical staffs are all retired industrial officials from the Osaka Research Institute of Industrial Science and Technology (ORIST), a prefecture (higher) level kosetsushi.

management, marketing, accounting, taxes, finance, labor relations, or other non-technical aspects of enterprises.

Technical centers similar to kosetsushi are also found in other countries. Taiwan has 19 official research institutes including the Industrial Technology Research Institute, the Institute for Information Industry, and sectoral institutes for metal, automobile, bicycle, precision machinery, etc. whose role is to help firms innovate and/or commercialize innovations through both official and privately commissioned projects. Thailand has about ten specialized institutes in textile, food processing, automobile, electronics, sugar, steel as well as in SME development, technical training, and management certification. Among these, the Thai-German Institute has a large number of modern equipment for training and processing; the Thailand Automotive Institute works on policy formulation, supporting industries, standards, certification, and training; and the Electrical and Electronics Institute offer product testing, measurement equipment calibration, and factory quality inspection. In Africa, the Kenya Industrial Research and Development Institute (KIRDI) has supported SMEs since 1914 with currently over 100 technical staff at the Nairobi headquarters, the Kisumu regional office, and many satellite offices across Kenya. It supports food, leather, textile, bio-fuels, cosmetics, and other natural material-based production. KIRDI offers customized testing, training, product development, and production services for a subsidized fee. It is very popular with SMEs. KIRDI targets to support 500 firms per year.

All of these institutes in Taiwan, Thailand, and Kenya are national centers serving the entire nation, not centers under local governments as in the case of Japanese kosetsushi.

In Viet Nam at present, there is no technical support center that offers open, broad, and competent services to SMEs at reasonable cost in each province or even at the national level. Some specialized analyses and treatment are unavailable in Viet Nam and have to be conducted abroad. Manufacturing firms, universities, and research institutions may have standard production equipment such as lathe, machining, computerized numerical control (CNC), pressing and stamping, casting, forging, heat treatment, etc. as well as some basic testing devices, but few have a large collection of highly specialized testing and analyzing equipment in one place[25].

To establish a network of kosetsushi in all provinces and major cities in Viet Nam will be very costly and take much time. Moreover, unlike Japan, the pool of competent Vietnamese

[25] At SAITEC, in Saitama Prefecture, Japan, more than 120 types of analysis are available with specialized equipment in general analysis, material testing, precision measurement, non-destructive testing, vibration, microbe, preparation, and so forth.

technical experts who are willing to work at low salaries in any province is very small. Good engineers often prefer to work for top companies in or around Hanoi or Ho Chi Minh City, or migrate abroad for high salary. Given this reality, technical support centers in Viet Nam should first be established in Hanoi and Ho Chi Minh City, to be expanded to other areas as more human and financial resources become available. Even though the initial line-up of testing equipment may be limited, these two centers should complement and cooperate with each other, and they should also make arrangements with private firms, universities, and research institutes that have special equipment which can be made available to SMEs. MOIT has been studying the possibility of introducing kosetsushi in Viet Nam with Korean support as well as by sending study missions to a number of kosetsushi in Japan.

7.9 FDI-domestic firm linkage

In Japan, creation of business linkage between FDI and Japanese firms has never been an issue because Japan did not actively invite FDI at any time in its history. Japanese industrialization was achieved by domestic firms with little FDI linkage or support. Outside Japan, on the other hand, this linkage is critical for Japanese manufacturing FDI, especially in Southeast Asia. Japanese firms generally seek long-term trust and relationship with reliable local partners, so the choice of the right local partner is very important. Moreover, international competitiveness requires component procurement in the host country with high quality, low cost, and quick delivery (the QCD requirement) instead of importing them with long lead-time and added transport (and tariff) cost. For survival and competitiveness, Japanese manufacturing firms seriously look for competent local component suppliers. If local suppliers are not strong enough, Japanese firms often coach them until they become more effective (see Section 7.10 for supporting industry promotion).

For these reasons, Japanese firms have an incentive to find and foster competent local suppliers for their own benefit, and many local suppliers also want to work with Japanese firms for upgrading technology and joining global value chains. However, in a world with imperfect information, finding the right partner is not easy on either side, requiring much time, energy, and cost as well as many trials and failures. Because effective industrial linkage is important but difficult to realize, government is justified to intervene and facilitate matching activities.

There are two types of FDI-local firm matching. The first is procurement of materials and components between two independent firms (a buyer and a supplier). The second is finding an appropriate long-term business partner for joint venture, production cooperation, or long-term contract that go beyond simple component procurement. Needless to say, the second matching

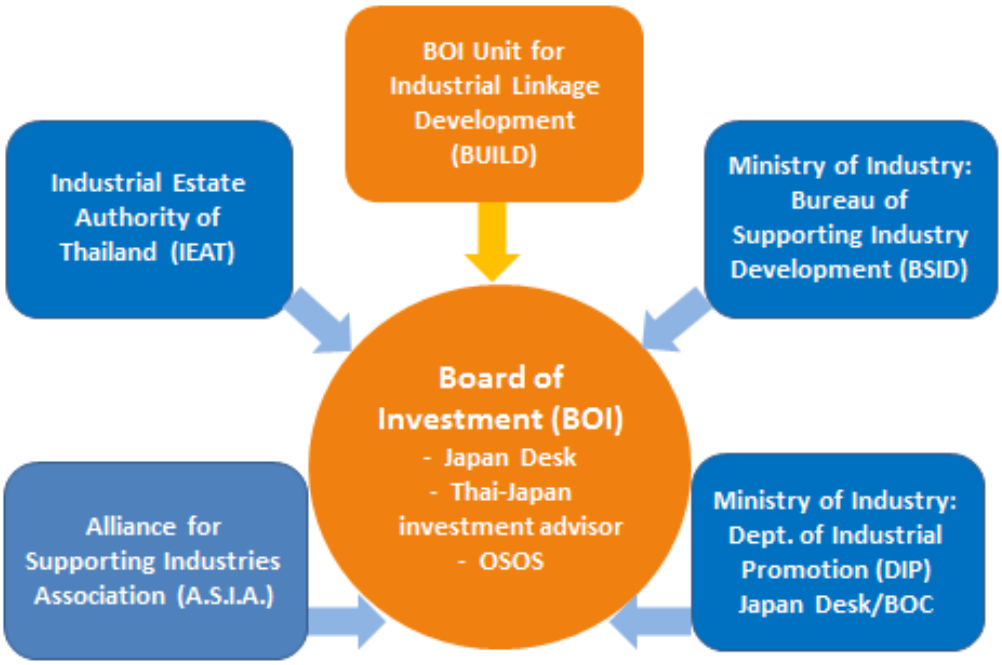
is deeper, more difficult, and more time-consuming than the first.

Government can promote matching in three ways. First, it can guide (or require) FDI firms to find, support, and transfer technology to local partners as a condition for granting an investment license or an incentive. Second, it can run official matching services through trade fairs, reverse trade fairs, matching events and seminars, maintenance of a supplier database, responding to individual inquiries, and so on. Third, it can subsidize, reduce tax, or otherwise incentivize FDI firms that train and work substantively with local firms. The first method is sometimes used, for example in China[26] and past Malaysia (see below), but forcing foreign firms to work with local firms (especially when the latter's capacity is low) generates discontent and refusal from FDI, and usually fails. Thus, official matching should be done in the second (direct support) or third (indirect support) way so linkage occurs willingly rather than coercively.

Among ASEAN members, Thailand offers the most advanced (though not perfect) form of official linkage promotion. Figure 7.5 illustrates the policy network for linking Thai and Japanese firms. The Board of Investment (BOI, an investment agency under the Prime Minister) and the Ministry of Industry (MOI) are the key official actors. They flexibly coordinate activities of their affiliated agencies as well as private bodies such as the Alliance for Supporting Industries Association (A.S.I.A.) which is an umbrella organization for 12 Thai industrial associations. This network is a loose one without formal instruction or explicit rules. Each member organization performs its tasks separately, and refers client companies to other organizations for services not rendered by itself. Personal relations among officials and experts at various organizations ensure the quality and speed of collective services. Loose working style such as this is universally observed in the Thai government, not just linkage promotion.

[26] China has been able to force FDI to transfer technology because foreign investors often accept undesirable conditions for the privilege of entering China's huge market. This advantage is unique to China, and a country with an "average" market size, including Viet Nam, cannot avail itself of this bargaining strategy. The US government severely criticizes this Chinese practice, which has become a principle cause of the US-China trade war.

Figure 7.5 Thailand: network for linking Thai and Japanese firms



Source: Thai BOI slide presented in May 2013.
Note: this policy network was created when BOI was placed under MOI at the time of Prime Minister Yingluck Shinawatra.

Within BOI, the BOI Unit for Industrial Linkage Development (BUILD) specializes in matching between FDI and Thai firms. This unit, created in 1992, provides one stop service for FDI firms with local procuring needs or in search of local partners. Main activities of BUILD are as follows.

(i) Sourcing service—BUILD provides free service to help both Thai and foreign buyers locate parts and components in Thailand. When an inquiry is received from a buyer, BUILD announces required product specification and volume in its website and solicits application from Thai suppliers. One-on-one meetings can also be arranged. Inquiries from buyers are received via email and phone as well as through other Thai bodies working with foreign buyers including BOI's Tokyo and Osaka offices.

(ii) SUBCON Thailand—this is a large regional subcontracting exhibition for industrial components and business matchmaking. It is organized in Bangkok jointly by BOI, the Thai Subcontracting Promoting Association, and UBM Asia (trade fair organizing firm) in May every year around the same time as Intermach, a large machinery exhibition.

(iii) ASEAN Supporting Industry Database—this is an e-service that lists manufacturers of parts and components in the ASEAN member countries on the internet for global access. BUILD is responsible for maintaining this regional database in Thailand which has the largest entries among ASEAN members. Information includes company profile, investment profile, employment, customers, products, capacity, processes, raw materials, and available machinery and equipment.

(iv) Vendors-Meet-Customers Roadshow—this program assists Thai part suppliers to participate in overseas trade fairs for widening their vision, knowledge, and linkage.

BUILD has one director and about ten staff members, with each staff assuming responsibility for supporting assigned buyers. According to the BUILD director, business matching is not an easy task, and partner search is more difficult than finding local inputs. It sometimes takes more than a year to locate suitable partner candidates. BUILD arranges many types of bilateral business partnership including joint venture, OEM, patent use, and production contract. BUILD does not have precise information on the number of procurement inquiries received or successful cases among them. However, about half of the FDI firms that make inquiries subsequently send a thank-you email and report the progress to BUILD.

In Malaysia, the Vendor Development Program (VDP), started in 1988, designated Proton, a state-owned national car company, to be an "anchor firm" which was obliged to purchase as many components as possible from local (Bumiputra) suppliers, offer technical assistance, and introduce government loans to them. By 2002, anchor firms were expanded in number to 85 firms including Malaysian, Japanese, and American companies, and 296 vendors (local suppliers) were registered. However, foreign assemblers were not enthusiastic about being required to buy from local vendors which lacked sufficient technology. Their participation was forced by the request of the Malaysian government rather than voluntary. VDP was partially successful in the automotive sector (thanks to the existence of Proton and Produa, another state-owned car maker) but much less successful in the electronics sector where FDI firms dominated. FDI firms do not like forced localization effort.

Malaysia renewed the policy by introducing the Industrial Linkage Program (ILP) in 1995, which was a policy instrument to carry out the Second Industrial Master Plan 1996-2005 with the establishment of the Small and Medium Industries Development Corporation (SMIDEC, now renamed to SME Corp. Malaysia). SMIDEC provided (i) "pioneer status" (standard investment incentive in Malaysia) with five-year corporate income tax exemption or 60% investment tax allowance, (ii) subsidies for eligible anchor firms, (iii) business matching using

the National SME Database, the SMEinfo Portal, and the SME Competitiveness Rating for Enhancement (SCORE), and (iv) a support package consisting of factory site provision, R&D, technology upgrading, and export market development. Firms eligible for ILP were expanded to non-Bumiputra SMEs so long as their Malay capital was 60% or greater. However, Malaysia subsequently abandoned linkage promotion and began to support value-creating Malaysian SMEs which were independent from FDI or large domestic firms.

In Viet Nam, annually in Hanoi or Ho Chi Minh City, various trade fairs are organized to match buyers and suppliers. Reverse trade fairs, where FDI firms display components they want to purchase domestically, are also held. JETRO has a list of Vietnamese component suppliers that possess adequate technology or have been improved through Japanese cooperation. Recently, JICA and the World Bank separately launched new projects for upgrading Vietnamese suppliers and linking them with foreign buyers. Samsung and the Korean government, also separately from each other, assist supporting industry development[27]. In the South, sophisticated matching between Japanese and Vietnamese SMEs before a head-to-head meeting was also tried[28]. Overall, however, Viet Nam's linkage policy remains fragmented and less systematic than in Thailand or past Malaysia. Matching events usually ends with business card exchange without securing new deals. Viet Nam must not only strengthen its linkage policy but enhance the capacity of Vietnamese SMEs so they will acquire skills and technology demanded by FDI.

7.10 Supporting industry promotion policy

Susono sangyo (supporting industries) is a Japanese term that refers to part and component suppliers located in the home country (not imported parts and components) that support production of large assembly firms in automotive, electronics, and other mechanical sectors. Historically, the most important laws for Japanese supporting industry development were the Provisional Act to Promote Machinery Industry (*Kishin-ho*) in 1956 and the Provisional Act to Promote Electronics Industry (*Denshin-ho*) in 1957. As the names indicate, these were time-bound laws for five years and each was renewed two times until 1971. The Japanese government made it clear that these measures were only for limited time during which Japanese supporting

[27] Korean organizations, including the Korea Trade-Investment Promotion Agency (KOTRA), the Korea International Agency (KOICA), and chaebols (large private business groups) such as Samsung and LG, tend to work independently from each other rather than "ALL KOREA."

[28] A Japanese prefecture sent a list of SMEs to Viet Nam with detailed information on what type of partnership each desired. For each, a list of potential firms was prepared on the Vietnamese side. Emails were exchanged between candidate partners in Japan and Viet Nam, with a Japanese-Vietnamese translator translating each email in both directions. By the time Japanese SMEs visited Ho Chi Minh City, sufficient information had already been gathered and firms could enter concrete negotiations for partnership. This pilot case proved that good preparation could produce effective matching. However, the method was very costly, labor-intensive, and time-consuming.

industries were expected to grow and achieve global competitiveness. After that, support would be withdrawn. The years in which these laws were in effect, from 1956/57 to 1971, coincided with Japan's post-World War II high growth era with rapid industrialization.

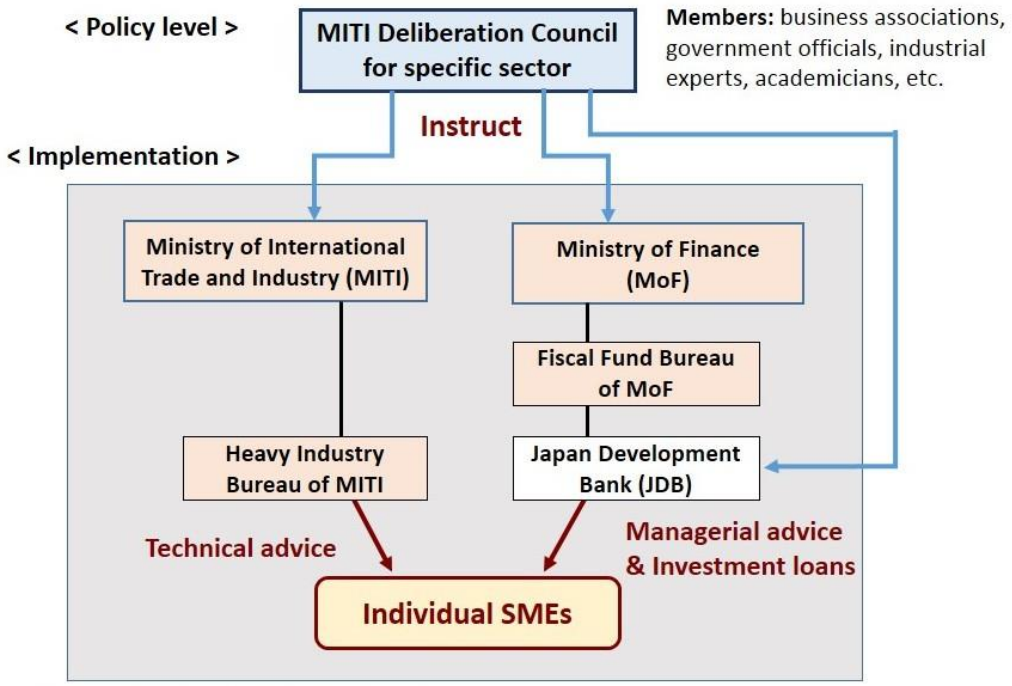
Kishin-ho and Denshin-ho had almost identical contents. The basic thrust of these laws was combining technology support by the Ministry of International Trade and Industry (MITI) with management support and investment loan provision by the Ministry of Finance (MOF) and the Japan Development Bank (JDB) under MOF. By integrating technical, managerial, and financial support in one mechanism, eligible SMEs could receive comprehensive support for investing in new technology and attaining excellence (Figure 7.6). The typical implementation sequence ran as follows.

(i) The Machine Industry Deliberation Council of MITI identifies key components and revises promotion programs annually.

(ii) MITI invites and screens applications from SMEs.

(iii) MITI coaches SMEs on production plan, equipment choice, purchase negotiation with equipment producers abroad, and other technical matters so applications are improved.

Figure 7.6 Integrated SME support under Kishin-ho and Denshin-ho



Source: Prof. Akira Suehiro's 2006 lecture in Hanoi, redrawn by the GRIPS Development Forum.

(iv) MITI sends selected applications to JDB or the Japan Finance Corporation for SME (JASME) for additional scrutiny, after which the financial institution provides management advice and investment loans to eligible SMEs.

(v) Private commercial banks also lend willingly to SMEs which receive advice and loans from these public banks.

A few remarks are in order. First, MITI and MOF were not neutral referees but friendly coaches offering hands-on advice to aspiring SMEs throughout the application and implementation stages. Firms rejected in the first round could apply again after improving their documents based on official instruction[29]. Second, unlike Southeast Asia today, Japan's supporting industries were made up of domestic firms alone and did not include FDI component suppliers. As a result, the core policy objective was assisting the purchase of appropriate equipment embodying new technology, around which technical, managerial, and financial supports were arranged. Japan did not need tax incentives to attract new investors or linkage promotion with FDI, because FDI was not a contributor to Japan's high growth era. Third, these laws had powerful effects on modernizing Japanese supporting industries which were originally regarded as weak, outdated, and costly. This in turn bolstered the competitiveness of large automotive and electronic assemblers which procured components from improved domestic suppliers. This also coincided with a period of general trade liberalization under the GATT Kennedy Round, which exerted external pressure, especially in the 1960s, to produce better and cheaper components.

In Thailand, on the other hand, supporting industry promotion has been closely related to FDI attraction and linkage. The need for this policy was keenly felt in the late 1980s with the arrival of a large wave of Japanese manufacturing firms. Absence of Thai component suppliers with high quality, low cost, and on-time delivery (QCD) was keenly felt, which was detrimental to Thailand's industrialization. Japanese firms, MITI, and JICA began to teach Thai workers and Thai supplier companies. Meanwhile, the Thai Ministry of Industry (MOI) adopted a step-by-step approach to the capacity building of Thai supporting industries. When private firms were weak and small in number, the government directly intervened to guide them and create new support systems such as 5S, kaizen, and shindan. As private capacity gradually rose, official

[29] A similar coaching approach is taken in Taiwan's Industrial Projects, a competitive program by the Ministry of Economic Affairs (MOEA) to subsidize commercialization of R&D. Sectoral technical institutes under MOEA help Taiwanese SMEs from project formulation to subsidy application and implementation, with assigned officials working closely with targeted SMEs for years until satisfactory results are obtained.

hands were withdrawn, and private agents took over. Specifically, Thai policy development went as follows.

In 1988, Thailand established the Metal-working and Machinery Industries Development Institute (MIDI) with JICA technical cooperation, and MOI officials began to teach SMEs through MIDI. In 1996, MIDI was upgraded to the Bureau of Supporting Industry Development (BSID) with a higher organizational status and broader mandate including plastic and packaging sectors as well as industrial linkage. This was a good example of scaling up and institutionalizing the pilot project (supported by JICA cooperation) by the ownership of the Thai government. Several more industrial institutes were established under MOI including the Thai-German Institute (1992), the Thailand Automotive Institute (1998), the Electrical and Electronics Institute (1998), and the Iron and Steel Institute (2000), which were initially funded by government budget or foreign aid, but currently operate as autonomous and financially self-supporting NPOs. In 1999, JICA began a five-year program to create a shindan system in Thailand and produced 450 Thai shindanshi as new experts to support SMEs (Section 7.4). Since then, Thai universities and private sector have taken over the role of training shindanshi whose current number is uncertain but surely in thousands.

In early days, BSID staff directly provided technical and managerial support to individual companies. When the number of Thai supporting industry firms grew to about 1,000, BSID created and managed several thematic "forums" (design, metal, machinery, foundry, etc.) with BSID serving as their coach as well as secretariat. Over time, these forums grew to become truly privately-run industrial associations. There were twelve such industrial associations created by BSID, now providing technical support and training to member firms without BSID's help. In 2008, the Alliance for Supporting Industries Association (A.S.I.A.) was established, again with the guidance of BSID, as an apex organization to coordinate among existing supporting industry associations, which now boast a total of over 15,000 member firms.

In Malaysia, supporting industry promotion in the past focused on providing tax incentives for eligible manufacturing projects and facilitation of FDI-local firm linkage.

For tax incentives, the main instruments were pioneer status (time-bound corporate income tax reduction) and investment tax allowance (offsetting taxable income by eligible capital expenditure) as well as exemption from import duty, sales tax, and excise duty. The Malaysian Investment Development Authority (MIDA) publishes a continuously updated list of promoted activities and products which include many supporting industry products. Application and approval processes are standardized, transparent, and relatively quick. MIDA's relevant industrial division first reviews the application, whose result is sent to the MIDA's weekly

Action Committee on Industry for deliberation and decision. To receive any incentive, the project must be truly manufacturing (not just trading), value-adding, technology upgrading, and/or linkage forming.

Malaysia in the 1990s also made much effort to foster linkage between local component suppliers ("vendors") with FDI or large state-run assemblers. The principle programs were the Vendor Development Program (VDP) introduced in 1988 and the Industrial Linkage Program (ILP) introduced in 1995-96. Subsequently, however, Malaysia abandoned linkage policy and replaced it with the promotion of autonomous and globally competitive SMEs without ties with FDI or large state-owned corporations (section 7.9).

These reviews show that each country adopts different methods of fostering supporting industries according to initial capacity as well as social and historical conditions. Viet Nam is a late starter in supporting industry promotion, and the Vietnamese term "công nghiệp hỗ trợ" and its meaning were popularized only in the early 2000s. Since then, the term has been frequently talked about in media, trade fairs, and symposiums but there has been little effective policy action to promote it. Laws and regulations were issued and revised, MOIT was designated as a responsible ministry, and assistance has been offered by Japan, Korea, the World Bank, and many FDI firms. However, Viet Nam's effort to develop supporting industries has been limited and scattered without a clear target or an integrated framework, and therefore has not reached all manufacturers in the country. Globally competitive Vietnamese suppliers are relatively rare even after a quarter century of vigorous globalization and industrialization. Thailand had 1,000 FDI-linked suppliers when the initial policy phase was completed, and currently has about 2,300 competitive suppliers. Viet Nam's supporting industry programs need a serious revitalization.

Supporting industry promotion must mobilize many productivity enhancing tools explained in this chapter. Because of latecomer advantage, Viet Nam can learn from past successes and failures of other nations and create a mechanism most suitable for its own conditions. Experiences of Japan, Thailand, and Malaysia cannot be copied directly to Viet Nam due to different circumstances, but many hints are available for building the Vietnamese system. The Japanese case suggests that the ultimate goal should be an integrated support in management, technology, and finance under close cooperation of relevant ministries and agencies. It also points to the usefulness of having a temporary law to execute this task. Thailand teaches the importance of phasing policies from direct official guidance to private initiative as domestic capacity rises. Malaysia shows that transparent and easy-to-use incentives are essential. Viet Nam can selectively combine relevant aspects of these policy lessons, and also incorporate several productivity tools discussed above (5S and kaizen, handholding, shindan, kosetsushi,

linkage, and others) to create a truly effective national system for promoting supporting industries. The current system is too narrow in scope and cumbersome in procedure for broad impact.

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APPENDICES

Appendix 1. Issues on data and estimation of coefficients in the TFP model

The General Statistics Office (GSO) data are used for value added, capital, and labor of the entire economy and 1-digit level industries for the period 1991-2015. The data are classified into three economic sectors of agriculture, forestry and fishery; industry and construction; and services, and by type of ownership including the state sector, the non-state sector, and the FDI sector. The output of the entire economy (Y or GDP) is calculated in Vietnamese dong at the constant 2010 price. Labor (L) is the number of person employed in a specific year.

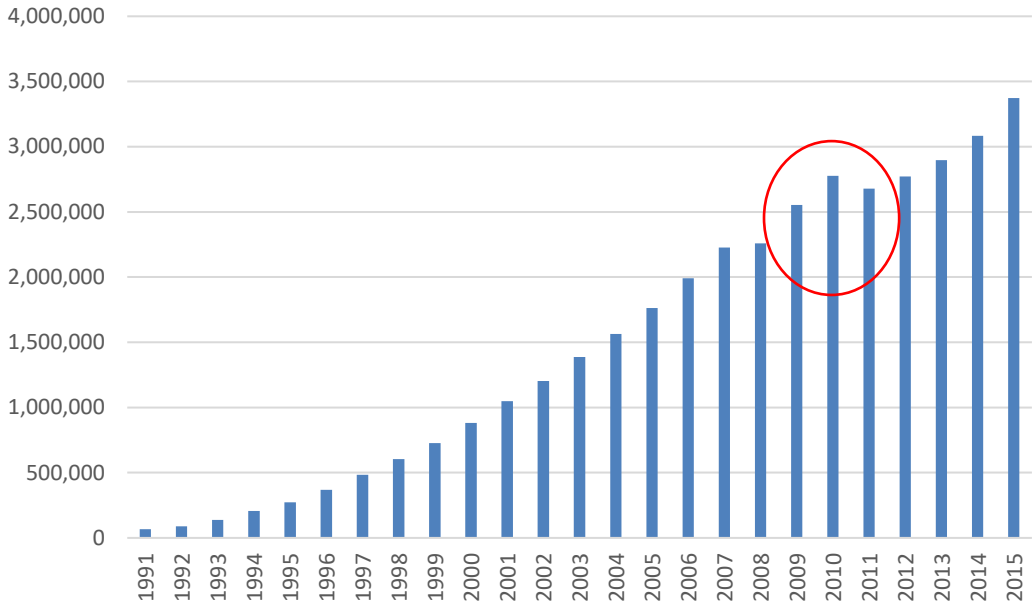
The Capital Department of GSO provides the data for capital (gross capital formation) and labor, both of which are used directly in the growth accounting method. The capital data of GSO is adjusted to constant 2010 price for the whole period 1991-2015. By using this data, the authors do not need to separately calculate the real value of capital based on some assumption on the depreciation rate of assets.

The difference in estimated TFP between this Report and Dr. Vu Minh Khuong's study may arise from the following two reasons (Vu Minh Khuong, 2014, 2016).

First, there is a data problem associated with the definition of capital used in Viet Nam's statistics. According to GSO, "Investment capital is measured by social development investment capital, which is the entire amount of money spent to increase or maintain production capacity and resources to improve the material and spiritual living standards of the whole society in a certain period of time, including: investment capital to create fixed assets, investment capital to increase mobile assets, capital to buy rare and precious assets, reserve gold in the form of goods and reserve goods in the population and other development investment capital to improve people's intellectual standards, enhance social welfare, improve the ecological environment, support people, etc." This measure of investment capital is used to calculate gross capital formation instead of capital stock. In other words, GSO cannot separate capital stock from the measurement of capital input flow. In this dataset, after the Asian financial crisis of 2008, the Vietnamese Government introduced stimulus packages that might be included in the capital stock data, leading to an increase of capital in 2009 and 2010. These packages were ended in 2011, resulting in a fall of capital stock in that year.

Figure A1.1 Gross capital formation

(Billion VND in constant 2010 price)



Source: GSO. The red circle shows irregularity explained in the text.

Another issue is related to the income share of capital. Dr. Vu Minh Khuong estimates this ratio to be around 0.5, which we think is much higher than the typical income share of capital in a developing country like Viet Nam. In VEPR's Report, a lower ratio of 0.28 was adopted for the entire economy (Table A1.1). This income share of capital is estimated by the regression of GDP on capital and labor for the period 1990-2015 using GSO data. A lower income share of capital produces a higher contribution of TFP to labor productivity growth, as this Report shows. If we change this ratio to 0.5, the contribution share of TFP becomes much lower and very close to the results of Dr. Vu Minh Khuong.

Table A1.1 Estimates of income share of capital

Sector	Estimated income share of capital
The whole economy	0.28
By economic activities	
Agriculture, forestry and fishery	0.25
Industry and construction	0.26
Services	0.07
By type of ownership	
State sector	0.34
Non-state sector	0.2
FDI sector	0.3

Source: VEPR estimates based on GSO data for the period 1990-2015.

Appendix 2. GDP growth decomposition using growth accounting method

Period	GDP growth	Contribution of inputs		TFP
		Capital	Labor	
1991-2015	**6.98**	**5.00**	**1.70**	**0.28**
1991-1995	8.79	11.96	1.67	-4.84
1996-1999	6.22	7.08	1.54	-2.41
2000-2007	7.25	3.96	2.18	1.11
2008-2012	5.83	1.47	1.85	2.51
2013-2015	6.33	2.22	0.43	3.68

Source: VEPR's calculation based on GSO data for the period 1991-2015, unit: %.

Appendix 3. Labor productivity from the perspective of enterprises[30]

Below, the relationship between labor productivity and wage is explored. Labor productivity is defined as value added per worker. The value added in each industry is calculated using the information from enterprise surveys, as follows.

$$VA = YL + INS + PRF + DEP_1 - DEP_0$$

Here VA is value added; YL is labor income consisting of salary, bonus, and subsidies; INS is payments on social, health, and unemployment insurance; PRF is firms' profits; and DEP_1 and DEP_0 are the values of accumulated capital depreciation at the end and beginning of the period. License taxes, taxes on the use of natural resources, and other business fees, which are not available in the enterprise survey, are not included in the calculation of value added. These taxes and fees are relatively small and their omission should not affect the results significantly.

Two measures of value added are adopted. The one excluding profits and losses arising from financial and asset-related activities, and the other including them. For each economic sector and industry, labor productivity is equal to total value added divided by total employment. The real value of labor productivity is obtained by using industrial GDP deflators.

Table A3.1 shows the growth rate of labor productivity in nominal and real terms from 2004 to 2015 by firm size. Small and medium enterprises experienced slightly relatively high productivity growth than large or micro enterprises.

[30] This appendix is based on selected findings of JICA (2017b).

Table A3.1 Labor productivity growth by firm size, 2004-15

(Percent per annum)

	Labor productivity	
	Nominal	Real
Total	14.52	4.96
By firm size		
Micro	15.43	5.41
Small	15.6	6.64
Medium	15.71	6.52
Large	14.93	5.2

Source: Nguyen Tien Dung et. al (2017).

Table A3.2 Labor productivity growth by ownership type, 2004-15

(Percent per annum)

	Nominal growth rate		Real growth rate	
	I	II	I	II
Period 2004-15				
Total	14.52	12.52	4.96	2.84
FDI	10.12	7.66	0.71	-2.04
Private	17.63	16.60	8.50	7.49
State	19.96	17.61	9.74	7.56
Subperiod 2004-10				
Total	19.43	14.97	7.22	2.68
FDI	8.93	3.94	-3.13	-8.42
Private	25.30	20.78	14.07	9.90
State	29.72	26.94	16.72	14.07
Subperiod 2010-15				
Total	8.89	9.65	2.32	3.04
FDI	11.56	12.30	5.51	6.21
Private	9.05	11.78	2.17	4.68
State	9.21	7.32	1.91	0.24

Note: (I) financial and asset-related profits are not included in value added, (II) they are included in value added.

Source: Nguyen Tien Dung et. al (2017).

Table A3.2 reports the average growth rates of per-worker value added by industry and economic sector. Using the first measure of value added (I) with financial and other profits excluded, labor productivity grew by 4.9% per year between 2004 and 2015. This is about 0.5 percentage point higher than estimation using the national account statistics. Labor productivity

growth was high in the latter half of the 2000s but significantly slowed down subsequently. It reached 7.2% in the first subperiod but dropped to 2.3% in the second subperiod. The second measure of value added gives a similar trend but it tends to produce lower estimates of labor productivity growth.

There are significant differences in labor productivity performance across economic sectors. Labor productivity growth was slower in the FDI sector compared to the private and state sectors. At FDI enterprises, value added per worker increased only 0.7% per year from 2004 to 2015. Those for the private and state sector were 8.5% and 9.7%, respectively. These two sectors experienced a large productivity gain in the first subperiod but productivity growth fell in the second subperiod.

The low productivity growth in the FDI sector was attributed partly to the sharp contraction in the mining sector, especially crude oil and gas production. This industry declined sharply from its peak in 2004. Falling output and prices severely affected oil and gas extracting enterprises, and FDI enterprises in particular. Our decomposition analysis shows that productivity gain from the manufacturing sector is largely offset by the loss in the mining sector. Besides that, the shift toward more labor-intensive activities negatively affected labor productivity despite rapid growth in output. These results confirm the finding in Chapter 2 of this Report. However, Nguyen Tien Dung *et al*. (2017) reports that manufacturing FDI performed well, and they even experienced a relatively high productivity growth in recent years. This is somewhat at odds with Chapter 2 of this Report.

In the state sector, high productivity growth was largely driven by investment. Between 2004 and 2015, the capital-to-labor ratio increased at the annual rate of 15.8%, which was considerably higher than the annual productivity growth of 9.7%. Investment also played an important role in boosting productivity in private enterprises, where the capital-to-labor ratio increased at the annual rate of 9.9%. By contrast, the growth of the capital-to-labor ratio in the FDI sector was far lower, averaging only 0.4% a year during the same period.

Table A3.3 Labor productivity growth by industry, 2004-15

(Percent per annum)

	Labor productivity growth	
	Nominal	Real
Total	14.52	4.96
By economic sectors		
FDI	10.12	0.71
Private	17.63	8.50

State	19.96	9.74
By firm size		
Micro	15.43	5.41
Small	15.60	6.64
Medium	15.71	6.52
Large	14.93	5.20
By industries		
Agriculture	8.73	-2.33
Mining	6.58	-7.62
Manufactures	16.36	9.43
Public utilities	20.11	9.43
Construction	15.51	6.44
Trade	15.87	5.04
Hotel	11.39	0.99
Posts & telecommunications	3.61	-0.67
Transportation	12.08	3.98
Other services	12.07	-0.63
Within manufacturing		
Chemical, rubber, plastics	17.87	10.85
Electronics	15.89	8.99
Food processing	17.35	10.36
Footwear	15.82	8.92
Garment	16.52	9.58
Machinery	16.69	9.75
Metals	13.97	7.18
Transportation means	14.92	8.08
Woods and furniture	15.70	8.82
Other manufactures	15.79	8.90

Notes: total labor income, consisting of all wage income, subsidies, bonus and payments on social and health insurances and unemployment insurance, are used. Financial and asset-related profits are not included in value added.

Source: Nguyen Tien Dung *et al.* (2017).

Manufacturing, water and electricity, and construction experienced the highest productivity growth of 9.4%, 9.4%, and 6.4% per annum, respectively. Hotels and restaurants and transportation exhibited low productivity growth. Labor productivity fell in mining, agriculture, post and telecommunication, and other services. Within manufacturing, most subsectors registered significant improvements in labor productivity. Food processing, garment, footwear, machinery and equipment, and chemicals exhibited high productivity growth, averaging between 9% and 10% a year. Meanwhile, metals and transportation means had relatively low productivity growth. A more detailed analysis of labor productivity in the manufacturing sector, by ownership and subsector, is given Table A3.4.

Table A3.4 Labor productivity growth in manufacturing, 2004-15

(Percent per annum)

	Nominal	Real
FDI SECTOR		
Total	13.99	7.21
Chemical, rubber, plastics	14.01	7.23
Electronics	14.47	7.66
Food processing	15.45	8.58
Footwear	14.42	7.61
Garment	15.72	8.83
Machinery	11.02	4.41
Metals	10.04	3.49
Transportation means	10.58	3.99
Woods and furniture	15.43	8.56
Other manufactures	13.37	6.63
PRIVATE SECTOR		
Total	18.29	11.24
Chemical, rubber, plastics	20.21	13.05
Electronics	19.36	12.26
Food processing	19.04	11.96
Footwear	17.21	10.24
Garment	17.78	10.77
Machinery	18.35	11.30
Metals	16.70	9.76
Transportation means	19.68	12.56
Woods and furniture	19.69	12.56
Other manufactures	17.89	10.87
STATE SECTOR		
Total	20.51	13.34
Chemical, rubber, plastics	23.51	16.16
Electronics	13.79	7.01
Food processing	21.21	14.00
Footwear	20.21	13.06
Garment	16.61	9.67
Machinery	15.16	8.31
Metals	15.86	8.96
Transportation means	13.64	6.87
Woods and furniture	16.24	9.32
Other manufactures	20.51	13.33

Notes: total labor income, consisting of all wage income, subsidies, bonus and payments on social and health insurances and unemployment insurance, are used. Financial and asset-related profits are not included in value added.

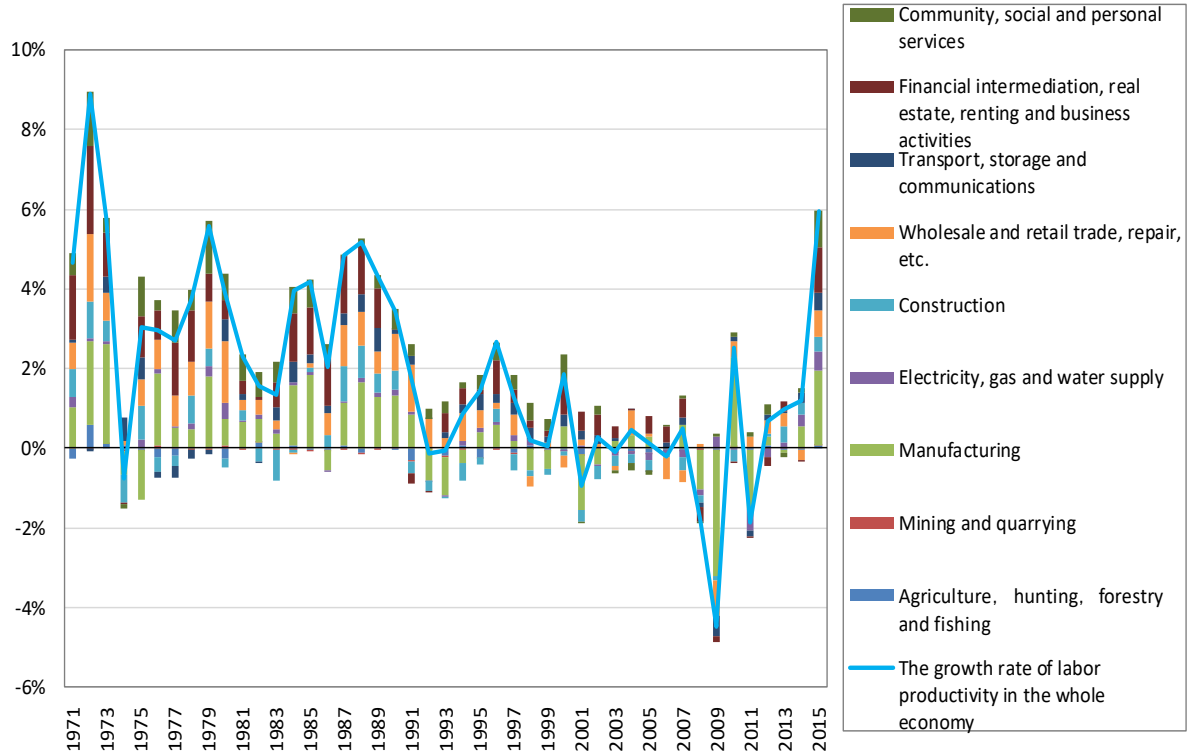
Source: Nguyen Tien Dung *et al.* (2017).

In the FDI sector, high productivity growth is observed in electronics, food processing, garment, chemicals, but not so in metals, machinery, and transportation means. In the private sector, high labor productivity growth was registered in chemical, rubber, plastics; machinery; transportation means; and woods and furniture. In the public sector, high labor productivity growth was observed in chemical, rubber, plastics and food processing.

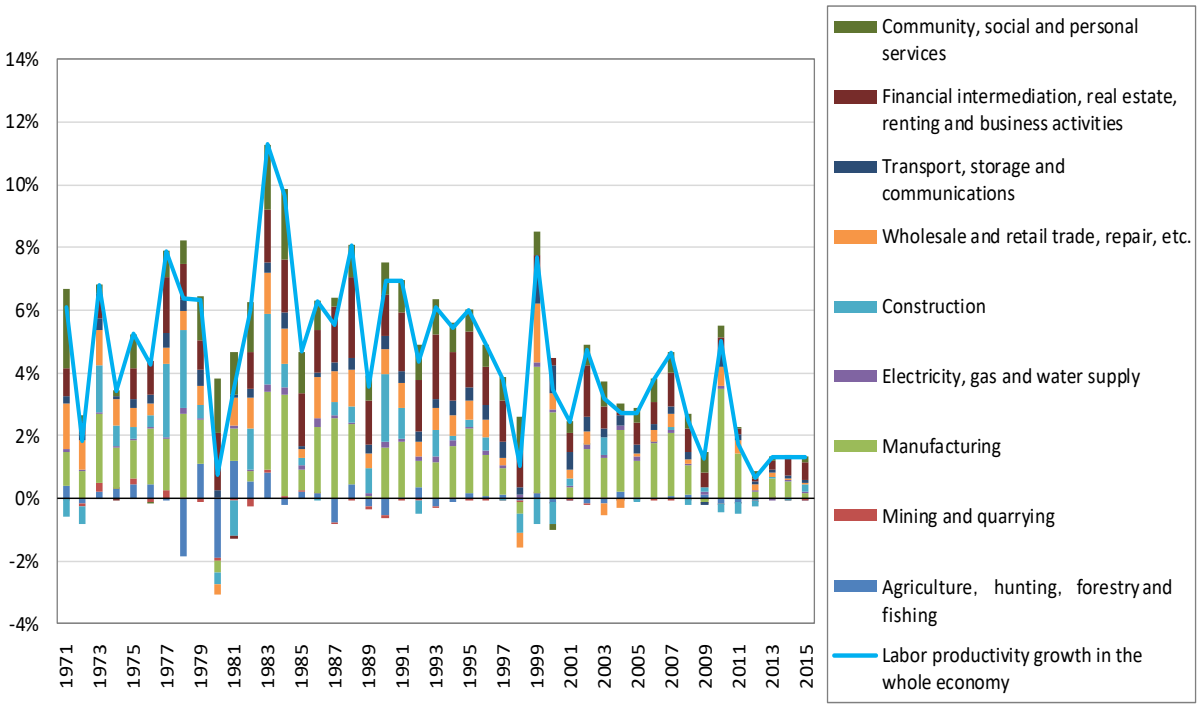
Labor productivity growth computed by the enterprise survey dataset in this appendix is about 0.5 percentage point higher than those reported in the main Report which uses national account statistics. However, the general trends among economic sectors are quite similar. This appendix provided additional information on labor productivity by enterprise size and manufacturing subsectors. As in the main text, it was found that FDI enterprises had significantly lower labor productivity than those of the other sectors, while private enterprises had relatively high labor productivity levels and more equal performance among manufacturing subsectors.

Appendix 4. Sectoral contribution to overall labor productivity: selected countries (%)

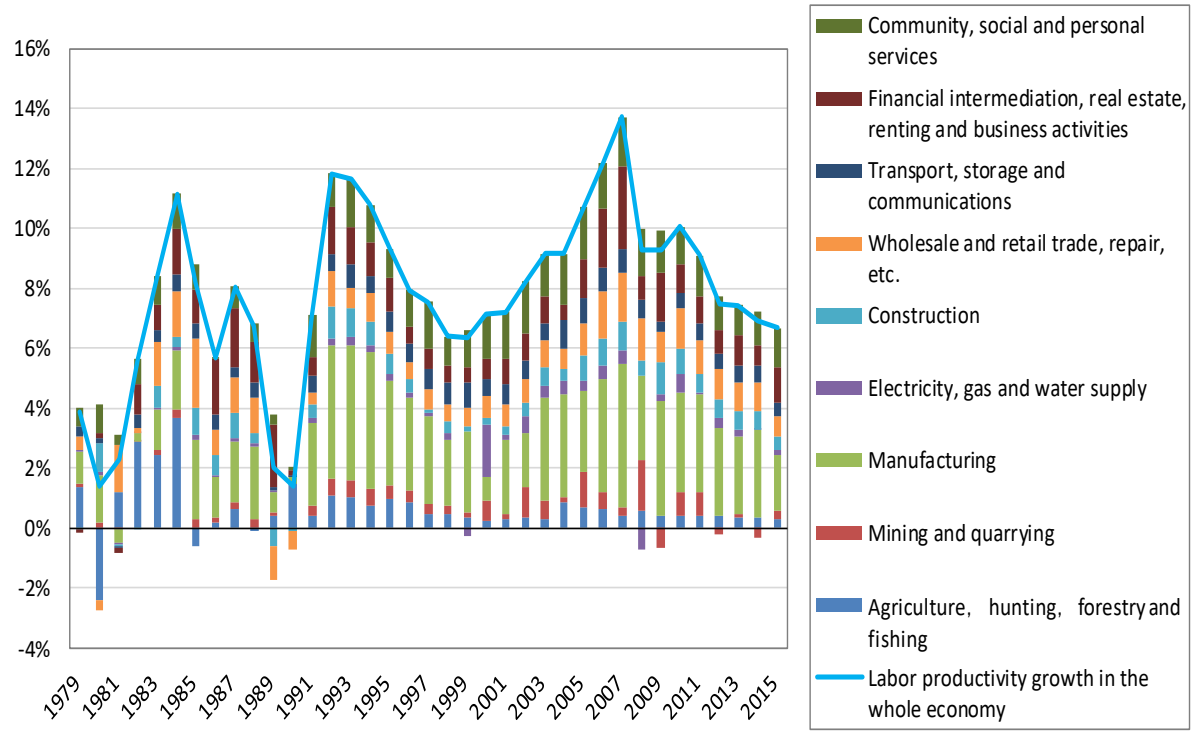
(a) Japan



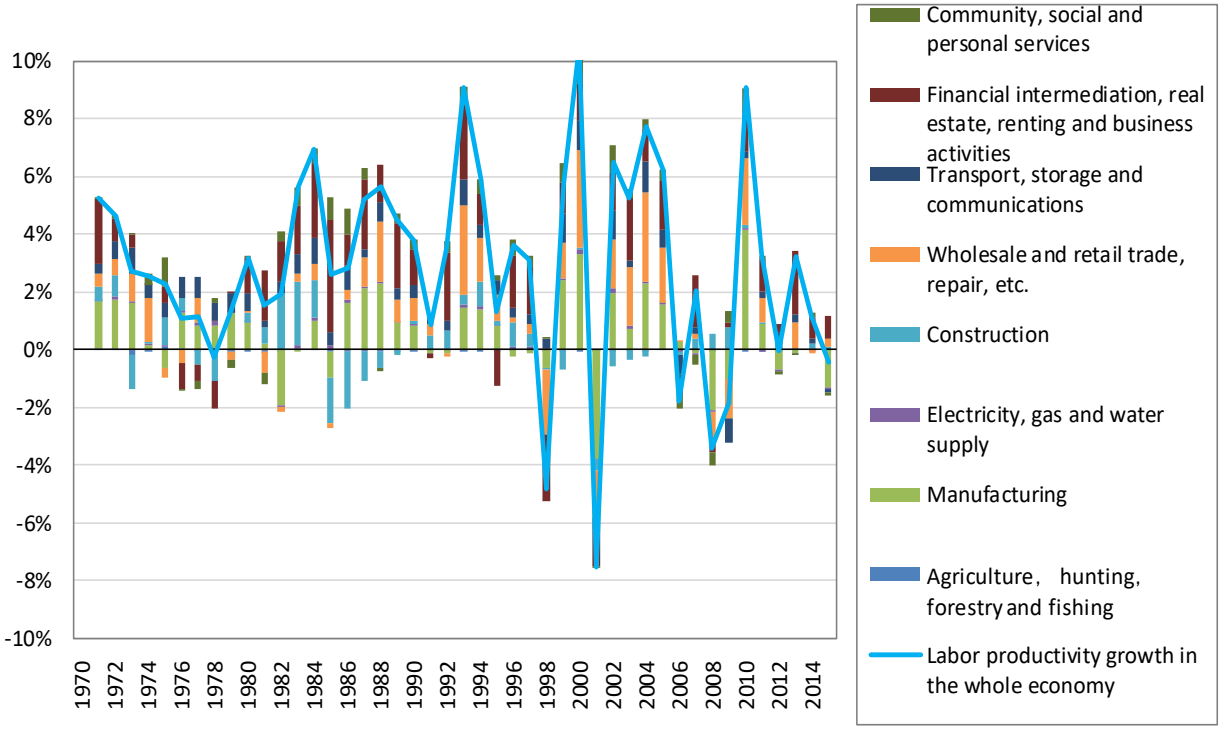
(b) South Korea



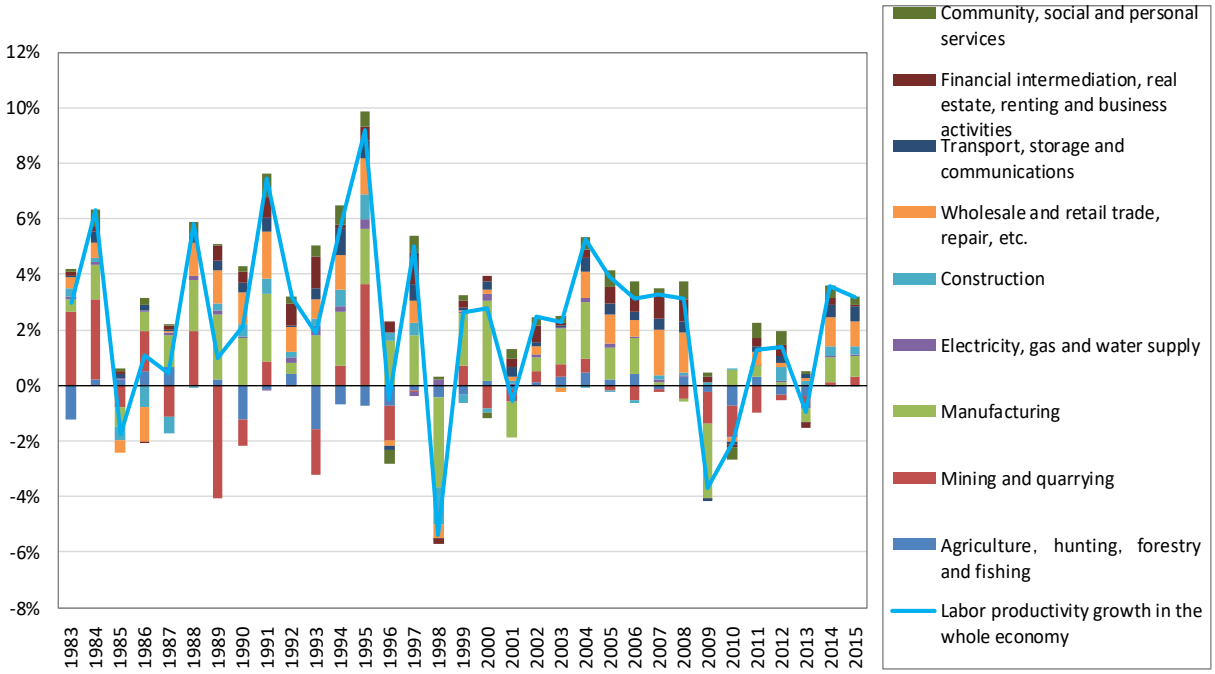
(c) China (from 1979)



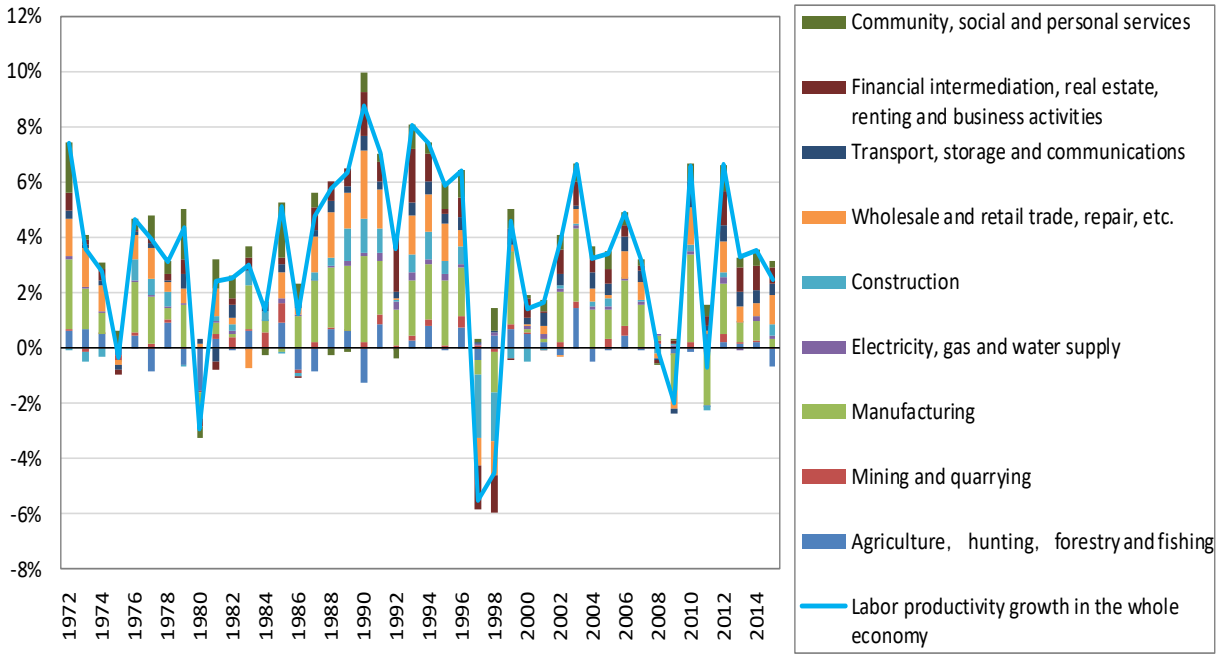
(d) Singapore



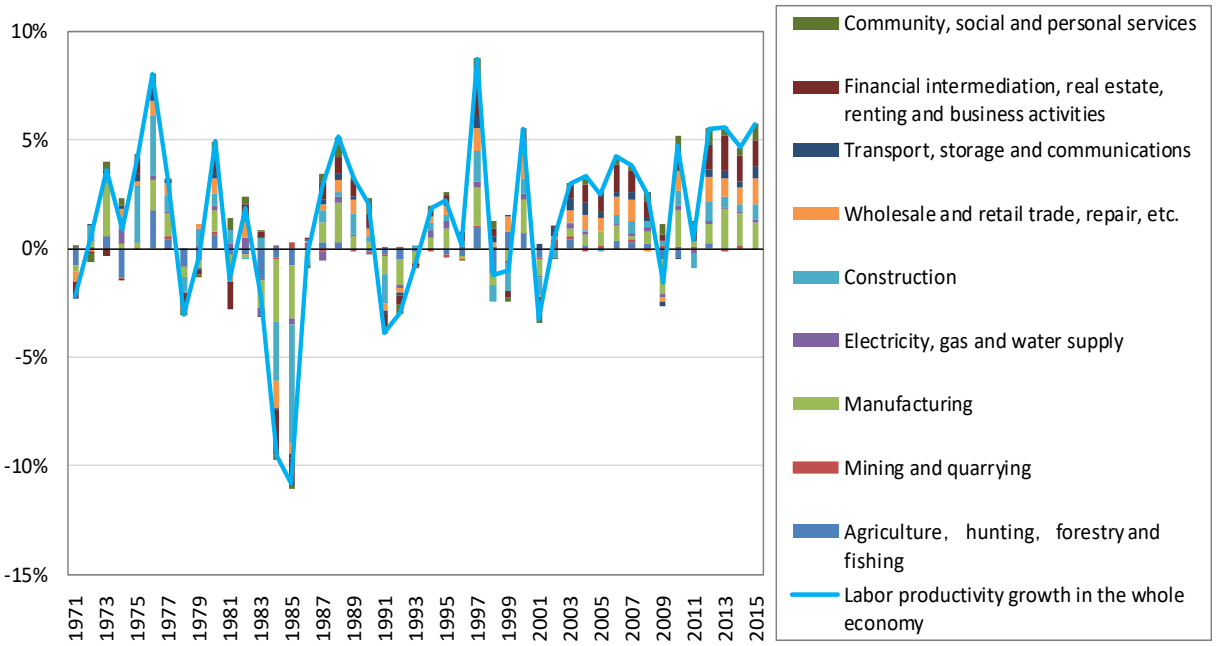
(e) Malaysia (from 1983)



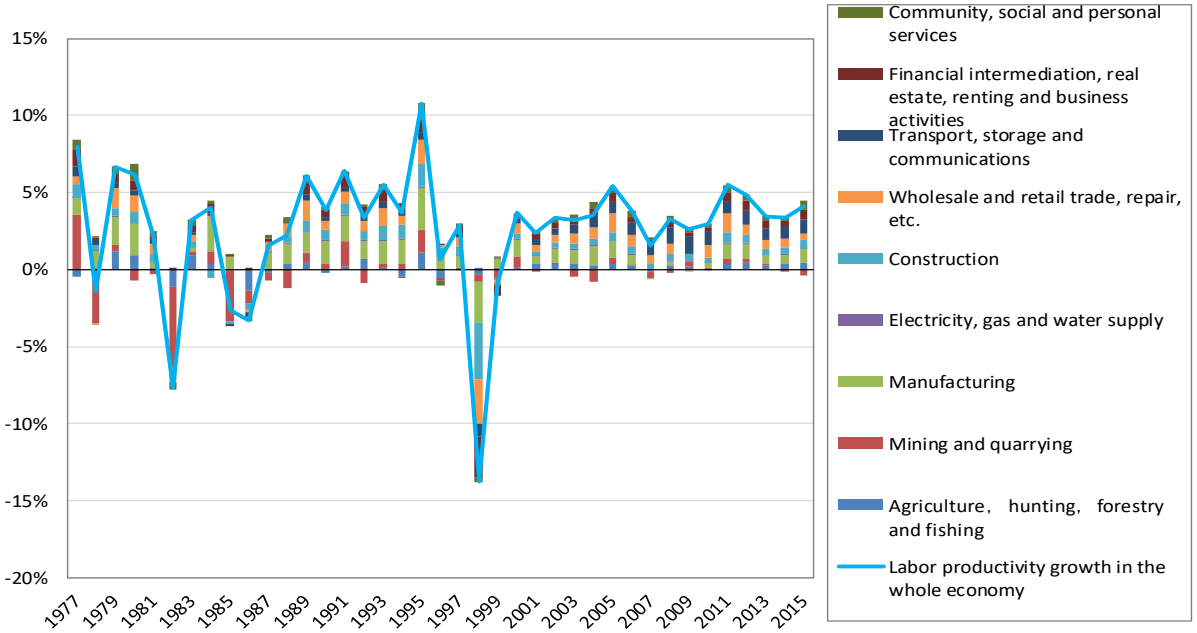
(f) Thailand (from 1972)



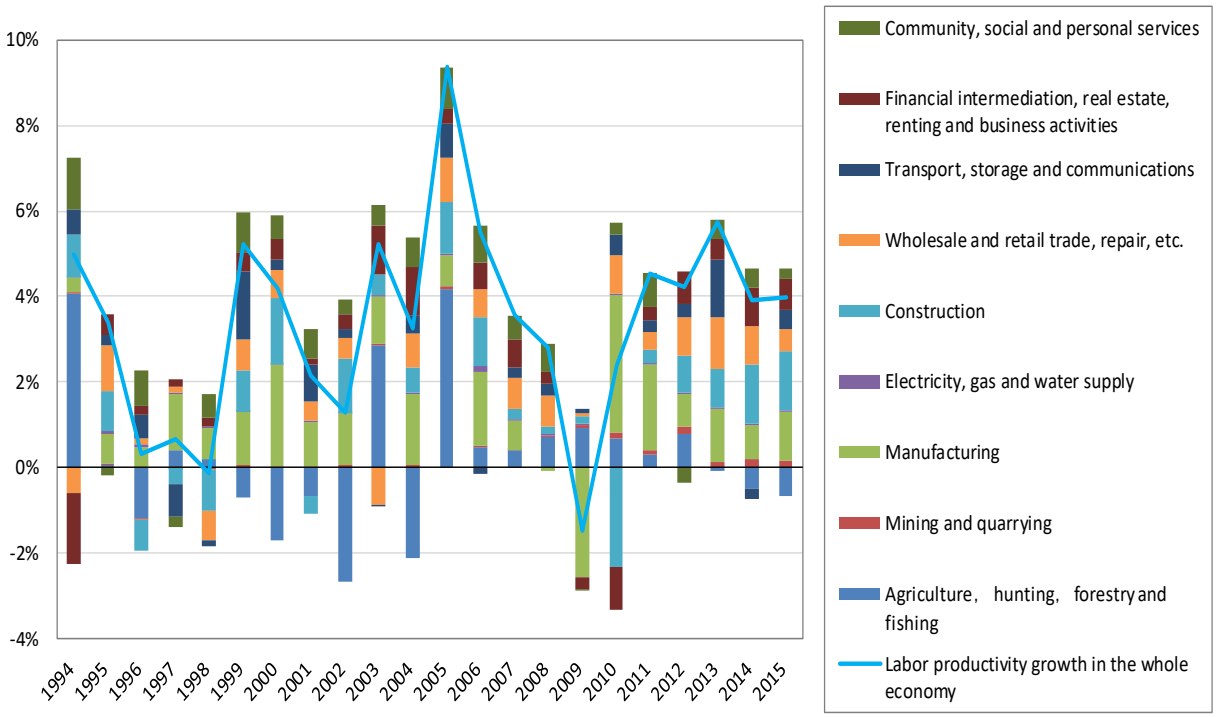
(g) Philippines



(h) Indonesia (from 1977)



(i) Cambodia (from 1994)



Source: author's calculation based on APO data.