Regional Study on Labour Productivity in ASEAN

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Regional Study on Labour Productivity in ASEAN

The ASEAN Secretariat
Jakarta

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Foreword by
H.E. Dr. Ida Fauziyah
Minister of Manpower of the Republic of Indonesia, Chair of ASEAN Labour Ministers Meeting 2020-2022

Observing the rapid economic development in the ASEAN region requires all of us to quickly adapt to the changes that may occur. One of the sectors that has influenced economic change and development is the labour sector. There is a strong causal relationship between the level of human capital of a country and the level of labour productivity. This certainly implies that we, as the ASEAN Community, have to pay more attention on promoting better human capital for all ASEAN workers.

This Study Report has comprehensively explained and measured the efforts needed to increase labour productivity through a three-component approach which includes: strengthening institutions, supporting national programmes, and promoting state culture.

In the effort to equalize labour productivity, I see that ASEAN has an important role in facilitating its Member States to formulate inclusive national strategic programs and policies to reduce the huge gap in labour productivity levels among them. On the other hand, ASEAN Member States need to support collective efforts to increase the competitiveness, agility, and resilience of their workforce to face the changes in the labour sector in the future. This is an important role for ASEAN to ensure all ASEAN Member States can go hand in hand and not leave any country behind.

I hope that the data contained in this Study Report can be useful for all stakeholders especially for policymakers to see and understand holistically and comprehensively the conditions of labour productivity in ASEAN, and become valid recommendations to formulate regulations to promote labour productivity level in their countries. As the ALMM Chair for the period 2020-2022, I would like to thank the researcher team, ASEAN Member States, Asian Productivity Organization (APO), as well as all parties who have also been involved and contributed to this study report. Stay Healthy, Stay Productive.

Dr. Ida Fauziyah
ALMM Chair (2020-2022)

Foreword by
H.E. Dato Lim Jock Hoi
Secretary-General of the Association of Southeast Asian Nations (ASEAN)

ASEAN has shown tremendous economic growth in the past decade[1]. Although the COVID-19 pandemic caused setbacks, our region is still forecasted to have a strong economic recovery of 5.5% growth in 2021[2]. One of the main factors driving this growth is the continuous improvement in labour productivity. Between 1971 and 2018, ASEAN's labour productivity grew by an average 2.96% annually[3]. Our commitment to enhance labour productivity also aligns with ASEAN's broader goal to achieve robust growth through innovation, technology and human resource development.

Nevertheless, ASEAN's economic growth will be affected in the coming years by globalisation, advances in digitalization of economies, aging populations, and the long-term impacts brought about by the COVID-19 pandemic. This in-depth narrative and analysis examines the effects of these issues on labour productivity at the regional level with the aim of ensuring that higher productivity promotes inclusive growth. Indeed, ASEAN recognises that our long-term competitiveness rests on significantly improving labour productivity and promoting inclusive growth in moving up the global value chain.

This study, which is one of the initiatives entrusted to the ASEAN Secretariat by the Senior Labour Officials Meeting (SLOM), with the support of the Asian Productivity Organization (APO), is therefore very timely. This pioneering study provides a comprehensive assessment on labour productivity trends in ASEAN and demonstrates human capital has statistically significant impact on the overall productivity in the world of work.

I hope that the findings and recommendations presented in this report will provide useful insights and guidance to ASEAN Member States in promoting skills and productivity of our workforce as well as in embracing the opportunities in the changing world of work. This publication proposes a regional framework to measure human capital productivity and underlines that shared prosperity, skills development and productivity are key to achieve strong, inclusive, equitable and sustainable growth.

DATO LIM JOCK HOI
Secretary-General of ASEAN

1 ASEAN Secretariat, ASEAN Statistical Yearbook 2020, accessible online at https://www.aseanstats.org/wp-content/uploads/2020/12/ASYB_2020.pdf

2 ASEAN Secretariat, ASEAN Economic Integration Brief, November 2020, accessible online at https://asean.org/storage/AEIB_No.08_November-2020.pdf

3 Asian Productivity Organization (APO), Asian Economy and Productivity Map.

Foreword by
H.E. Dr. AKP Mochtan
Secretary-General of the Asian Productivity Organization

The economic environments of APO member economies and ASEAN member states are changing rapidly due to globalization, digitalization, and aging populations. Labor productivity will without doubt be affected by all these changes. The current status of labor productivity in the member economies of both organizations must be analyzed to provide policymakers with the information to devise measures for sustainable labor productivity growth for the future. Although advanced technology will boost productivity around the world, human capital and its impact on labor productivity are still relevant in the region.

It is noteworthy that human capital has a significant impact on labor productivity growth and that the return on investment in human capital can be as substantial as that in the other determinants of labor productivity. Thus, the role of human capital should be considered crucial in policy recommendations for labor productivity growth, and continuing development of human capital should be one of the top priorities. Encouraging inclusive engagement and shared prosperity is indispensable to promote human capital productivity.

For this purpose, the APO and ASEAN agreed to collaborate to conduct this preliminary research to deepen human capital productivity as well as recommend a holistic framework for its optimal management. This report explores the feasibility of developing an ASEAN Labor Productivity Index so that it can be boosted further. The index is intended to measure the contributions of individual input variables to the promotion of labor productivity.

This collaborative research with ASEAN will provide policymakers of both the APO and ASEAN a useful opportunity to better understand the current situation of labor productivity and make policy recommendations that will promote its growth in the region over the long term.

Dr. AKP Mochtan
Secretary-General

Acknowledgements

The Regional Study on Labour Productivity in ASEAN was an initiative endorsed by the Senior Labour Officials Meeting's Working Group on Progressive Labour Practices to Enhance the Competitiveness of ASEAN (SLOM-WG) and coordinated by the ASEAN Secretariat with the support of the Asian Productivity Organization (APO).

The Study has successfully achieved its objectives in presenting the current situations of labour productivity across ASEAN Member States, analyzing determinants of labour productivity growth in particular the contribution of human capital, providing policy recommendations to sustain labour productivity growth and exploring the feasibility of developing a regional labour productivity index contextual to ASEAN.

This Study Report was launched and disseminated at the virtual regional workshop on 23 February 2021.

Sincere appreciation goes to the following individuals for their technical contributions to this Study:

- To the SLOM-WG focal points, all of whom cannot be acknowledged individually, from the labour ministries of ASEAN Member States for your invaluable time and efforts to provide data and information, share insights, review and provide constructive feedbacks to the Study;
- To the ASEAN Secretariat under the leadership of H.E. Kung Phoak, Deputy Secretary-General for ASEAN Socio-Cultural Community including Director Rodora T. Babaran, Labour and Civil Service Division led by Ms. Mega Irena (Head and Assistant Director) and her team members, in particular Ms. Madyah Rahmi Lukri, Mr. Carl Rookie O. Daquio, Mr. Alvin Pahlevi and Ms. Felicia Clarissa for the professional coordination, facilitation of consultations and stakeholder participation, and feedback to the draft Study;
- To the Asian Productivity Organization (APO) under the leadership of H.E. Dr. AKP Mochtan, Secretary-General of the APO and the team members, particularly Mr. Baek Sehyeon and Ms. Mayumi Nakagawa for the continued support in the development and implementation of the Study;
- Finally, to Prof. Kim Dong-Hun of Yonsei University and Dr. Woon Kin Chung of iXp Consulting as the authors of this Study Report. This Study would not have been possible without their expertise and support.

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Executive Summary

The economic environments of the ASEAN Member States are rapidly changing due to globalization, the digitalization of economies, and aging populations. These larger changes will undoubtedly affect the labor productivity of ASEAN Member States. Despite the significance of these emerging phenomena, there remains a lack of in-depth narrative and analysis at the ASEAN level on the effects of these phenomena on labor productivity, although the International Labour Organization (ILO) and the Asian Productivity Organization (APO) provide statistical snapshots including the labor productivity of the ASEAN Member States.

This report analyzed the trends of labor productivity in the ASEAN Member States. The overall per-worker labour productivity for the ASEAN as a whole as of 2018 was 24.27 (thousands of USD), but there was a large variation among the countries. Labor productivity in the ASEAN grew by 2.96 percent on average annually over 1971-2018 according to APO. In terms of individual Member States, Thailand recorded the highest average growth rate, with an average annual per-worker labour productivity growth rate of 3.44 percent. It was also found that a large portion of labor productivity growth in ASEAN Member States was attributable to the growth of capital per worker, i.e., capital deepening. The roles of total factor productivity and human capital have been relatively limited in the promotion of labor productivity.

This report compared the level of human capital of ASEAN Member States and analyzed its impact on labor productivity. The results show that human capital has a statistically significant impact on labor productivity growth and the return on human capital is greater than that of other determinants of labor productivity. This implies that the role of human capital should be strengthened in the policy implementation for labor productivity growth. This report also explored how the performance of human capital differs across the countries in the promotion of labour productivity. The same level of human capital can contribute to the increase in labour productivity differently across the different countries. As of 2017, Singapore achieved the best performance of human capital among the member countries, followed by Viet Nam, Malaysia, the Philippines, and Thailand.

This report proposed a holistic framework for the management of human capital productivity. This framework comprises three levers: institutions, strategy, and culture. Institutions refer to the various types of organizations involved in managing human

capital productivity. Strategy encompasses specific strategic thrusts and their supporting programs aimed at boosting productivity. Culture covers the shared values that undergird and support all the efforts undertaken. The proposed holistic approach to the management of human capital productivity can serve as a framework for the ASEAN and its Member States to have a common collective vision, goals, and strategy to maximize the potential of the region's human capital.

- There are many institutions that are directly or indirectly involved in improving human capital productivity. These institutions are vital to the successful implementation of human capital productivity management.
- This report proposes five strategic thrusts to improve human capital productivity. First, it is important to develop skills of human capital continuously to keep abreast of the changing world of work to increase the quality of human capital. Second, steering the deployment of human capital in the economy is important because it determines whether scarce resources are put to optimal use. Third, maximizing efficiency and effectiveness of human capital at work is as important as its optimal deployment. This has very much to do with improving the management practices of human capital in enterprises as the practices determine the work environment in which jobs and specific tasks are performed. Fourth, fostering inclusive engagement and shared prosperity is crucial in the promotion of human capital productivity. Fifth, labor market policies serve as enablers that support the determinants of human capital productivity.
- Culture comprises the paradigm of deeply embedded, subconscious shared values, as well as beliefs, about human capital productivity in the country. The programs for productivity enhancement cannot be sustained unless they are backed by a strong culture that is favorable to the pursuit of human capital productivity. What is needed is the building of a culture that will drive continuous improvement in human capital productivity.

This report explored the feasibility of developing an ASEAN labor productivity index that measures the labor productivity enhancing capacity of ASEAN Member States. The analyses in this report indicate that labor productivity is affected by diverse factors. To understand the labor productivity gap among the countries, it is necessary to evaluate the contribution of individual factors to labor productivity. The index is intended to measure the contribution of individual input variables in the promotion of general labor productivity. Second, the performances of individual variables can be simplified by constructing a composite index for a cross-country comparison.

1

Introduction

Driving forces that affect labor productivity in the ASEAN have been changing rapidly and constantly. Labor productivity is measured as output per unit of labor input. In general, it is improved by investments in capital, technology, and human capital. Economic environments increasingly affected by globalization, the digitalization of economies, and aging populations will also specifically affect the labor productivity of ASEAN Member States. Globalization can be defined as the reduction of trade and investment costs or the process of increasing the interdependence of the world's markets and businesses. Globalization can be linked with productivity in various ways, including trade liberalization, exposure to new technology, and FDI. Globalization involves global value chains (GVCs), where different stages of the production process are located across different countries to capitalize on their comparative advantages. Advances in digital technologies such as artificial intelligence, cyber-physics systems, and the internet of things have spawned the Fourth Industrial Revolution affecting and disrupting all sectors of the global economy. They are transforming the way business and production methods are run, how work is done, creating new business models, and replacing old management practices with new innovations. ASEAN Member States have experienced an increasing share of elderly population and a declining share of youth in recent decades. Workforce aging has direct implications for labor productivity. A more mature labor force will have higher average levels of work experience, with potentially positive effects on productivity (Disney, 1996). The stock of workforce skills is likely to become increasingly dated as the average age of participants in the workforce rises, with negative effects on innovation and productivity.

Despite the significance of these emerging phenomena, there remains a lack of in-depth narrative and analysis at the ASEAN level on the effects of these phenomena on labor productivity, although the International Labour Organization (ILO) and the Asian Productivity Organization (APO) provide statistical snapshots of labor productivity including those of the ASEAN Member States. This report explores the current status of labor productivity in ASEAN Member States and provides policy recommendations that will help produce sustainable labor productivity growth in coming years. In particular, this report focuses on the role of human capital in labor productivity growth. This study also investigates the feasibility of establishing an ASEAN Labor Productivity Index in the future. It is expected that this research will provide policymakers of the ASEAN a useful opportunity to better understand the current situation of labor productivity in ASEAN Member States and come up with policy recommendations that will promote labor productivity growth in the region.

Labor productivity in ASEAN grew by 2.96 percent on average annually over 1971-2018 according to APO. A large portion of the growth is attributable to the growth of capital per worker, i.e., capital deepening. The roles of total factor productivity and human

capital have been relatively limited in the promotion of labor productivity. This report shows that human capital has a statistically significant impact on labor productivity growth and the return on human capital is greater than that of other determinant of labor productivity. This implies that the role of human capital should be strengthened in the policy implementation for labor productivity growth.

To promote human capital productivity, this report proposes a holistic framework to the management of human capital productivity. This framework comprises three components: institutions, strategy, and culture. Institutions refer to the various types of organizations involved in managing human capital productivity. Strategy encompasses specific strategic thrusts and their supporting programs aimed at boosting productivity. Culture covers the shared values that undergird and support all the efforts undertaken. The proposed holistic approach to the management of human capital productivity can serve as a framework for the ASEAN and its Member States to have a common collective vision, goals, and strategy to maximize the potential of the region's human capital.

This study also explores the feasibility of developing an ASEAN labor productivity index that measures the labor productivity enhancing capacity of ASEAN Member States. The analyses in this report indicate that labor productivity is affected by diverse factors. To understand the labor productivity gap among the countries, it is necessary to evaluate the contribution of individual factors to labor productivity. The index is intended to measure the contribution of individual input variables in the promotion of labor productivity. Second, the performances of individual variables can be simplified by constructing a composite index for a cross-country comparison.

The rest of the report is structured as follows. In chapter II, this study characterizes the current status of labor productivity in ASEAN Member States. The chapter reviews the concepts of labor productivity and analyzes labor productivity and labor productivity growth in ASEAN. It also decomposes labor productivity growth into labor quality growth, capital deepening, and the growth of multifactor productivity. Analysis by key industrial sectors is conducted to calculate each industry's GDP share, labor productivity level, and growth. In chapter III, this report examines the specific contribution of human capital on labor productivity growth. It compares the role of human capital with that of other determinants of labor productivity across ASEAN Member States. It also evaluates the efficiency of human capital in the promotion of labor productivity among the Member States. In chapter IV, this report provides policy recommendations to sustain labor productivity growth. It analyzes the impacts of the changing environment such as globalization, aging populations, technological advancement, and structural transformations of economies on labor productivity. This chapter proposes a holistic framework to the management of human capital productivity. In chapter V, this report

explores the feasibility of developing a regional labor productivity index for the ASEAN. It explains the rationale for developing a regional labor productivity index and the structure of that index. In chapter VI, this report gives closing remarks and suggests policy recommendations.

2

Characterization of Labor Productivity Growth in ASEAN Member States

2.1. Concepts of Labor Productivity

Productivity measurement can be largely classified into two types: single-factor productivity (SFP) and multi-factor productivity (MFP). SFP, which is defined as labor productivity, is the ratio of the output to a single input, while MFP can be a single or aggregated output per aggregated inputs of all factors of production. Measuring MFP involves more measurement problems than labor productivity: weighting inputs/outputs, taking into account quality changes in inputs/outputs, treating investments in intangible assets, and so on.

Labor productivity (LP) is measured as output per unit of labor input. Labor is one of the most important factors of production, and at first glance it seems relatively easy to measure. However, there are various issues to consider when measuring labor productivity. Typically, either work hours or the number of people employed is used as labor input; however, these variables do not account for multiple-job holders, unpaid workers, or the quality of labor. Nonetheless, despite these shortcomings, work hours are recognized as the most appropriate measure of labor input.

Labor Productivity (LP)=Q/L ; where Q is output, and L is labor

In general, labor productivity depends on investments in capital, technology, and human capital. MFP, also referred to as total factor productivity (TFP), is another measure of labor efficacy. It is derived by isolating the contribution of production inputs such as physical capital, human capital, and labor from the total amount of outputs (goods and services). By computing the contributions of labor and capital to output, MFP measures the residual growth that cannot be explained by the rate of change in the services of labor, capital, and intermediate outputs, and the estimated residual is often interpreted as technical and organizational innovation.

Multi factor productivity (MFP)=Q/(F(L,K)), where K is capital

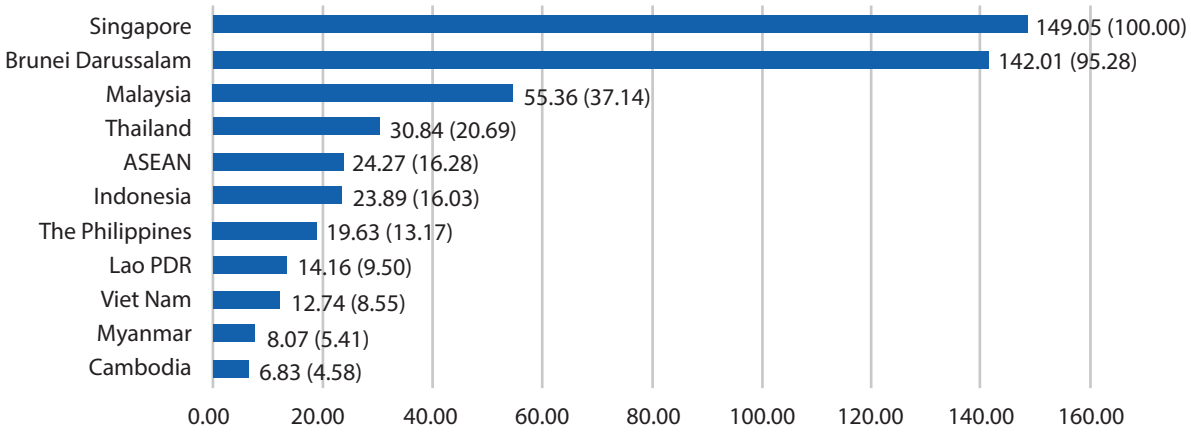
The modern approach to MFP measurement is based on Solow's growth model and its growth accounting technique. As one of the methodologies for MFP measurement, growth accounting is based on neoclassical assumptions: factors of production are paid their marginal products and are entirely consumed in a competitive market system. However, original neoclassical assumptions do not hold up in reality; thus, some studies have sought to improve the model by assuming various possibilities such as non-constant returns to scale, markups, refinements, and so on(Hall, 1989; Paquet et al., 2001). Toward the end of the 1980s, as endogenous growth models arose, many studies were conducted on the magnitude of the impact of capital accumulation, including clarification of the role of human capital and understanding of the processes of endogenous technological change (Barrell et al., 2000, p. 11).

Estimating productivity starts from defining outputs and inputs, and the most recognized and widely used productivity measures (by the OECD and the APO) provide thorough insights into the productivity concept and comparable measurement. Capital inputs are estimated by cumulating and depreciating past investments such as machinery and equipment because capital stock data is not available.

2.2. Trends of Labor Productivity in ASEAN Member States

Figure 2-1 shows the per-worker labor productivity of ASEAN Member States as of 2018. The overall per-worker labor productivity for the ASEAN as a whole is 24.27 (thousands of USD), but there is large variation among the countries. Singapore presents the highest level of labor productivity at 149.05 (thousands of USD due mainly to the high growth in capital investments via foreign direct investment over the years, closely followed by Brunei Darussalam at 142.01 (thousands of USD). Following Singapore and Brunei Darussalam are Malaysia (55.36 thousands of USD), Thailand (30.84 thousands of USD), Indonesia (23.89 thousands of USD), and the Philippines (19.63 thousands of USD). Lao PDR (14.16 thousands of USD), Viet Nam (12.74 thousands of USD), Myanmar (8.07 thousands of USD), and Cambodia (6.83 thousands of USD) round out the relatively lower levels of per-worker labor productivity among the ASEAN Member States in 2018.

<Figure 2-1> Per-worker labor productivity of ASEAN Member States (2018)

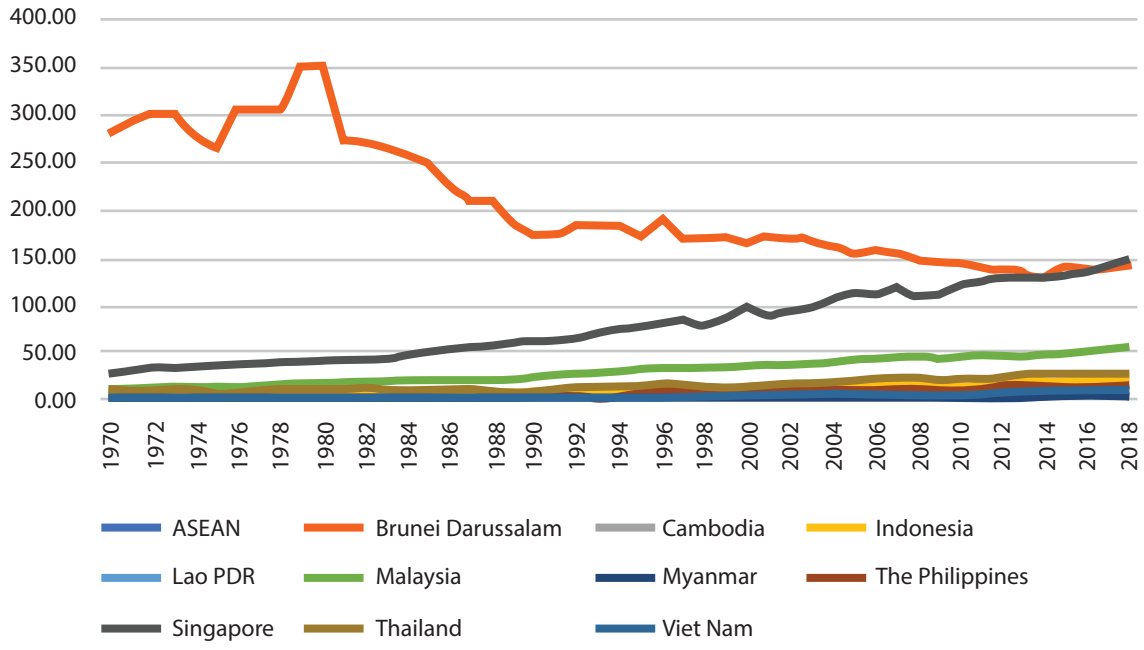


Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

Note: Output per worker (thousands of USD, constant 2017 PPP). The numbers in the parentheses indicate the relative labor productivity (%) against that of Singapore.

Figure 2-2 shows the trend of per-worker labor productivity in ASEAN Member States over the years, from 1970 through to 2018. All 10 Member States other than Brunei Darussalam presented a general upward trend in labor productivity, though with different growth rates and occasional dips in growth.

<Figure 2-2> Per-worker labor productivity trend over time (1970-2018)

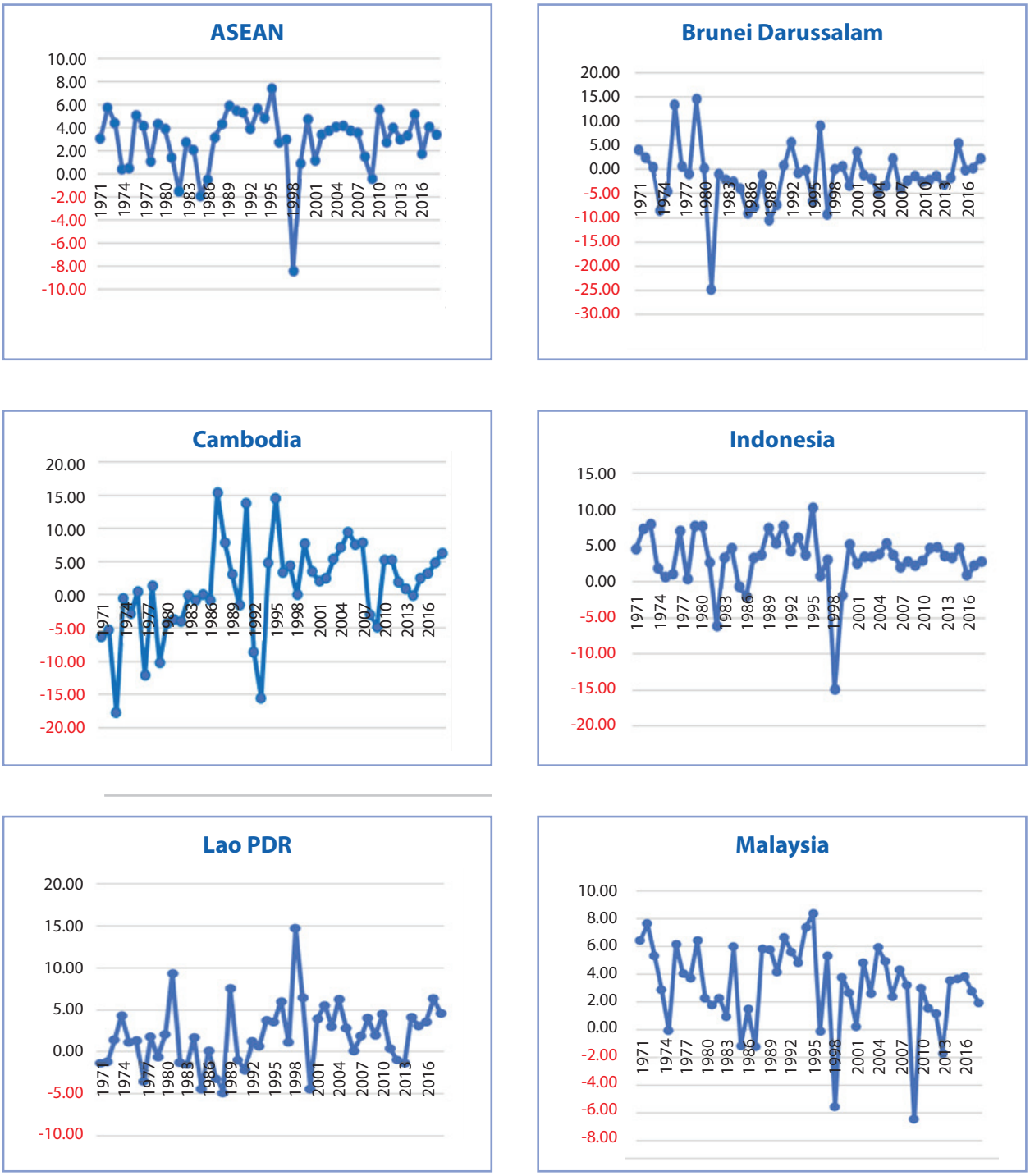


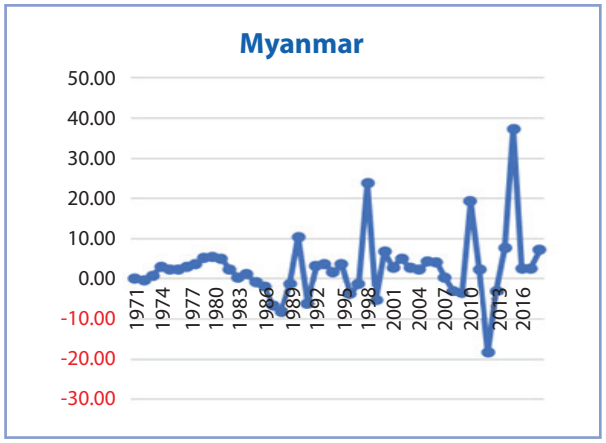
Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

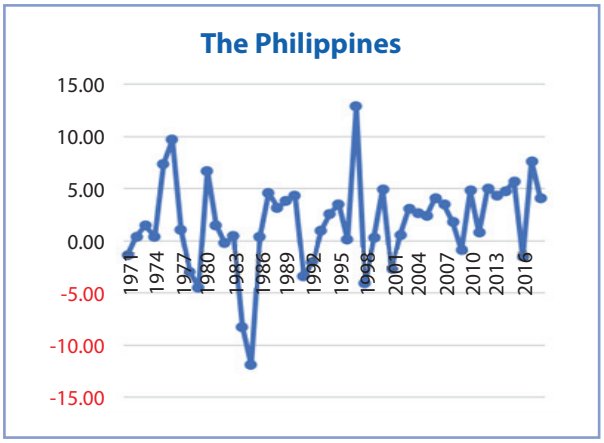
Note: thousands of USD, constant 2017 PPP.

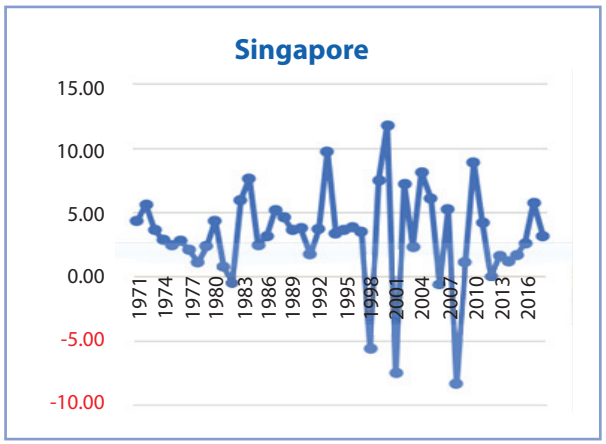
Figure 2-3 presents the trends of per-worker labor productivity growth over the years, from 1971 to 2018. The figure shows that labor productivity growth rates have been fairly volatile both over the years and across the Member States. All countries over this time frame have experienced both negative and positive annual growth rates, though all have experienced positive average growth over 1971-2018, with the notable exception of Brunei Darussalam.

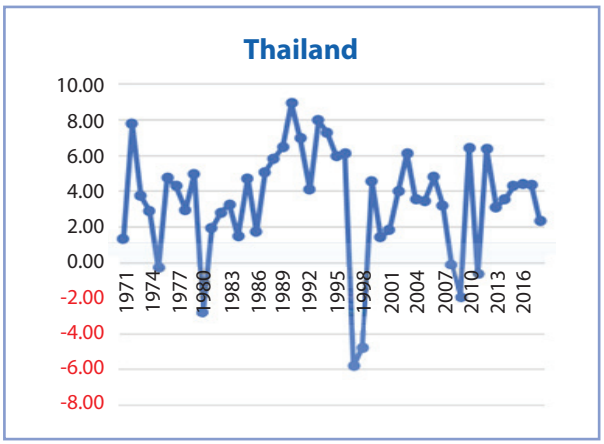
<Figure 2-3> Per-worker labor productivity growth (1971-2018, %)

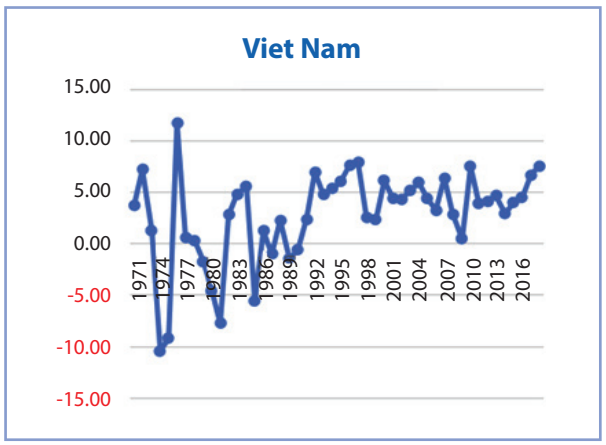












Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10*th*, 2020.

Table 2-1 shows that the ASEAN Member States as a whole experienced positive per-worker labor productivity growth approximately ranging from 2 to 3.5 percent each decade from 1971 to 2018, with an average growth rate of 2.96 percent over this sample period. In terms of individual Member States, Thailand recorded the highest average growth rate, with an average annual per-worker labor productivity growth rate of 3.44

percent. Singapore (3.25 percent), Malaysia (3.18 percent), and Indonesia (3.17 percent) followed with similar average annual growth rates of over 3 percent. Viet Nam and Myanmar achieved average growth rates of 2.81 percent and 2.58 percent, respectively. Meanwhile, Lao PDR (1.92 percent), the Philippines (1.72 percent), and Cambodia (1.06 percent) demonstrated relatively low per-worker labor productivity growth. Brunei Darussalam was the only ASEAN Member State that recorded a negative average growth rate at -1.43 percent. In recent decades, Indonesia, Myanmar, the Philippines, and Viet Nam have displayed rising growth rates.

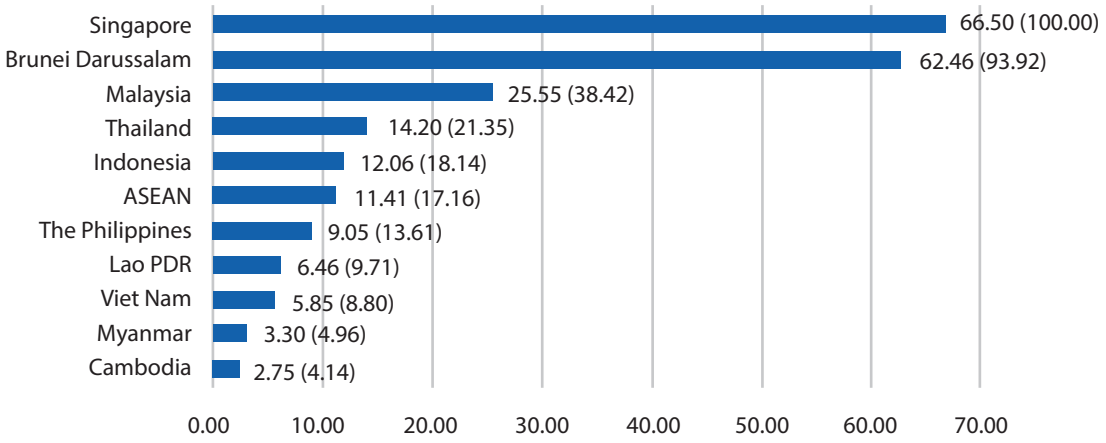
<Table 2-1> Statistics for per-worker labor productivity growth of ASEAN Member States (1971-2018)

Country	1971-1980	1981-1990	1991-2000	2001-2010	2011-2018	1971-2018
ASEAN	3.28	2.12	3.01	3.05	3.45	2.96
Brunei Darussalam	2.19	-6.99	-0.39	-1.55	-0.12	-1.43
Cambodia	-5.71	1.55	2.79	3.94	3.12	1.06
Indonesia	4.63	2.20	2.44	3.24	3.38	3.17
Lao PDR	0.54	0.23	3.10	3.39	2.47	1.92
Malaysia	4.51	2.60	3.92	2.53	2.12	3.18
Myanmar	2.52	0.04	2.61	3.40	4.77	2.58
The Philippines	1.85	-0.19	1.60	1.94	3.86	1.72
Singapore	3.20	3.70	4.35	2.28	2.55	3.25
Thailand	2.98	4.23	3.40	3.14	3.49	3.44
Viet Nam	-0.10	0.06	5.23	4.48	4.79	2.81

Source: author's calculations based on the APO's *Asian Economy and Productivity Map.*
Note: percentages

Figure 2-4 shows the per-hour labor productivity of ASEAN Member States in 2018, which is defined as output per hour. Work hours are different across different countries and some countries tend to work longer than others. Therefore, per worker-based labor productivity may not well reflect the productivity gap across countries. Per-hour labor productivity figures attempt to remedy this shortcoming. Nonetheless, the relative standings of the ASEAN Member States' per-hour labor productivity in 2018 are similar to those of per-worker labor productivity. Singapore (66.5 USD) and Brunei Darussalam (62.46 USD) have the highest per-hour labor productivity, followed by Malaysia (25.55 USD), Thailand (14.2 USD), and Indonesia (12.06 USD). The Philippines (9.05 USD), Lao PDR (6.46 USD), Viet Nam (5.85 USD), Myanmar (3.3 USD), and Cambodia (2.75 USD) recorded relatively low labor productivity below the ASEAN average (11.41 USD).

<Figure 2-4> Per-hour labor productivity of ASEAN Member States (2018)

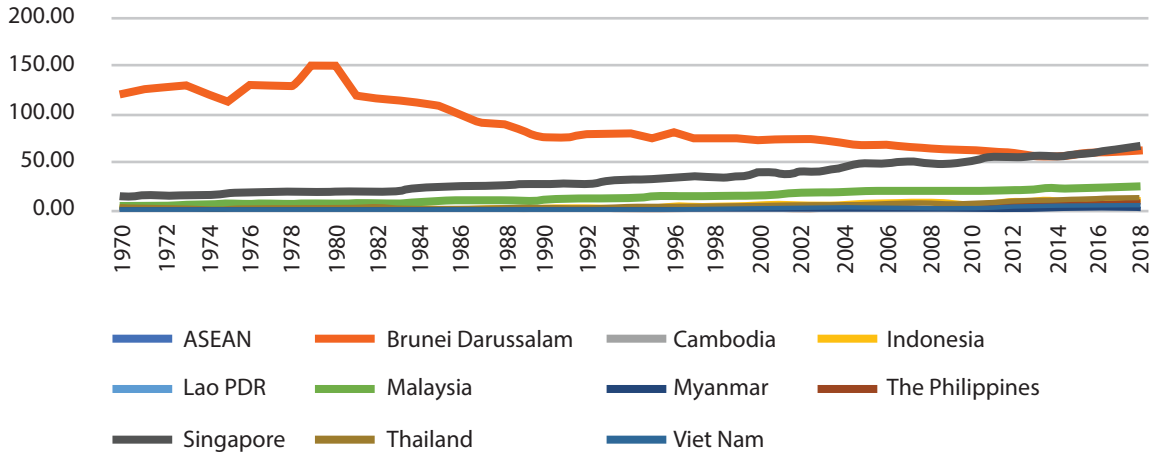


Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

Note: Output per hour (USD, constant 2017 PPP). The numbers in the parentheses indicate the relative labor productivity (%) against that of Singapore.

Figure 2-5 shows the trends of per-hour labor productivity in ASEAN Member States from 1971 to 2018. It shows the same trends as those demonstrated by the per-worker labor productivity graph in Figure 2-2, with an overall positive trend for all states, though at different growth rates and with the notable exception of Brunei Darussalam's generally negative trend.

<Figure 2-5> Per-hour labor productivity trend over time (1970-2018)

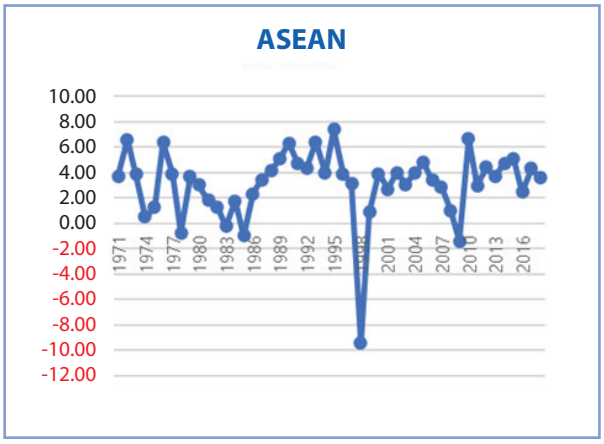


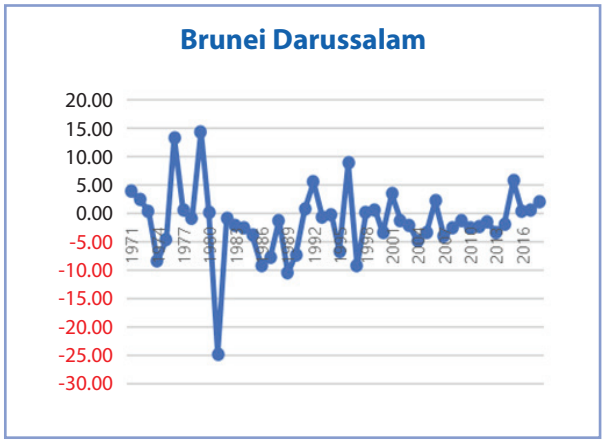
Source: Asian Productivity Organization (APO), Asian Economy and Productivity Map, accessed on Nov. 10th, 2020.

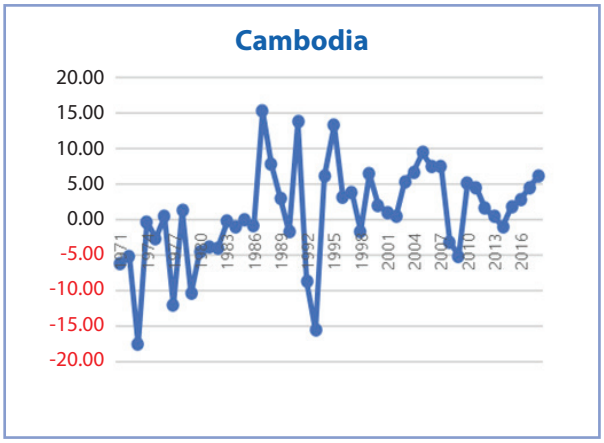
Note: thousands of USD, constant 2017 PPP.

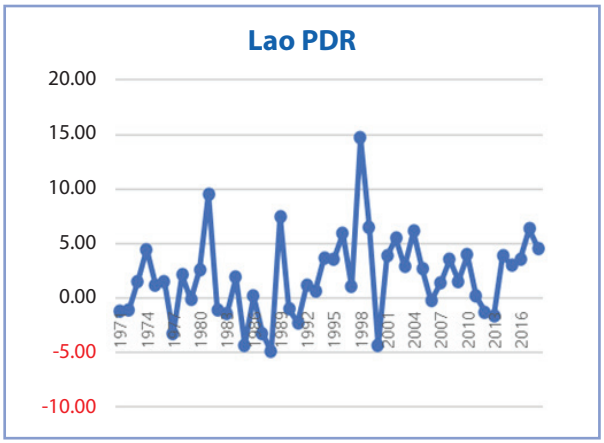
Figure 2-6 shows the per-hour labor productivity growth rate in ASEAN Member States from 1971 to 2018. Like Figure 2-3, it shows volatile labor productivity growth rates across the Member States and across the sample period.

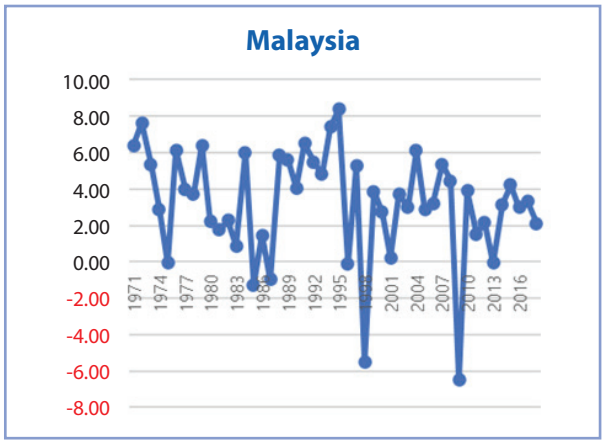
<Figure 2-6> Per-hour labor productivity growth (1971-2018, %)

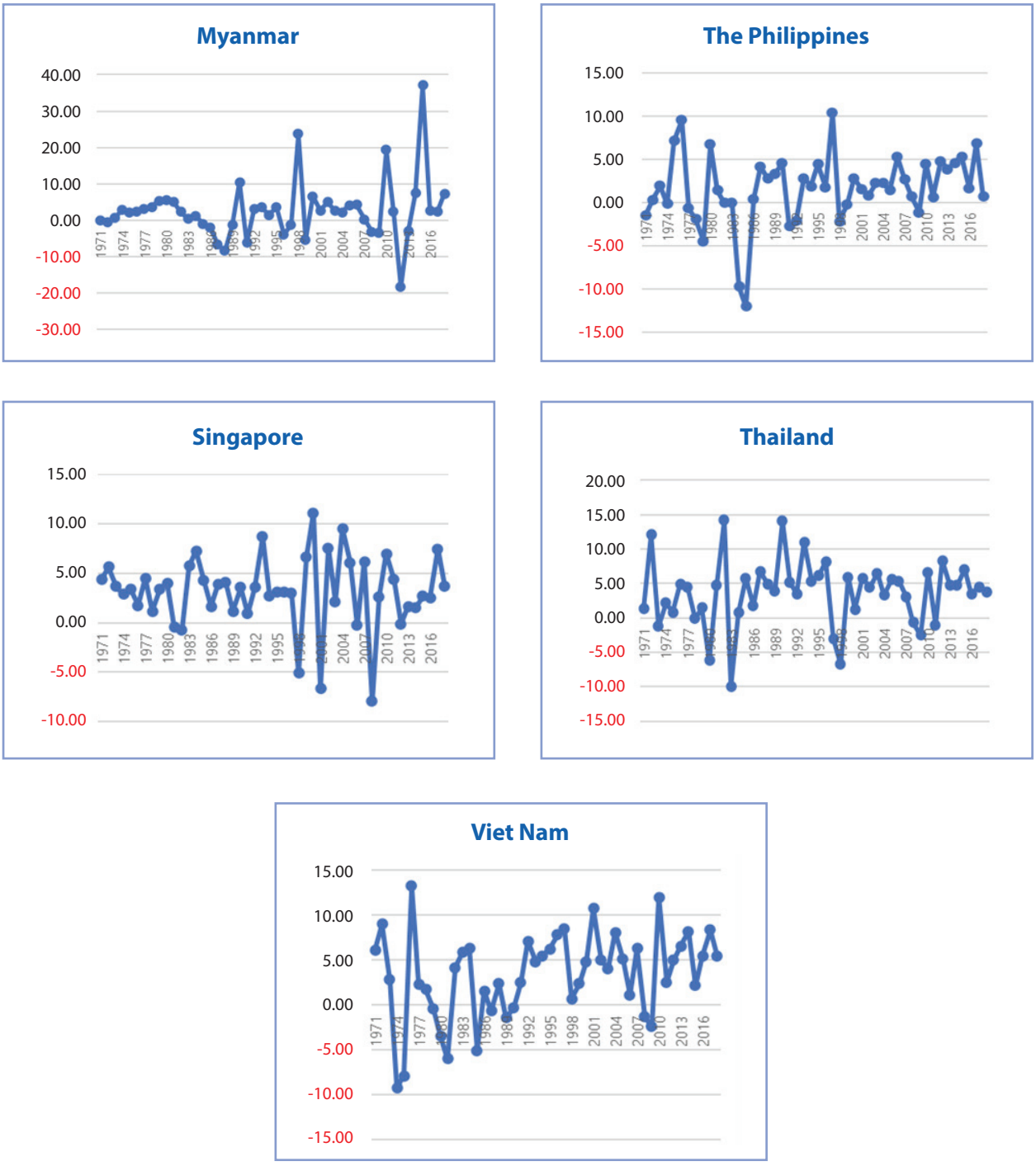












Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

Table 2-2 shows the per-hour labor productivity growth in ASEAN Member States over 1971-2018. ASEAN Member States as a whole averaged 3.08 percent growth over the sample period, with decade averages between approximately 2.5 and 4 percent. Thailand presented the highest average annual growth rate from 1971 to 2018 at 3.7 percent, followed by Viet Nam (3.42 percent), Malaysia (3.23 percent), Singapore (3.2 percent), and Indonesia (3.08 percent), which all achieved average annual per-hour labor productivity growth rates of over 3 percent and above the ASEAN average. They are followed by

Myanmar (2.58 percent), Lao PDR (1.93 percent), the Philippines (1.67 percent), and Cambodia (0.79 percent). Brunei Darussalam was alone in recording negative average annual growth at -1.38 percent.

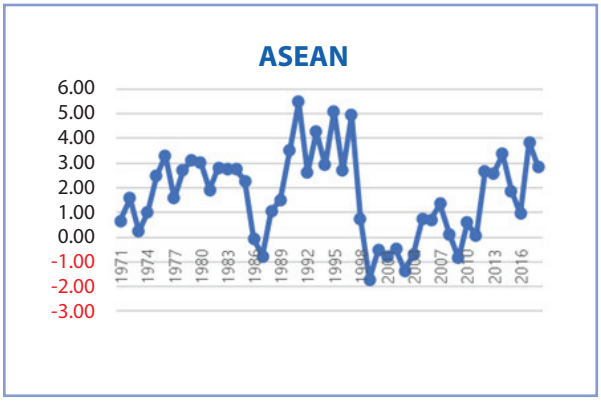
<Table 2-2> Statistics for per-hour labor productivity growth of ASEAN Member States (1971-2018)

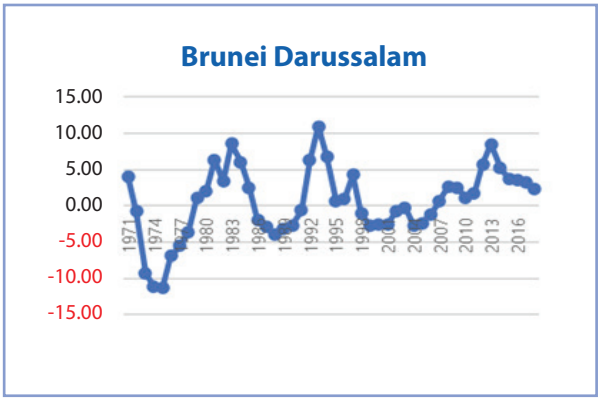
Country	1971-1980	1981-1990	1991-2000	2001-2010	2011-2018	1971-2018
ASEAN	3.20	2.49	2.90	3.08	3.89	3.08
Brunei Darussalam	2.22	-6.96	-0.35	-1.55	0.04	-1.38
Cambodia	-5.68	1.47	2.31	3.55	2.65	0.79
Indonesia	4.05	2.70	2.08	2.81	3.91	3.08
Lao PDR	0.79	0.33	3.09	3.15	2.36	1.93
Malaysia	4.48	2.57	3.89	2.64	2.43	3.23
Myanmar	2.55	0.04	2.56	3.44	4.75	2.58
The Philippines	1.75	-0.46	1.74	2.11	3.60	1.67
Singapore	3.49	3.06	3.78	2.62	2.98	3.20
Thailand	1.99	4.72	3.70	3.77	4.47	3.70
Viet Nam	1.42	0.68	5.04	4.88	5.47	3.42

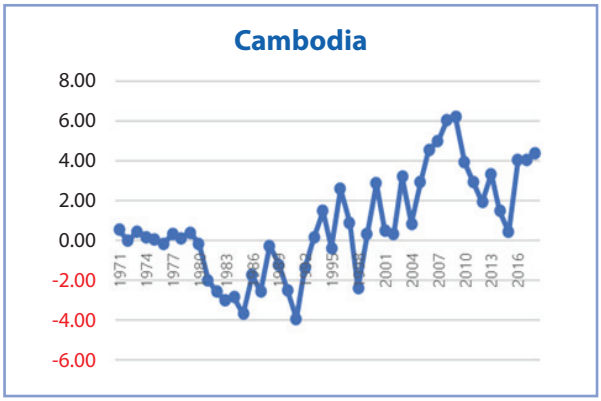
Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: percentages

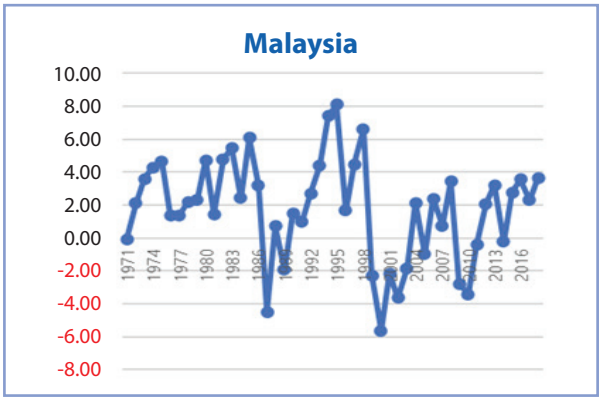
Per-hour labor productivity growth can be decomposed into three components: the growth of capital per hour (i.e. capital deepening), the growth of multifactor productivity, and the change of labor quality. Figure 2-7 shows the trend of capital deepening in ASEAN Member States over 1971-2018. The graph indicates that capital deepening has also been volatile with all countries experiencing negative growth rates at one point or another.

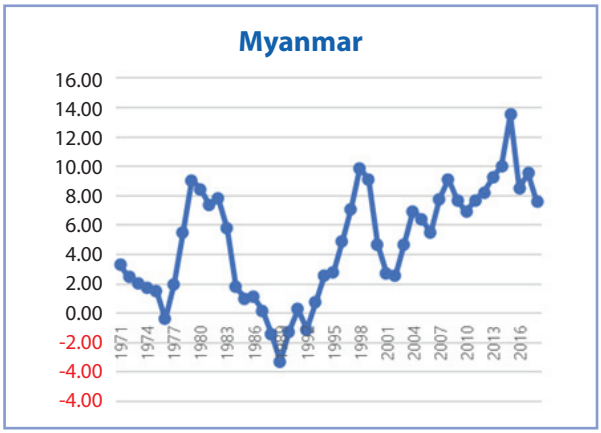
<Figure 2-7> Trend of capital deepening of ASEAN Member States (1971-2018, %)

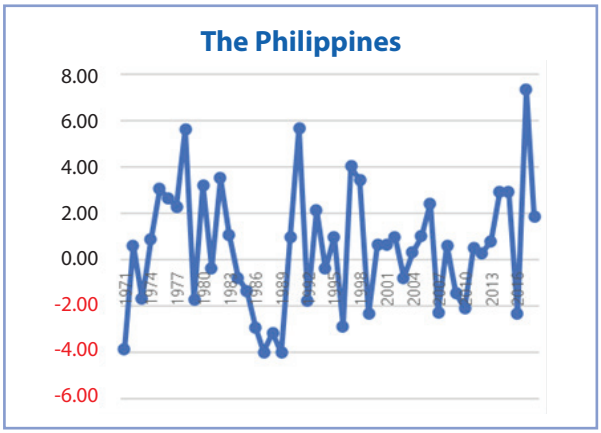


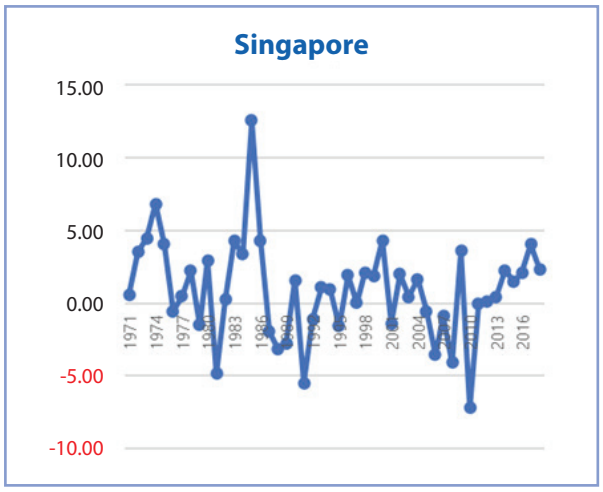


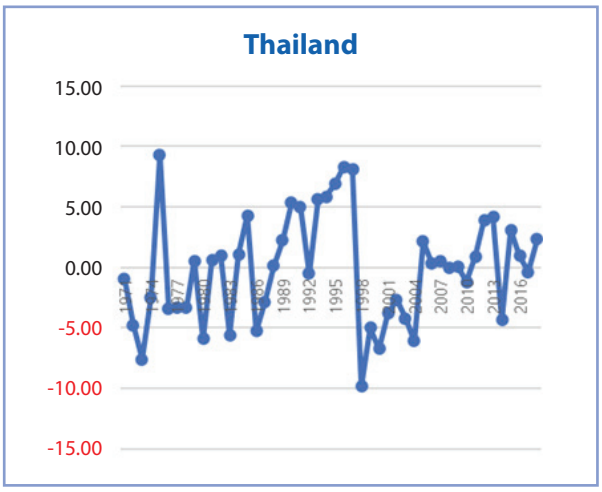


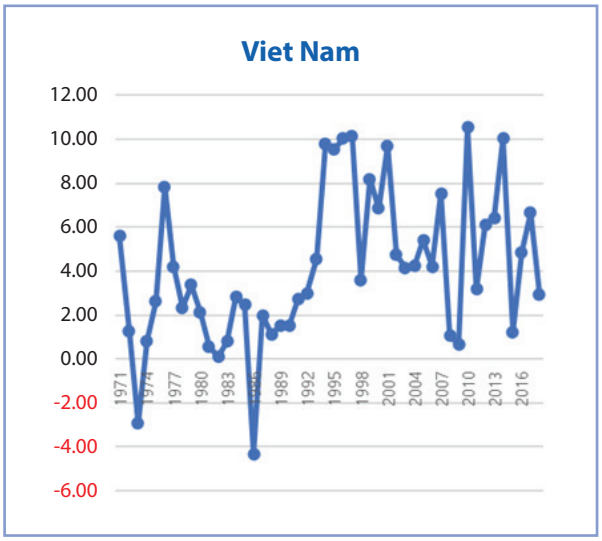












Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

Table 2-3 decomposes capital deepening into separate time periods over 1971-2018. The average value for 1971-2018 represents the long-run capital deepening. The data shows that Myanmar (4.81 percent) experienced the most rapid growth of capital accumulation over this sample period followed by Viet Nam (4.13 percent), Lao PDR (3.14 percent), and Malaysia (1.78 percent). In particular, Myanmar recorded a 9.31 percent average annual growth rate over 2011-2018. The remaining Member States demonstrated relatively low capital deepening below the ASEAN average (1.71 percent).

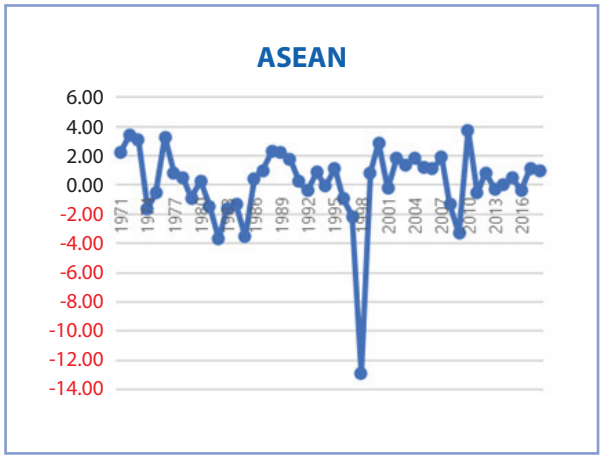
<Table 2-3> Statistics for capital deepening of ASEAN Member States (1971-2018)

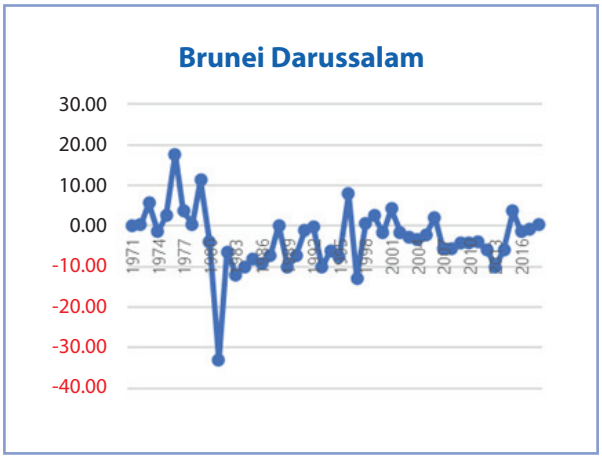
Country	1971-1980	1981-1990	1991-2000	2001-2010	2011-2018	1971-2018
ASEAN	1.98	1.78	2.66	-0.06	2.29	1.71
Brunei Darussalam	-4.12	1.22	2.29	-0.27	4.23	0.52
Cambodia	0.17	-2.23	0.02	3.36	2.83	0.75
Indonesia	1.48	1.75	0.93	-0.24	0.76	0.94
Lao PDR	1.97	2.36	4.54	1.78	5.55	3.14
Malaysia	2.66	1.92	2.85	-0.61	2.12	1.78
Myanmar	3.58	1.92	4.10	6.03	9.31	4.81
The Philippines	1.12	-1.09	0.97	-0.05	1.80	0.50
Singapore	2.31	1.37	0.41	-1.00	1.59	0.91
Thailand	-2.18	0.11	1.78	-1.48	1.34	-0.15
Viet Nam	2.73	0.86	6.85	5.23	5.18	4.13

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: percentages

Figure 2-8 shows the trend of total factor productivity growth, which shows greater variation than capital deepening over 1971-2018. The average standard deviation of capital deepening was 3.32 percent while that of total factor productivity was 4.72 percent between 1971 and 2018.

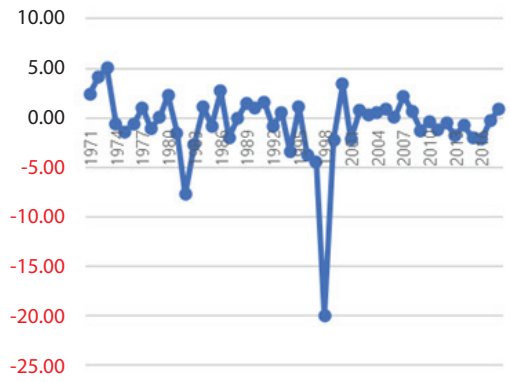
<Figure 2-8> Trend of total factor productivity growth of ASEAN Member States (1971-2018)



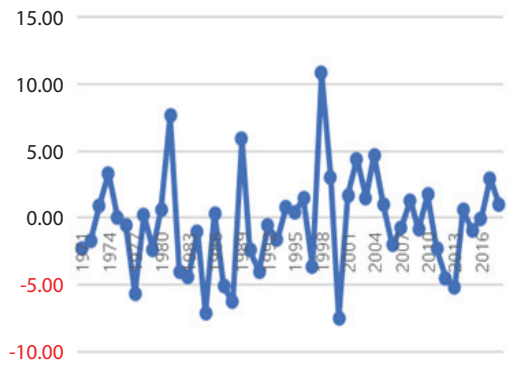


Cambodia

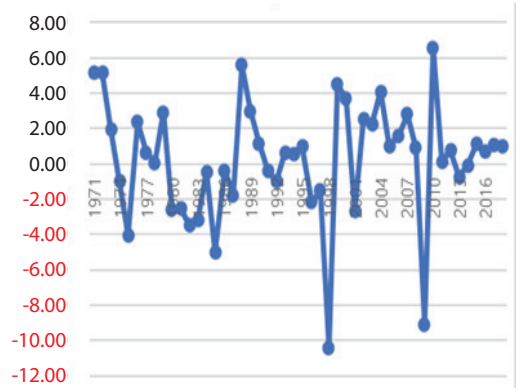
Indonesia



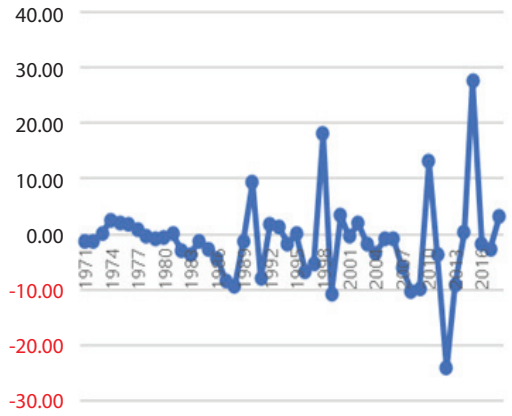
Lao PDR



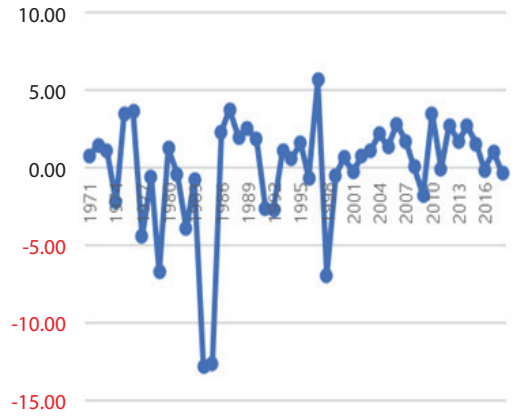
Malaysia

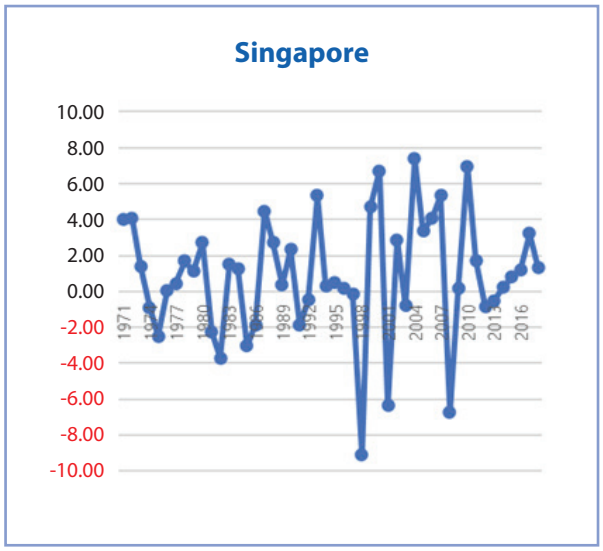


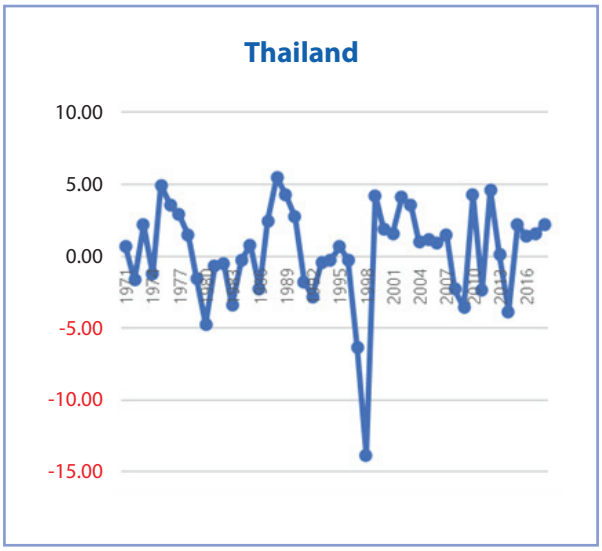
Myanmar

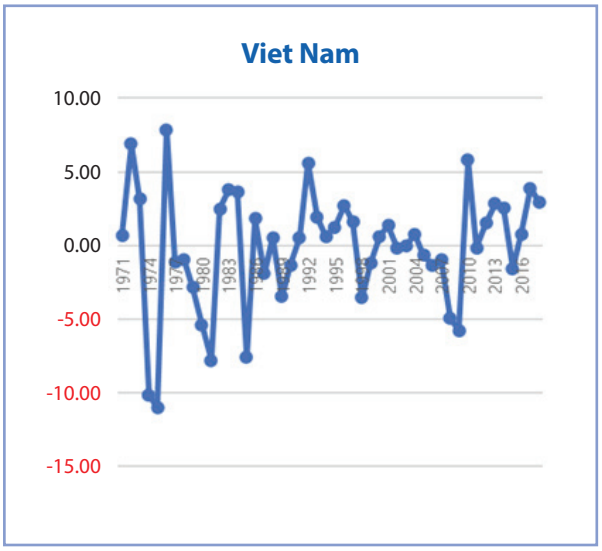


The Philippines









Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

The average decade growth rates of total factor productivity are reported in Table 2-4. The data indicates that Singapore achieved the highest average growth of total factor productivity of 0.91 percent over 1971-2018. In particular, TFP growth has been more pronounced in recent periods since the start of the new millennium. Among the ten ASEAN Member States, seven countries experienced negative average TFP growth rates, with the exception of Malaysia, Singapore, and Thailand. However, the overall ASEAN TFP growth rate remained positive at a 0.15 percent.

<Table 2-4> Total factor productivity growth of ASEAN Member States (1971-2018)

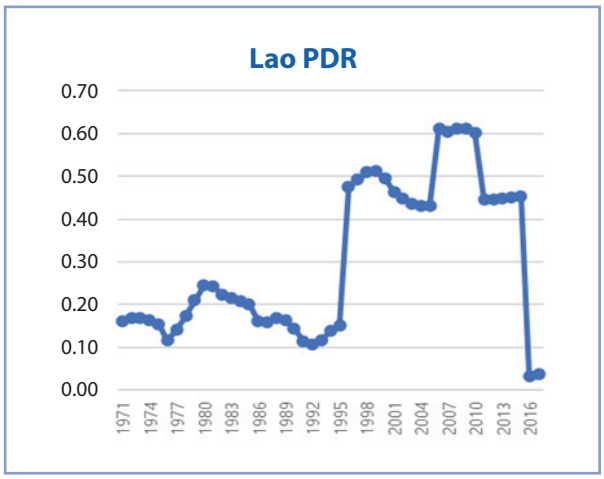
Country	1971-1980	1981-1990	1991-2000	2001-2010	2011-2018	1971-2018
ASEAN	1.06	-0.38	-1.03	0.84	0.29	0.15
Brunei Darussalam	3.67	-10.30	-2.80	-2.23	-2.94	-2.92
Cambodia	-6.54	2.34	1.77	0.84	-0.24	-0.37
Indonesia	1.13	-0.83	-2.79	0.18	-0.97	-0.64
Lao PDR	-0.75	-1.65	-0.08	1.28	-1.06	-0.43
Malaysia	1.06	-0.69	-0.51	1.01	0.50	0.26
Myanmar	0.30	-2.47	-0.77	-1.82	-1.34	-1.21
The Philippines	-0.23	-1.81	-0.37	1.16	1.15	-0.07
Singapore	1.22	0.18	0.62	1.63	0.91	0.91
Thailand	0.67	0.86	-1.88	1.22	0.74	0.30
Viet Nam	-1.29	-0.98	1.01	-0.60	1.61	-0.12

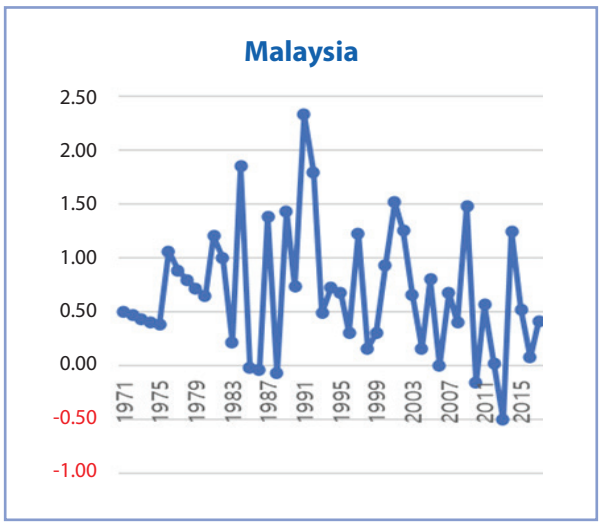
Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: percentages

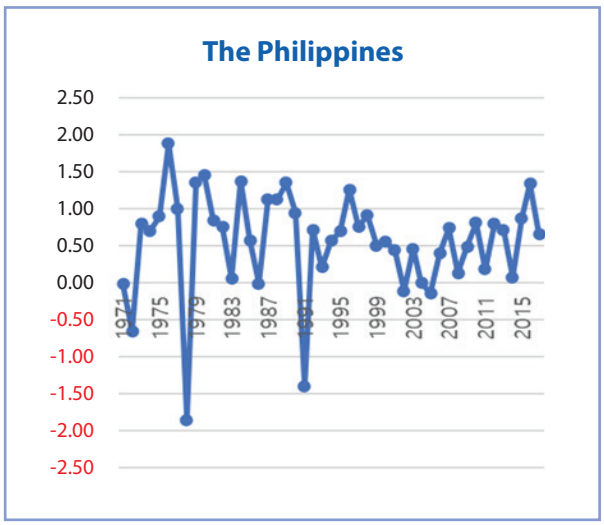
Figure 2-9 shows the trend of labor quality growth. Labor hours are not homogeneous with respect to its impact on productivity. The effect of per hour labor output will be different depending upon such factors as the knowledge, intelligence, and strength of the workers supplying the hours of work. Labor quality refers to these productivity-augmenting characteristics of workers.1 Labor quality showed more much stable growth over the years than capital deepening and total factor productivity with an average standard deviation of 0.6 percent for the countries.

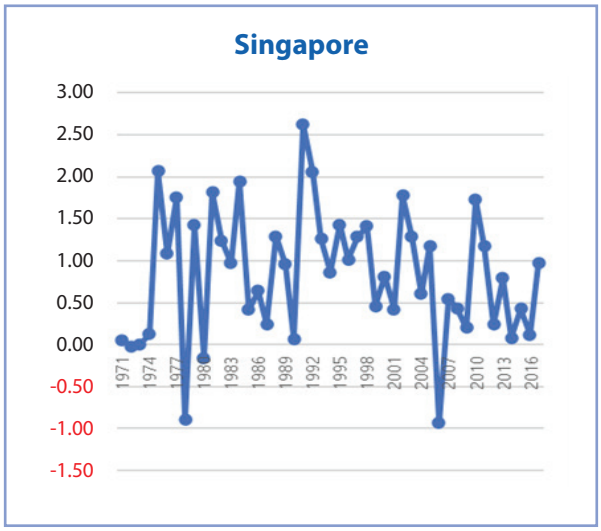
<Figure 2-9> Trend of labor quality growth (1971-2017)

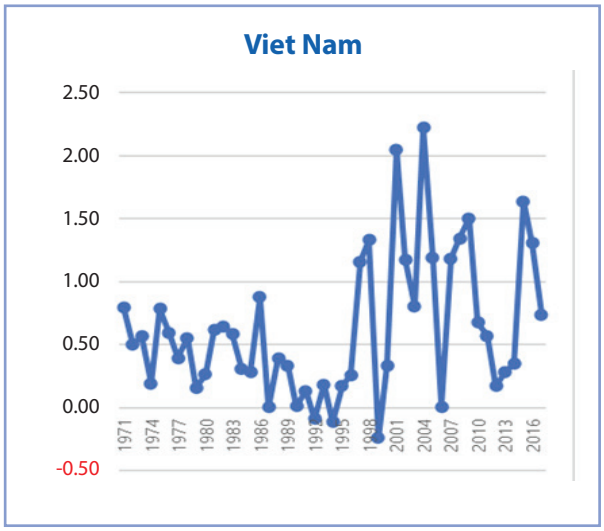
[1] Refer the specific details of the measurement of labor quality to APO Productivity Databook, https://www.apo-tokyo.org/publications/wp-content/uploads/sites/5/APO-Productivity-Databook-2019_light.pdf.











Sources: Asian Productivity Organization (APO), *APO Productivity Databook 2019*.

Table 2-5 presents the labor quality growth of ASEAN Member States over 1971-2017 period. It indicates that Thailand achieved the highest average growth of labor quality during the sample period and has maintained its robust growth over time. Indonesia experienced the highest growth rate in the most recent period of 2011-2017. Meanwhile, the average growth of labor quality in Brunei Darussalam, Cambodia, and Lao PDR remained at a relatively low level.

<Table 2-5> Labor quality growth of ASEAN Member States (1971-2017)

Country	1971-1980	1981-1990	1991-2000	2001-2010	2011-2017	1971-2017
Brunei Darussalam	0.26	0.37	0.14	0.20	-0.09	0.19
Cambodia	0.37	0.16	0.25	0.46	0.82	0.39
Indonesia	0.67	0.86	1.75	1.04	1.83	1.19
Lao PDR	0.17	0.19	0.31	0.53	0.33	0.30
Malaysia	0.63	0.77	0.90	0.68	0.34	0.68
Myanmar	0.09	0.53	0.62	0.68	0.14	0.43
The Philippines	0.55	0.81	0.47	0.32	0.66	0.56
Singapore	0.55	0.96	1.32	0.73	0.54	0.84
Thailand	1.17	1.79	1.91	1.39	1.58	1.56
Viet Nam	0.48	0.41	0.31	1.22	0.72	0.62

Sources: Asian Productivity Organization (APO), *APO Productivity Databook 2019.*

Note: percentages

To evaluate the relative contributions of the three components of labor productivity growth – capital, total factor productivity, and labor quality – to overall growth, we can decompose the short-run (2011-2017) and the long-run (1971-2017) labor productivity growth into their three constituent components. Table 2-6 shows that capital deepening has been the predominant driver of long-term labor productivity growth for ASEAN Member States over 1971-2017. It is also noticeable that half of the countries experienced a negative average total factor productivity growth rate. However, in recent years total factor productivity growth is starting to account for more of the overall labor productivity growth than before, as seen in Table 2-7. In Cambodia, total factor productivity growth accounted for 31 percent of labor productivity growth between 2011 and 2017. Lao PDR has also recently seen total factor productivity growth contribute 35 percent of overall per-hour labor productivity growth. In the Philippines, the contribution of total factor productivity growth increased to 36 percent of labor productivity growth. Meanwhile, the

share of total factor productivity within overall labor productivity growth has decreased in Singapore despite other advanced countries typically experiencing an increased role for total factor productivity in the promotion of general labor productivity.

<Table 2-6> Composition of per-hour labor productivity growth (1971-2017)

	Growth Rates (%)				Share of Labor Productivity Growth			
	labor productivity growth	capital deepening	total factor productivity	labor quality	labor productivity growth	capital deepening	total factor productivity	labor quality
Brunei Darussalam	-1.35	1.59	-3.14	0.19	100%	-118%	233%	-14%
Cambodia	1.06	0.89	-0.22	0.39	100%	84%	-21%	37%
Indonesia	3.04	2.39	-0.55	1.19	100%	79%	-18%	39%
Lao PDR	3.71	2.42	0.99	0.3	100%	65%	27%	8%
Malaysia	3.32	2.40	0.24	0.68	100%	72%	7%	20%
Myanmar	2.23	3.27	-1.47	0.43	100%	146%	-66%	19%
The Philippines	1.50	1.22	-0.27	0.56	100%	81%	-18%	37%
Singapore	3.03	1.37	0.82	0.84	100%	45%	27%	28%
Thailand	3.81	1.96	0.28	1.56	100%	51%	7%	41%
Viet Nam	3.86	2.66	0.57	0.62	100%	69%	15%	16%

Sources: Asian Productivity Organization (APO), *APO Productivity Databook 2019*.

<Table 2-7> Composition of per-hour labor productivity growth (2011-2017)

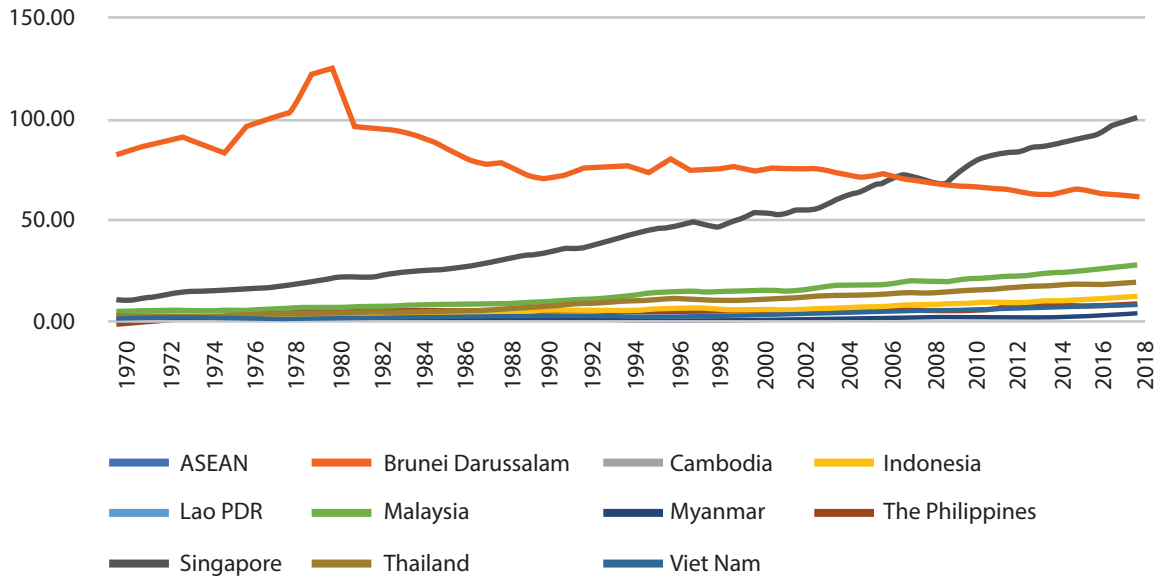
	Growth Rates (%)				Share of Labor Productivity Growth			
	labor productivity growth	capital deepening	total factor productivity	labor quality	labor productivity growth	capital deepening	total factor productivity	labor quality
Brunei Darussalam	-0.95	3.26	-4.12	-0.09	100%	-342%	432%	9%
Cambodia	4.31	2.14	1.34	0.82	100%	50%	31%	19%
Indonesia	3.77	3.47	-1.53	1.83	100%	92%	-41%	49%
Lao PDR	5.45	3.19	1.93	0.33	100%	59%	35%	6%
Malaysia	2.45	1.66	0.46	0.34	100%	68%	19%	14%
Myanmar	3.07	6.2	-3.28	0.14	100%	202%	-107%	5%
The Philippines	4.08	1.97	1.45	0.66	100%	48%	36%	16%
Singapore	2.30	1.46	0.3	0.54	100%	64%	13%	23%
Thailand	5.30	3.14	0.58	1.58	100%	59%	11%	30%
Viet Nam	5.80	3.24	1.84	0.72	100%	56%	32%	12%

Sources: Asian Productivity Organization (APO), *APO Productivity Databook 2019*.

2.3. Analysis by Key Sectors: GDP Share, Labor Productivity, and Growth

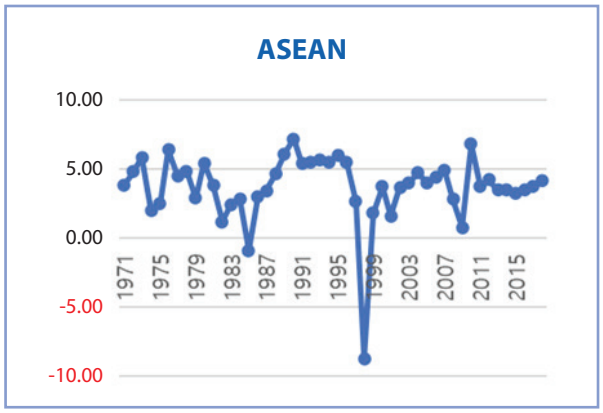
The ASEAN economy grew on average by 3.7 percent annually over the 1971-2018 period. Although there was growth in general, Member States experienced volatile year-to-year growth with differing growth rates between them. Singapore presented the highest average growth rate of 4.7 percent, followed by Thailand and Indonesia. Per capita GDP increased by 4.07 percent and 4.03 percent annually, respectively in these countries. Malaysia recorded an annual growth rate of 3.18 percent and Viet Nam achieved 3.73 percent growth over the same period. All countries experienced some negative annual growth rates over the sample period and Brunei Darussalam uniquely experienced a negative average growth rate (-0.61%).

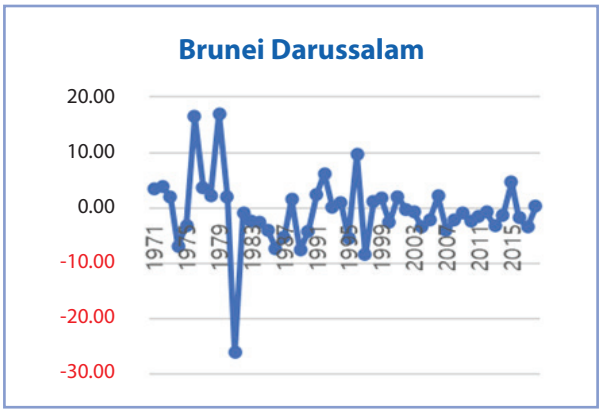
<Figure 2-10> Per capita real GDP of ASEAN Member States (1970-2018)

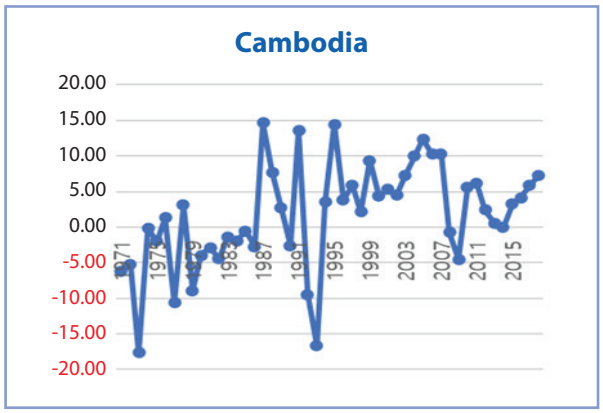


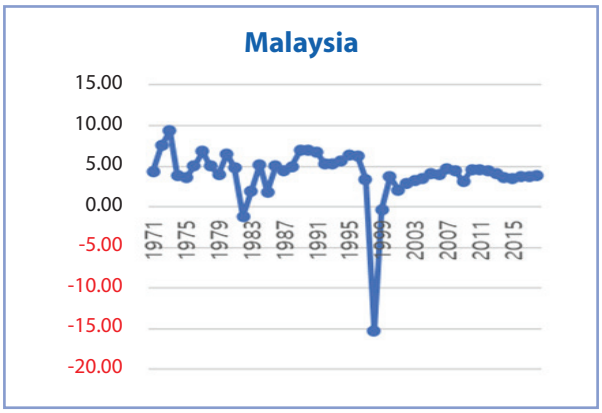
Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.
Note: thousands of USD, constant 2017 PPP

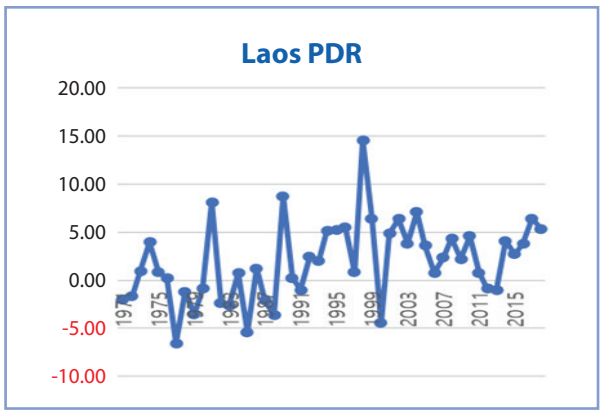
<Figure 2-11> Per capita real GDP growth of ASEAN Member States (1970-2018)

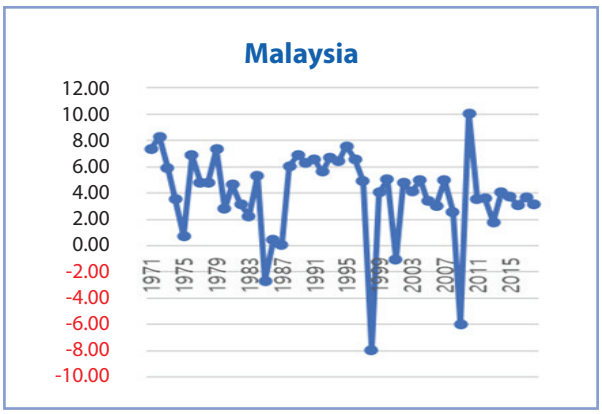


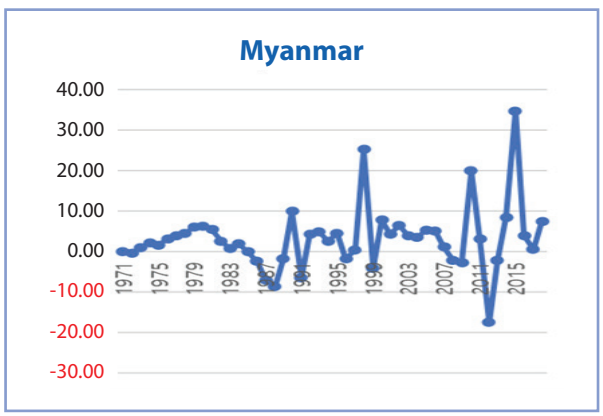


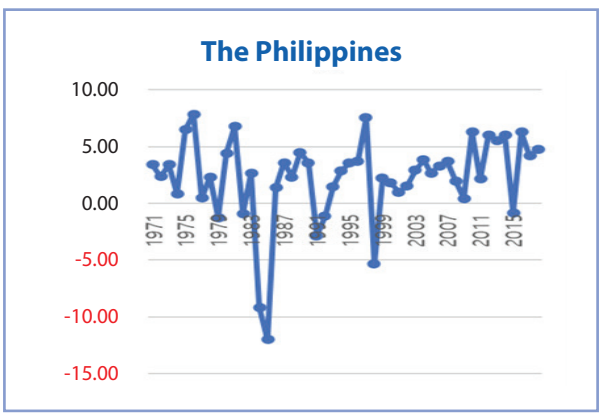


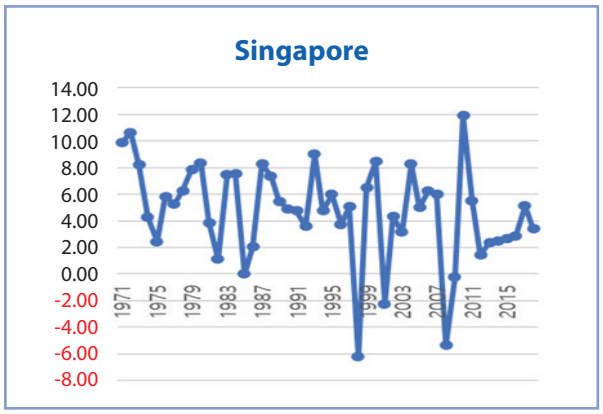


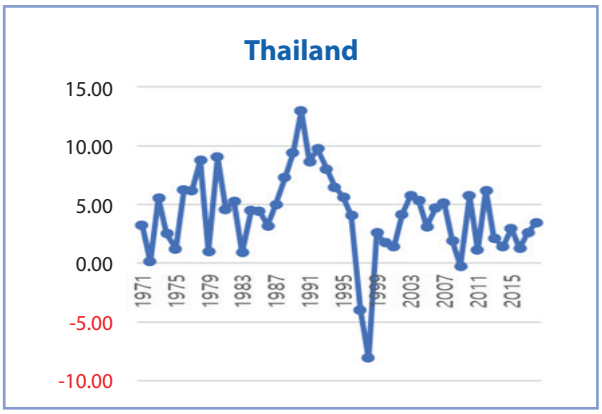


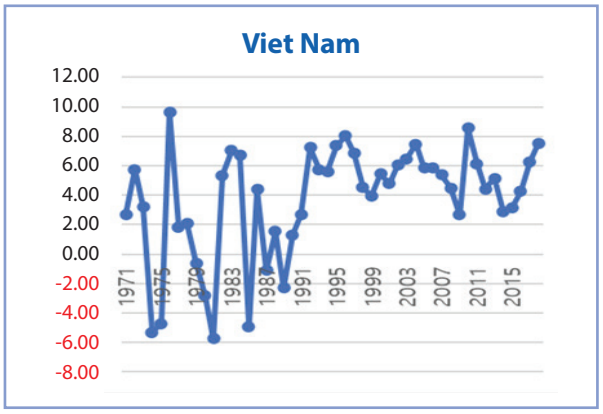












Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

<Table 2-8> Statistics for per capita GDP growth of ASEAN Member States (1971-2018)

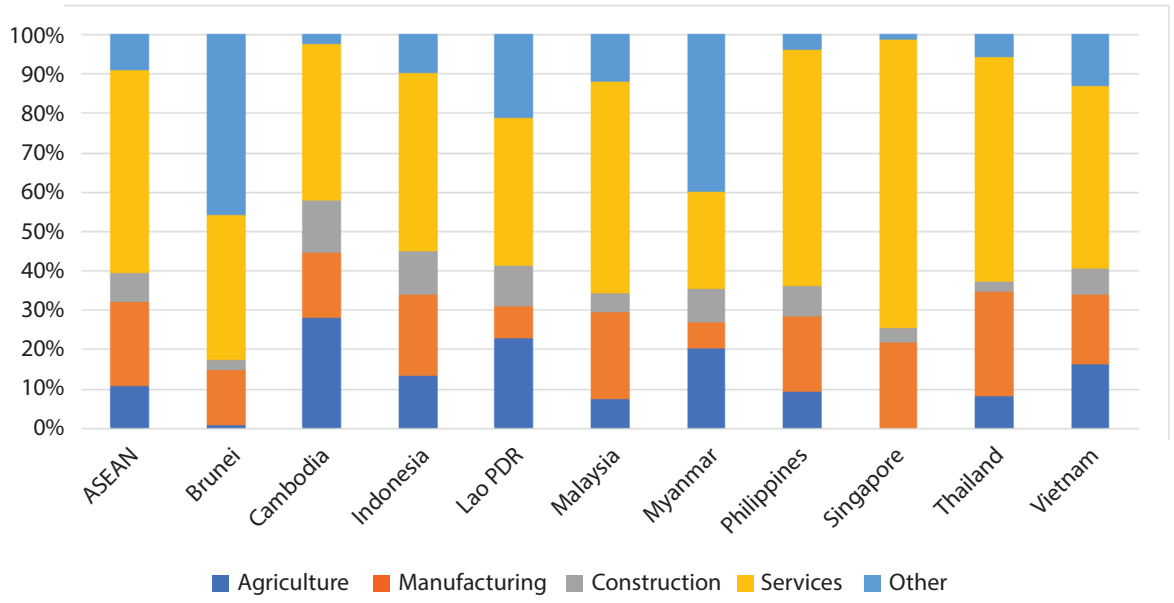
Country	1971-1980	1981-1990	1991-2000	2001-2010	2011-2018	1971-2018
ASEAN	4.33	3.40	3.32	3.79	3.71	3.71
Brunei Darussalam	4.10	-5.80	0.63	-1.16	-0.86	-0.61
Cambodia	-5.03	0.86	3.12	6.06	3.72	1.66
Indonesia	5.63	4.11	2.74	3.69	3.97	4.03
Lao PDR	-0.97	0.30	3.68	4.01	2.66	1.91
Malaysia	5.26	3.25	4.56	3.10	3.34	3.92
Myanmar	2.88	0.13	3.78	4.53	4.91	3.18
the Philippines	3.05	0.28	1.40	2.78	4.28	2.28
Singapore	6.90	4.81	4.57	3.72	3.24	4.70
Thailand	4.41	5.78	3.51	3.73	2.65	4.07
Viet Nam	1.19	1.23	5.75	5.76	4.97	3.73

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.

Note: percentages

As of 2018, the ASEAN Member States have diverse economies, from Brunei Darussalam with its large oil and gas industry to Singapore's extensive services-based economy. In 2018, the services sector accounted for 51.5 percent of GDP while manufacturing represented 21 percent. The agriculture and construction sectors were responsible for 11.0 percent and 7.4 percent of GDP, respectively. Figure 2-12 presents the composition of industries in GDP for ASEAN Member States.

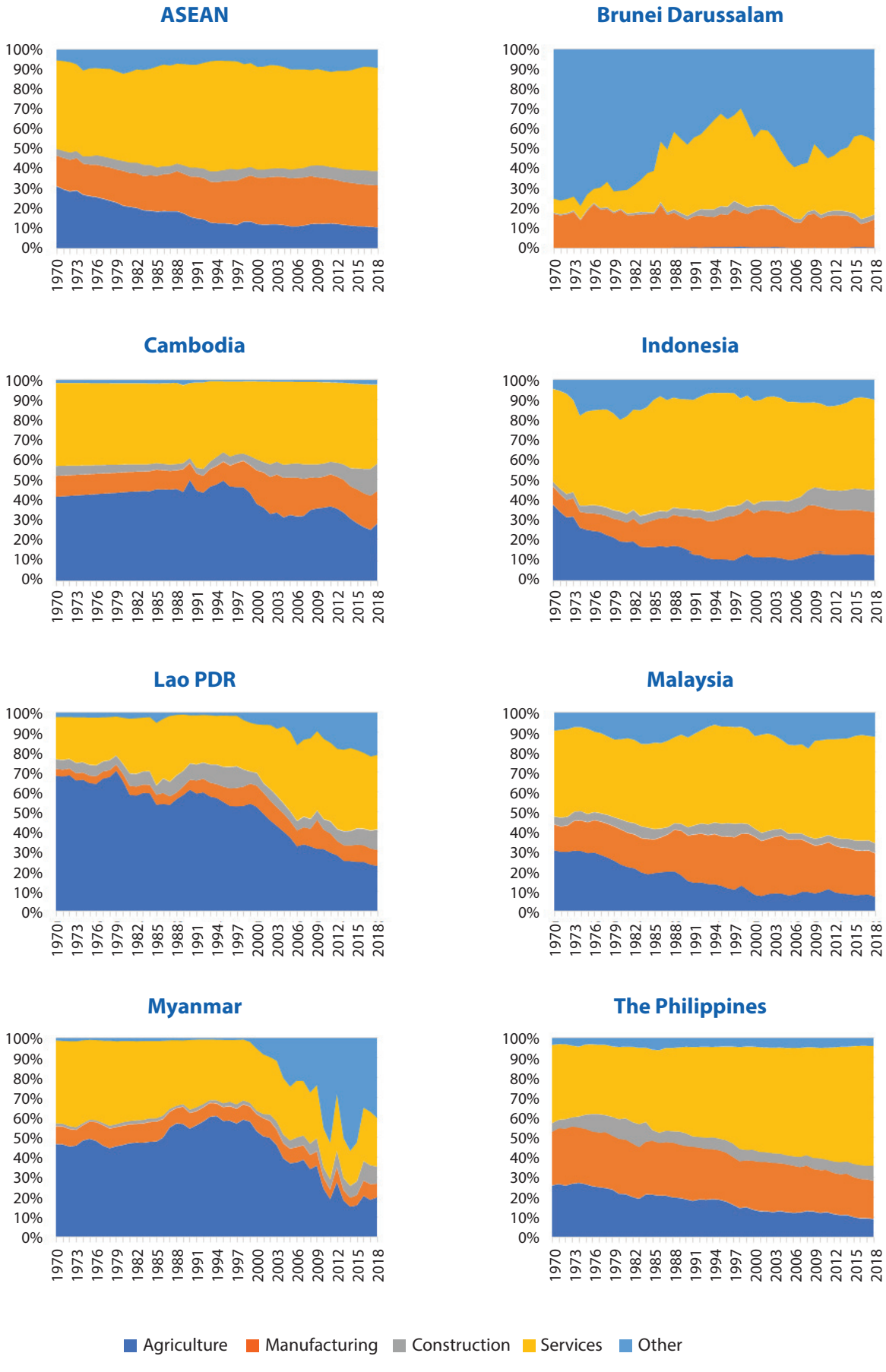
<Figure 2-12> GDP share by industry of ASEAN Member States (2018)

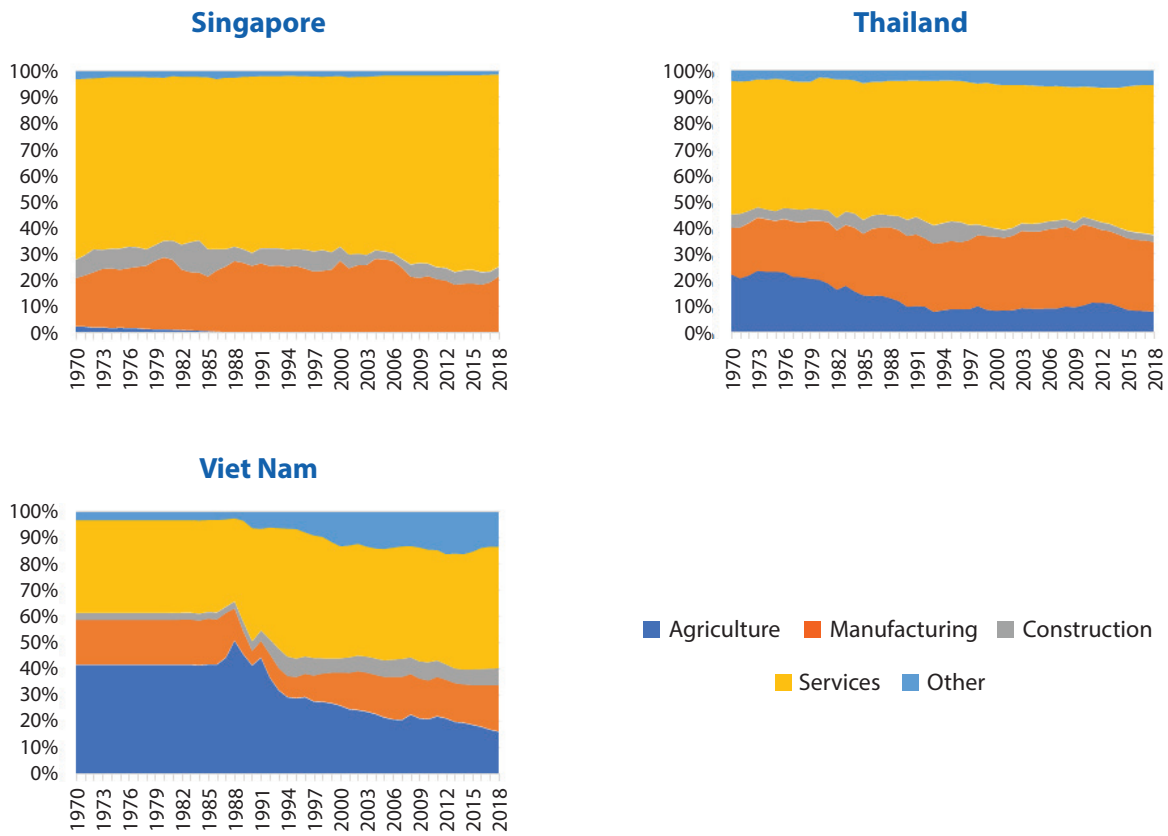


Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

From 1970 to 2018, the ASEAN economies went through a structural transformation in terms of industrial sector compositions. A distinctive feature is the shrinking of the agricultural sector, from 32 percent of GDP in 1970 to 11 percent of GDP in 2018. In the case of the manufacturing sector, its share crept up from 15.3 percent to 21 percent. Meanwhile, the services sector expanded its share from 44.3 percent to 51.5 percent. Figure 2-13 shows the trends of industrial composition over the 1970-2018 period.

<Figure 2-13> GDP share by industry of ASEAN Member States (1970-2018)





Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

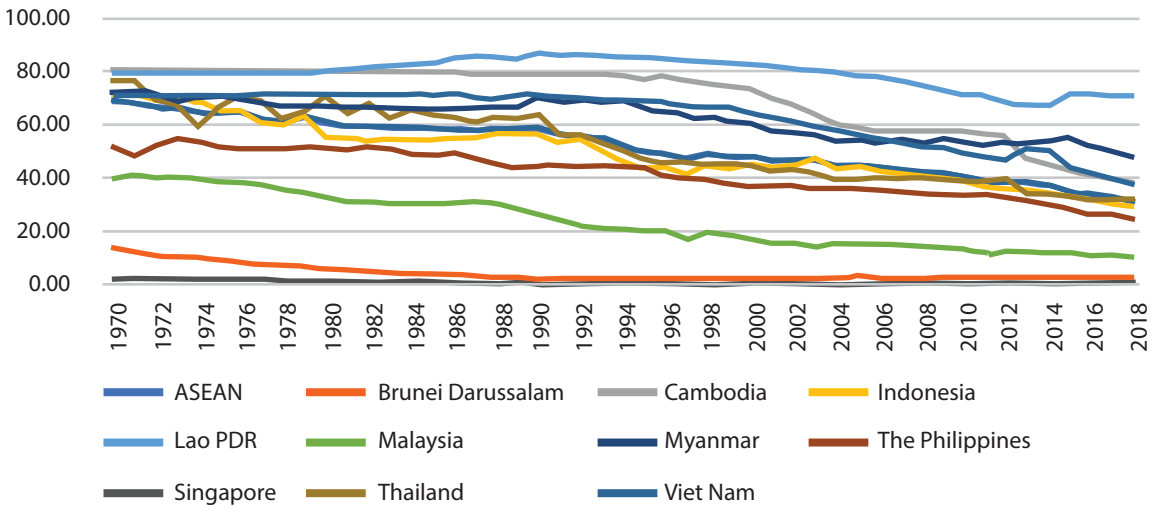
As the GDP share of agriculture declined in the ASEAN, the agricultural share of employment also fell from 64.8 percent in 1970-1998 to 35.6 percent in 2011-2018. There was no exception to this trend among the Member States in the long run, though Brunei Darussalam and Singapore experienced a slight increase their shares recently (Table 2-9 & Figure 2-14).

<Table 2-9> Agriculture share of employment in ASEAN

Country	1970-1980	1981-1990	1991-2000	2001-2010	2011-2018	1971-2018
ASEAN	64.77	58.67	51.00	43.86	35.58	3.71
Brunei Darussalam	9.30	3.52	1.59	2.11	2.56	-0.61
Cambodia	80.26	79.66	77.24	60.75	45.99	1.66
Indonesia	65.75	55.13	46.72	42.58	33.03	4.03
Lao PDR	80.06	83.95	84.87	77.83	70.04	1.91
Malaysia	37.77	30.06	19.78	14.33	11.27	3.92
Myanmar	69.79	66.79	65.58	55.04	52.11	3.18
The Philippines	51.75	47.99	41.32	35.42	28.97	2.28
Singapore	1.73	0.60	0.21	0.25	0.40	4.70
Thailand	68.57	63.72	48.83	40.16	34.20	4.07
Viet Nam	71.29	71.22	68.20	55.93	45.10	3.73

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: percentages

<Figure 2-14> Trend of agricultural share of employment in ASEAN(%)



Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

The manufacturing share of employment increased from 8.2 percent in 1970-1980 to 13.4 percent in 2011-2018 in the ASEAN. The Philippines and Singapore were only countries that experienced a decline in their shares. In particular, Singapore's share of manufacturing employment sank from 24.5 percent in 1970-1980 to 14.6 percent in 2011-2018.

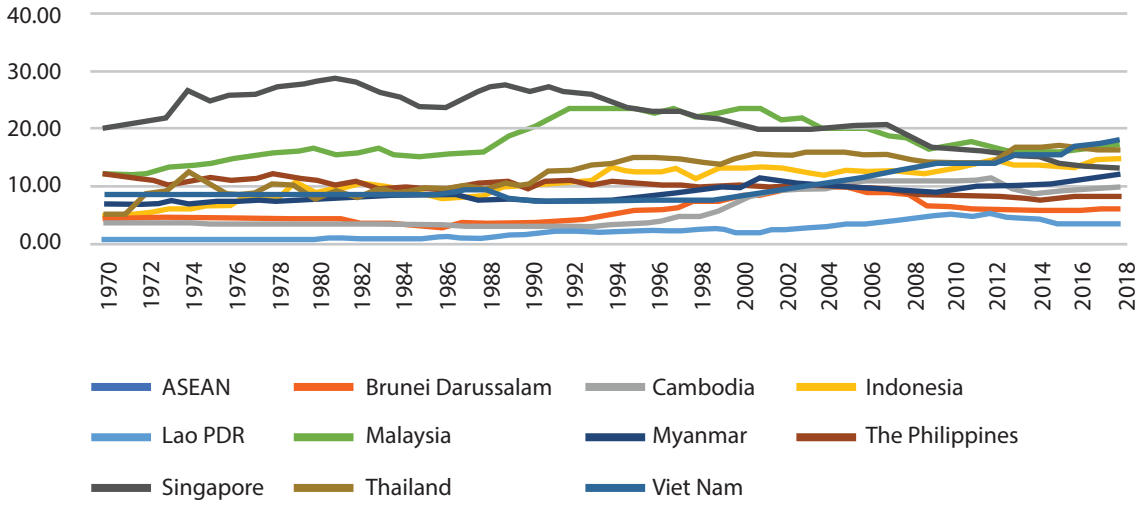
<Table 2-10> Manufacturing share of employment in ASEAN

Country	1970-1980	1981-1990	1991-2000	2001-2010	2011-2018
ASEAN	8.20	9.36	11.35	12.38	13.40
Brunei Darussalam	4.25	3.43	5.79	8.62	5.80
Cambodia	3.53	3.15	4.10	10.12	9.85
Indonesia	6.84	9.37	12.06	12.62	14.00
Lao PDR	0.77	1.01	2.14	3.44	4.11
Malaysia	14.06	16.30	22.92	19.78	16.79
Myanmar	7.24	7.98	8.24	9.92	10.61
The Philippines	11.31	10.02	10.19	9.43	8.04
Singapore	24.66	26.36	23.84	19.45	14.58
Thailand	8.79	9.48	14.08	15.26	15.93
Viet Nam	8.32	8.40	7.55	11.45	15.66

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: percentages

Figure 2-15 shows the trend of manufacturing's share of employment from 1970 to 2018. The manufacturing sector's share of ASEAN employment declined from 6.8 percent 1970 to 14.2 percent in 2018.

<Figure 2-15> Trend of manufacturing share of employment in ASEAN(%)



Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

As the services sector expanded in the ASEAN over the years in terms of GDP, its share of employment also increased from 24.0 percent in 1970-1980 to 43.4 percent in 2011-2018. The share was the highest in Singapore at 71.7 percent in 2011-2018, followed by Brunei Darussalam at 62.2 and Malaysia at 61.1 during the same period. The share remained a relatively low level in Lao PDR, Myanmar, and Viet Nam.

<Table 2-11> Services share of employment in ASEAN

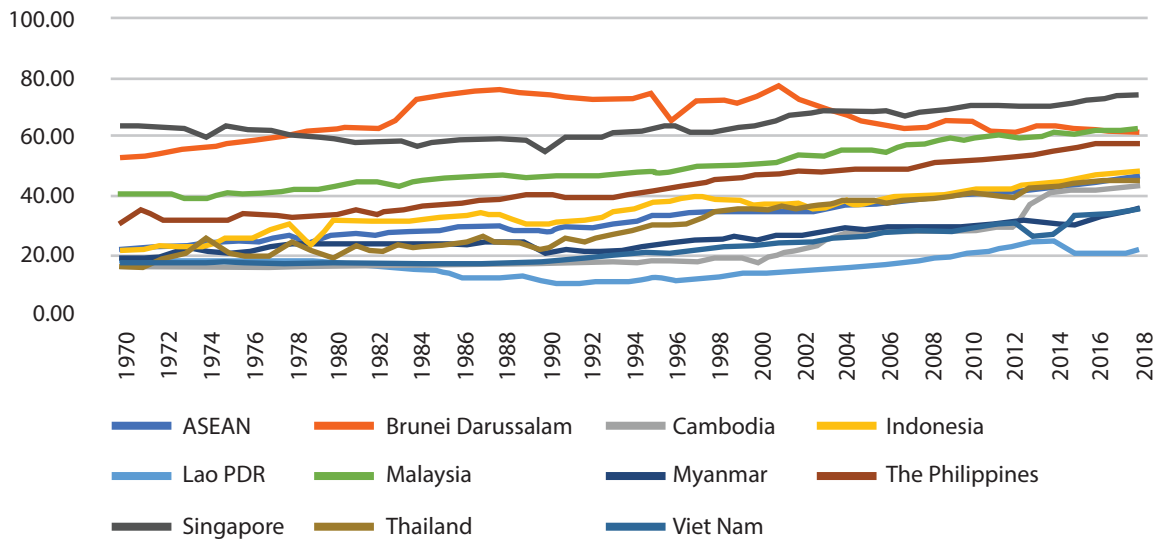
Country	1970-1980	1981-1990	1991-2000	2001-2010	2011-2018
ASEAN	24.00	28.14	32.44	37.48	43.41
Brunei Darussalam	57.48	71.47	72.25	67.43	62.23
Cambodia	15.47	16.51	17.56	25.98	38.21
Indonesia	24.85	31.77	36.16	38.69	45.11
Lao PDR	17.76	13.70	11.41	16.48	22.09
Malaysia	40.60	45.57	48.26	55.74	61.06
Myanmar	21.23	23.20	23.26	28.20	31.81
The Philippines	32.54	37.19	42.33	49.42	55.57
Singapore	61.90	57.89	61.86	68.43	71.66
Thailand	20.00	22.99	30.01	38.07	43.11
Viet Nam	17.22	17.17	20.70	26.56	31.31

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.

Note: percentages

Figure 2-16 shows the trend of services share of employment from 1970 to 2018. The share of services sector employment in the ASEAN increased from 21.3 percent 1970 to 46.7 percent in 2018.

<Figure 2-16> Trend of services share of employment in ASEAN(%)



Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

In terms of sectoral labor productivity, Brunei Darussalam maintained the highest level of labor productivity in the agricultural sector at 57.5 (thousands of USD) as of 2018 among ASEAN Member States, even though the country experienced a declining trend in the value of labor productivity over time. After Brunei Darussalam, Malaysia presented the highest labor productivity in agriculture among the Member States at 43.7(thousands of USD) in 2018, greatly ahead of the other Member States.

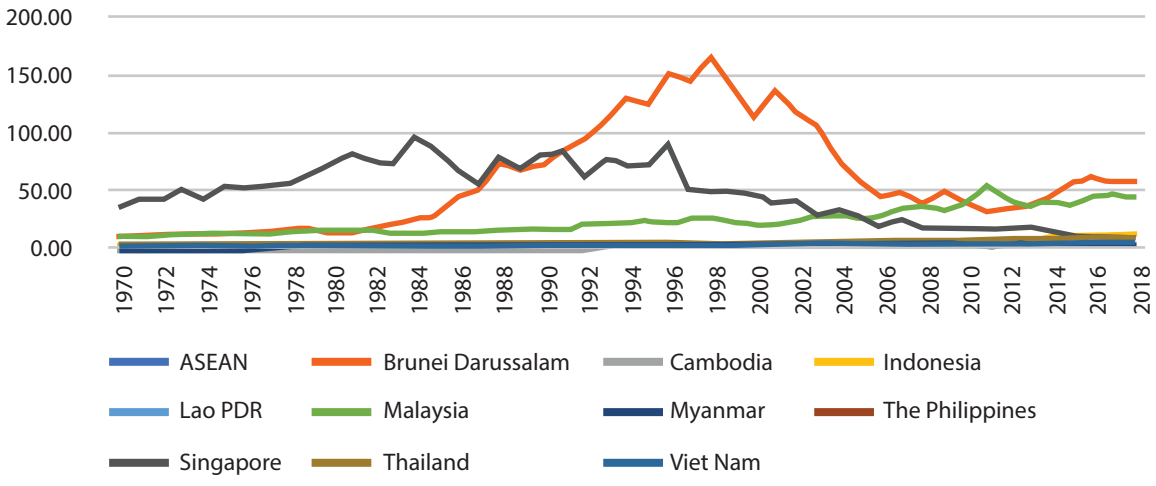
<Table 2-12> Labor productivity of agricultural sector in ASEAN

Country	1995	2000	2005	2010	2015	2018
ASEAN	3.5	3.7	4.3	6.0	7.5	8.8
Brunei Darussalam	125.2	112.8	58.5	40.2	55.4	57.5
Cambodia	2.1	2.0	2.8	3.6	4.2	5.4
Indonesia	3.8	3.7	4.1	7.0	9.8	11.5
Lao PDR	4.7	5.8	5.4	5.7	4.7	5.1
Malaysia	23.5	19.5	26.2	38.8	37.9	43.7
Myanmar	2.9	3.6	3.3	2.6	2.2	3.5
The Philippines	4.8	4.8	4.7	5.6	6.9	7.9
Singapore	70.2	46.8	28.0	17.3	10.6	9.2
Thailand	3.7	3.6	5.4	7.2	8.6	8.7
Viet Nam	2.0	2.5	3.0	4.1	5.0	6.0

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: thousands of USD per employed person (constant prices and 2017 PPP)

Across the ASEAN a whole, agricultural labor productivity increased from 3.1 (thousands of USD per person) in 1970 to 8.8 (thousands of USD per person) in 2018 (Figure 2-17).

<Figure 2-17> Trend of labor productivity of agricultural sector in ASEAN



Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: thousands of USD per employed person (constant prices and 2017 PPP)

In the case of labor productivity in the manufacturing sector, Brunei Darussalam presented the highest level at 334.3 (thousands of USD per person) and Singapore was second in magnitude at 264.7 (thousands of USD per person) as of 2018. The Malaysian manufacturing sector's labor productivity more than doubled between 1995 and 2018, with levels increasing to 75.4 (thousands of USD per person) in 2018 from 38.1 (thousands of USD per person) in 1985.

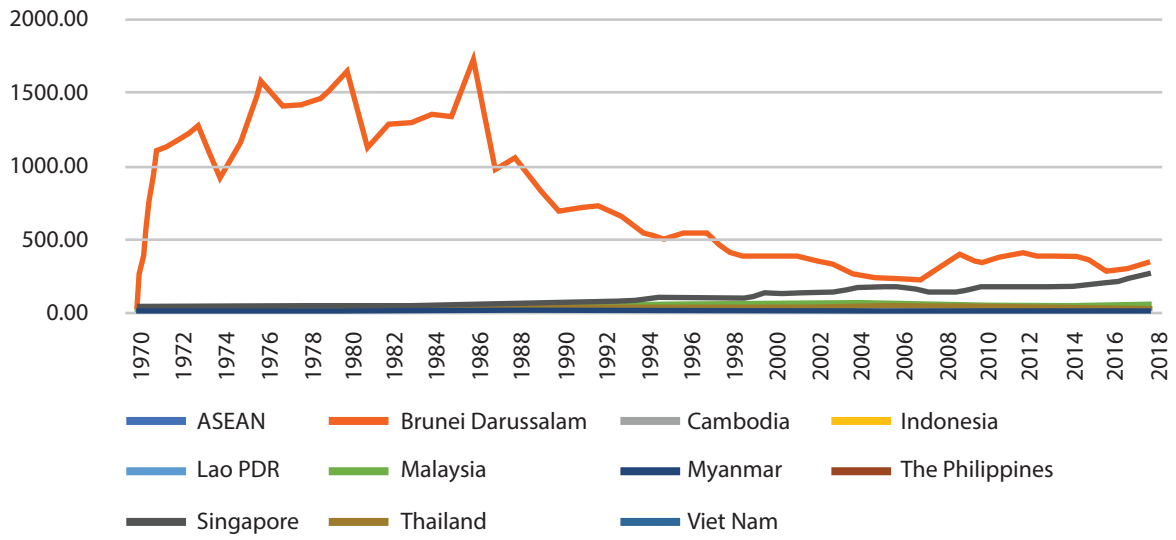
<Table 2-13> Labor productivity of manufacturing sector in ASEAN

Country	1995	2000	2005	2010	2015	2018
ASEAN	24.68	26.80	31.64	35.20	36.75	36.93
Brunei Darussalam	481.03	373.88	228.97	328.83	354.11	334.30
Cambodia	8.92	9.07	9.39	8.31	11.81	12.29
Indonesia	22.40	22.49	28.96	33.12	37.01	34.90
Lao PDR	26.97	52.55	29.66	25.04	33.54	36.34
Malaysia	38.12	47.37	64.56	67.14	74.89	75.42
Myanmar	2.82	3.42	3.52	3.34	3.60	4.77
The Philippines	26.73	30.43	33.24	39.23	48.51	49.54
Singapore	91.30	137.82	167.69	169.59	192.69	264.66
Thailand	33.25	36.12	42.44	57.69	50.55	55.05
Viet Nam	5.22	9.05	10.78	10.43	11.55	13.88

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: thousands of USD per employed person (constant prices and 2017 PPP)

The ASEAN's labor productivity in the manufacturing sector was 15.3(thousands of USD per person) in 1970 and increased to 36.9 (thousands of USD per person) by 2018 (Figure 2-18).

<Figure 2-18> Trend of labor productivity of manufacturing sector in ASEAN



Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.
Note: thousands of USD per employed person (constant prices and 2017 PPP)

Singapore showed a great divergence with other ASEAN Member States in its labor productivity in its services sector, recording a level of 156.9 (thousands of USD per person) in 2018 while Brunei Darussalam's remained at half the level of Singapore's at 85.9(thousands of USD per person). In Cambodia, Myanmar, and Indonesia, labor productivity of the services sector remained sluggish and did not change much between 1995 and 2018.

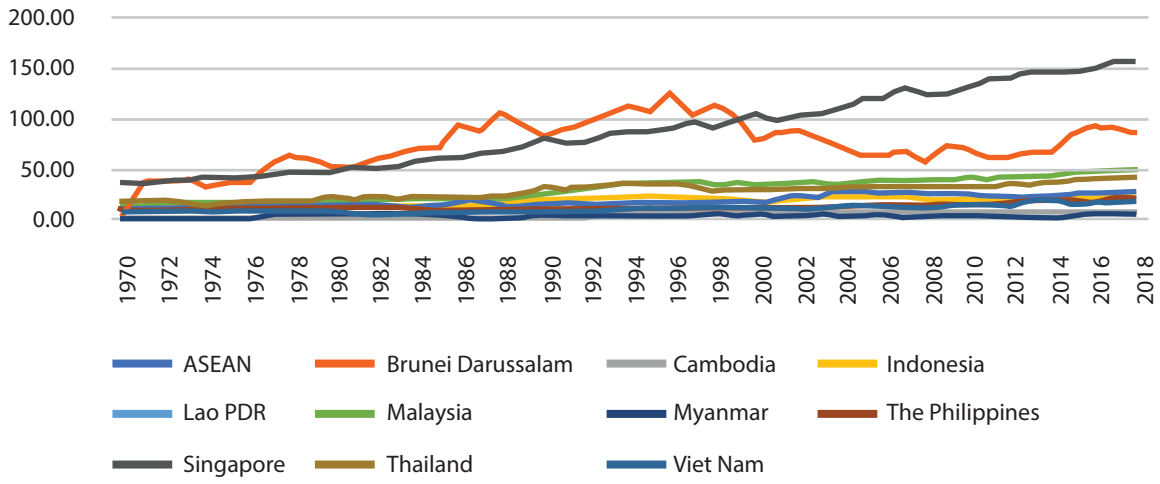
<Table 2-14> Labor productivity of services sector in ASEAN

Country	1995	2000	2005	2010	2015	2018
ASEAN	22.78	20.65	22.37	22.35	26.43	27.48
Brunei Darussalam	107.59	77.96	64.55	69.96	85.76	85.92
Cambodia	6.41	8.52	7.55	8.32	6.49	6.81
Indonesia	23.04	19.35	22.35	19.16	23.66	23.40
Lao PDR	17.13	16.74	28.43	25.58	25.76	27.62
Malaysia	36.60	34.83	36.86	40.48	45.98	49.52
Myanmar	4.61	5.03	4.48	3.77	4.76	5.75
The Philippines	12.26	13.79	14.64	16.36	19.64	21.30
Singapore	87.72	103.74	118.48	132.08	146.82	156.91
Thailand	34.31	29.77	31.17	31.78	39.26	42.82
Viet Nam	11.30	11.18	12.51	13.83	15.63	18.19

Source: author's calculations based on the APO's *Asian Economy and Productivity Map.*
Note: percentages of thousands of USD per employed person (constant prices and 2017 PPP)

In the ASEAN as a whole, the labor productivity of the services sector increased from 14.0 (thousands of USD per person) in 1970 to 27.5 (thousands of USD per person) in 2018 (Figure 2-19).

<Figure 2-19> Trend of labor productivity of services in ASEAN

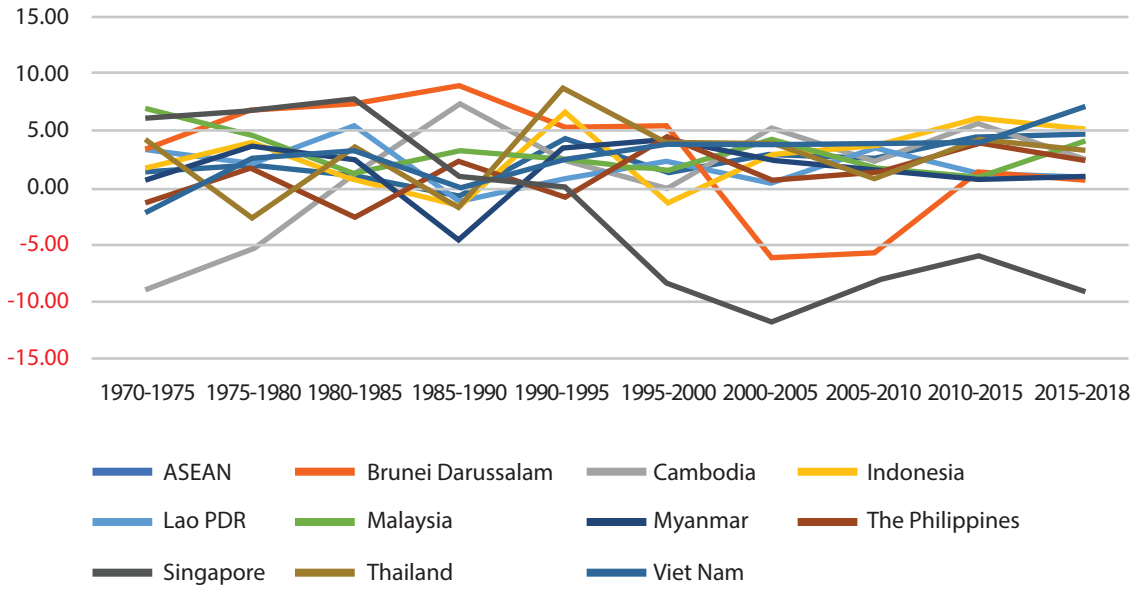


Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.

Note: thousands of USD per employed person (constant prices and 2017 PPP)

Figure 2-20 shows the labor productivity growth in the agricultural sector of ASEAN Member States. The ASEAN Member States present large variation over time and across the countries. Viet Nam and Indonesia are leading countries in labor productivity growth in the agricultural sector, recording growth rates of 6.91 percent and 5.05 percent, respectively, in the 2015-2018 period. Malaysia and Thailand recorded growth rates of 4.03 percent and 3.23 percent each during the same period. Meanwhile, agricultural labor productivity in Singapore has been deteriorating over time, recording -9.01 percent growth in 2015-2018.

<Figure 2-20> Labor productivity growth in agriculture sector of ASEAN Member States(%) (1970-2018)



Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

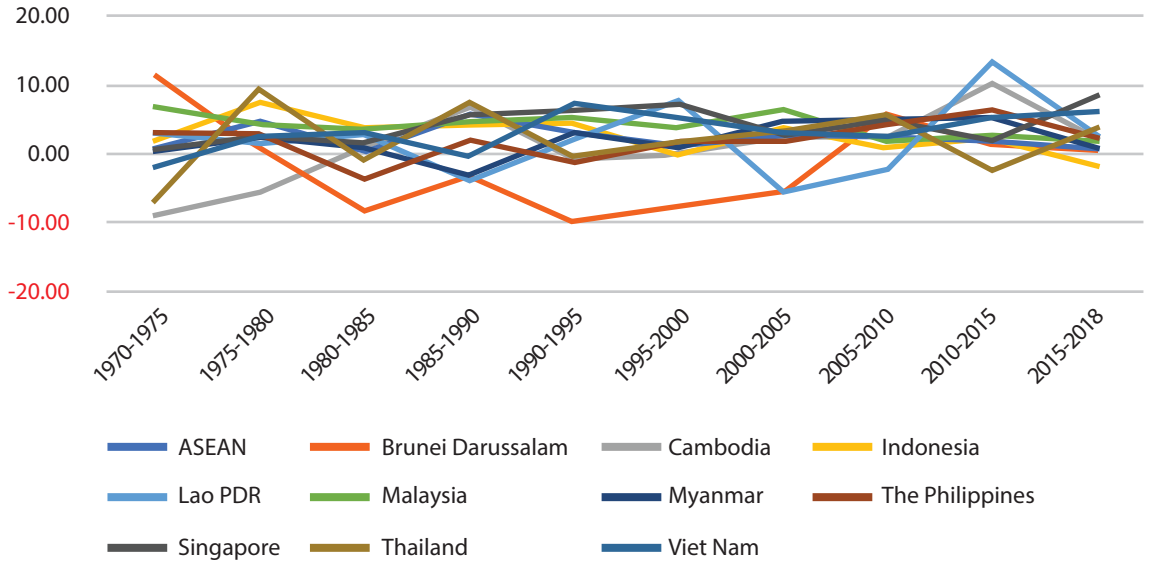
<Table 2-15> Labor productivity growth in agriculture sector of ASEAN Member States(%)

Country	1975-1980	1985-1990	1995-2000	2005-2010	2015-2018
ASEAN	2.04	-0.77	1.39	2.60	4.66
Brunei Darussalam	6.84	8.97	5.38	-5.65	0.77
Cambodia	-5.45	7.38	-0.11	2.23	2.53
Indonesia	3.92	-1.52	-1.49	3.55	5.05
Lao PDR	1.98	-1.19	2.20	3.47	0.75
Malaysia	4.51	3.19	1.40	1.76	4.03
Myanmar	3.57	-4.72	4.07	1.41	0.75
The Philippines	1.78	2.22	4.53	1.29	2.41
Singapore	6.68	0.99	-8.39	-8.20	-9.01
Thailand	-2.72	-1.75	3.93	0.72	3.23
Viet Nam	2.49	-0.08	3.69	3.72	6.91

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.

Labor productivity growth in the manufacturing sector shows a different trend from that of agricultural sector. Singapore shows strong growth in the sector with a recent record of 8.6 percent annually in 2015-2018 period. Viet Nam also achieved strong growth of more than 6 percent annually. In the case of Indonesia, its labor productivity growth has slowed down from previous years and recorded a negative growth rate of -1.6 percent in 2015-2018 period. Brunei Darussalam showed a volatile spikes and dips in growth rate, alternating between positive and negative growth over the years.

<Figure 2-21> Labor productivity growth in manufacturing sector of ASEAN Member States(%) (1970-2018)



Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

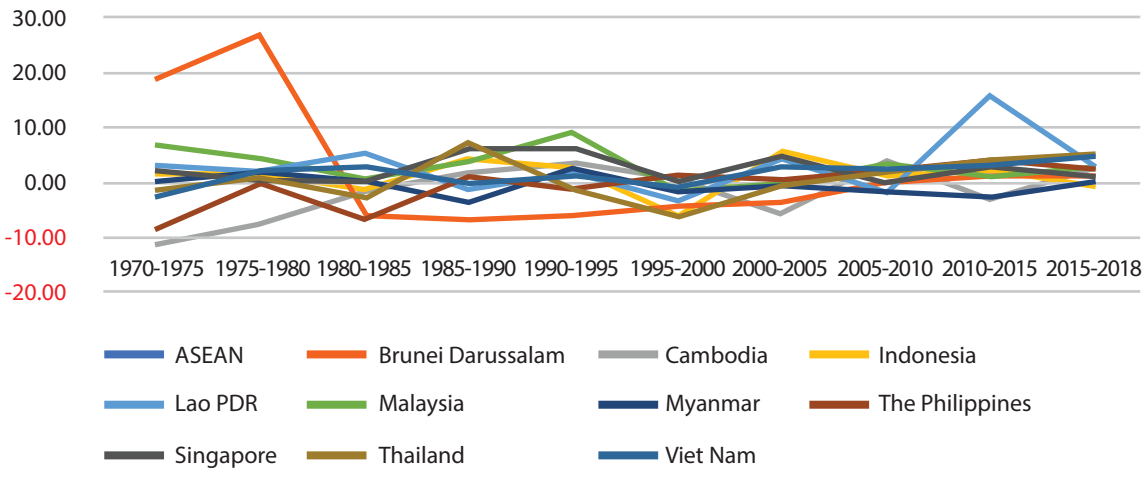
<Table 2-16> Labor productivity growth in manufacturing sector of ASEAN Member States(%)

Country	1975-1980	1985-1990	1995-2000	2005-2010	2015-2018
ASEAN	4.66	5.69	0.92	2.16	0.57
Brunei Darussalam	0.65	-2.92	-7.56	5.77	0.77
Cambodia	-5.40	6.70	0.17	2.73	2.53
Indonesia	7.52	4.37	-0.03	0.97	-1.64
Lao PDR	1.49	-3.92	7.80	-2.42	3.02
Malaysia	4.51	4.67	3.97	1.84	1.81
Myanmar	2.06	-3.07	0.86	4.48	0.75
The Philippines	2.95	2.10	1.73	4.25	2.41
Singapore	2.77	5.74	7.05	5.01	8.56
Thailand	9.69	7.79	1.75	5.78	3.56
Viet Nam	2.49	-0.08	5.48	2.64	6.17

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.

Viet Nam achieved strong labor productivity growth in its wholesale and retail sector, achieving an average annual growth of 4.61 percent in 2015-2018. Thailand also picked up its growth from 1.86 percent in the 2005-2010 period to 5.26 percent in the 2015-2018 period. Labor productivity growth turned from negative growth of -1.38 percent in 2005-2010 to positive growth of 3.38 percent in 2015-2018 in Lao PDR.

<Figure 2-22> Labor productivity growth in wholesale and retail sector of ASEAN Member States (1970-2018)



Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

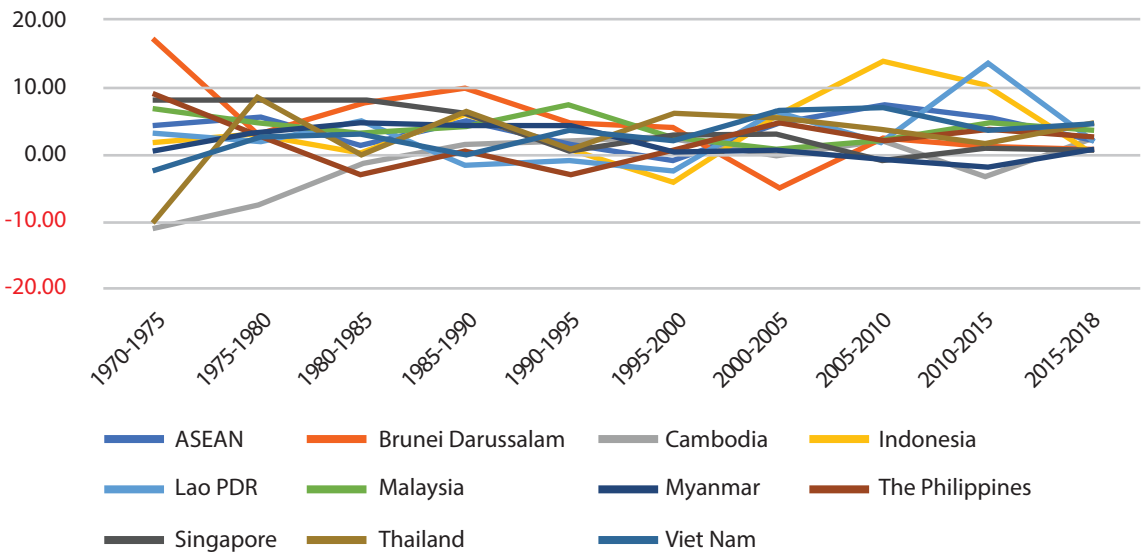
<Table 2-17> Labor productivity growth in wholesale and retail sector of ASEAN Member States

Country	1975-1980	1985-1990	1995-2000	2005-2010	2015-2018
ASEAN	1.93	4.41	-4.15	2.07	1.61
Brunei Darussalam	27.15	-6.54	-4.13	0.35	0.77
Cambodia	-7.34	1.70	0.63	4.06	2.53
Indonesia	2.09	4.55	-5.92	1.64	-0.75
Lao PDR	1.99	-1.16	-2.99	-1.38	3.38
Malaysia	4.51	3.98	-1.16	3.36	2.78
Myanmar	2.25	-3.44	-1.58	-1.46	0.75
The Philippines	-0.14	1.38	1.60	2.62	2.41
Singapore	0.30	6.31	0.39	0.15	1.25
Thailand	1.09	7.23	-5.96	1.86	5.26
Viet Nam	2.49	-0.08	-0.50	2.74	4.61

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.

In the case of the transportation and communications sector, Thailand was a leading country in labor productivity growth and was successful in maintaining a high level of growth over the years. Recently, its labor productivity growth rate increased from 3.65 percent in 2005-2010 to 4.65 percent in 2015-2018. Malaysia, Viet Nam, and The Philippines also maintained robust growth rates in 2015-2018 period. They recoded the growth rates of 3.82 percent, 4.47 percent, and 2.41 percent, respectively.

<Figure 2-23> Labor productivity growth in transportation and communication sector of ASEAN Member States (1970-2018, %)



Source: Asian Productivity Organization (APO), *Asian Economy and Productivity Map*, accessed on Nov. 10th, 2020.

<Table 2-18> Labor productivity growth in transportation and communication sector of ASEAN Member States

Country	1975-1980	1985-1990	1995-2000	2005-2010	2015-2018
ASEAN	5.58	5.30	-0.79	7.49	2.22
Brunei Darussalam	2.95	9.72	4.01	2.50	0.77
Cambodia	-7.34	1.70	3.05	1.96	2.53
Indonesia	2.55	6.26	-4.23	13.92	0.64
Lao PDR	1.92	-1.59	-2.56	1.90	2.11
Malaysia	4.51	4.03	2.54	2.37	3.82
Myanmar	3.51	4.43	0.37	-0.67	0.75
The Philippines	3.02	0.56	0.81	2.29	2.41
Singapore	8.15	5.98	3.01	-1.03	0.78
Thailand	8.72	6.44	6.09	3.65	4.65
Viet Nam	2.49	-0.08	2.06	7.06	4.47

Source: author's calculations based on the APO's *Asian Economy and Productivity Map*.

Impacts of Human Capital on Labor Productivity

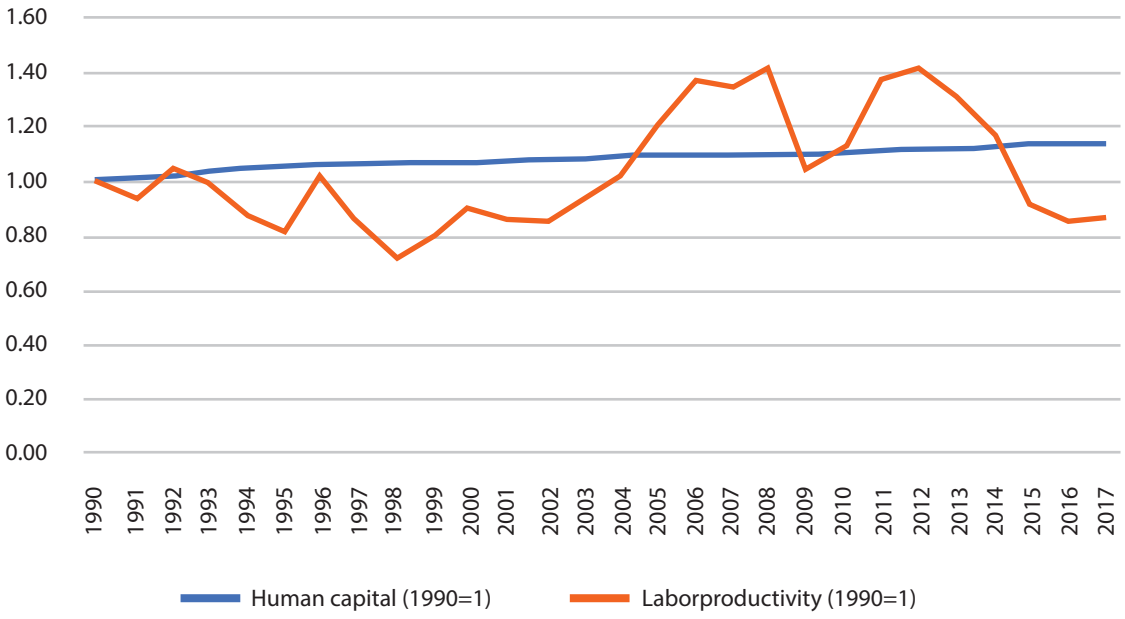
3.1. Human Capital and Labor Productivity in ASEAN Member States

Human capital is defined as the knowledge, skills, competences, and other attributes embodied in individuals or groups of individuals acquired during their lives that are used to produce goods, services, or ideas in market circumstances (OECD, 1998). Human capital is accumulated not only from formal education during early childhood, formal school systems, and adult training programs, but also via informal and on-the-job learning and work experience (Barro and Sala-i-Martin, 1995, Becker, 1964; Mincer, 1974).

The endogenous growth theory indicates that human capital investment is a crucial factor for sustaining long-term economic growth (Lucas, 1988; Romer, 1990; Mankiw et al., 1992). Human capital is also an important factor to increase labor productivity at the firm level. Previous studies indicate that employment of more highly educated workers tend to contribute to higher labor productivity among firms (Aggrey et al., 2010; Corves, 1996). Rukumnuaykit and Pholphirul (2015) suggest that employment of highly educated workers and in-service training has a significant impact on an increase in labor productivity.

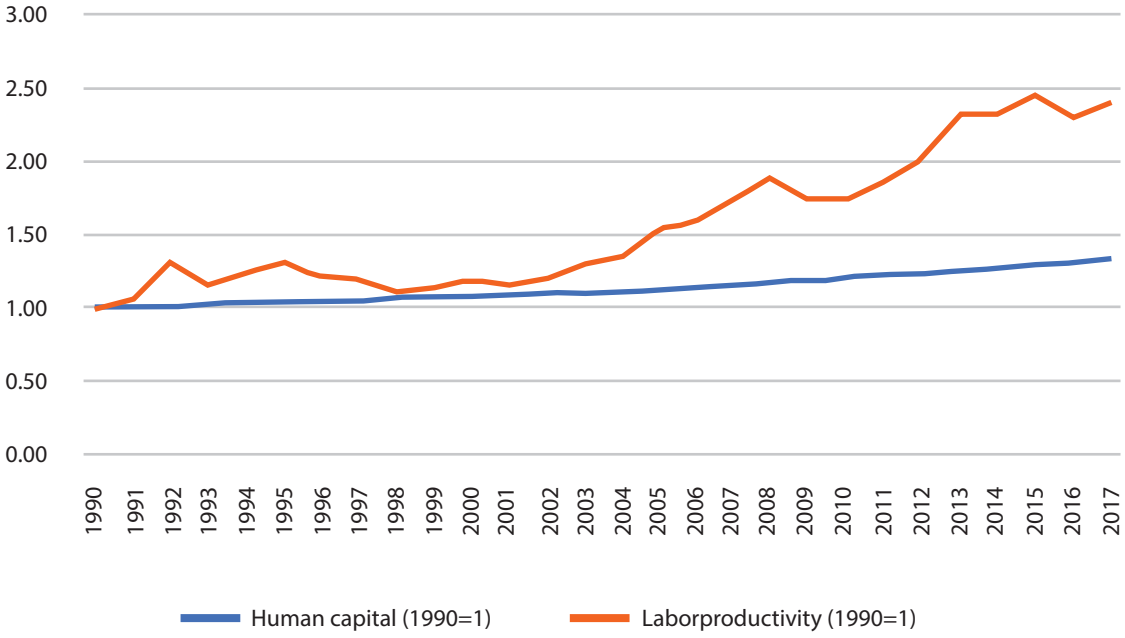
The figures below show the trends of human capital and labor productivity in ASEAN Member States. For comparison of human capital across ASEAN Member States, this report used the Penn World Table (PWT) human capital index that is based on the average years of schooling from Barro and Lee (BL, 2013) and an assumed rate of return to education, based on Mincer equation estimates around the world (Psacharopoulos, 1994). The values of 1990 were set to 1 to normalize the human capital index and labor productivity series. Over the 1990-2017 period, Singapore achieved a 94 percent increase in human capital while its labor productivity increased by 117 percent. Viet Nam recorded 63 percent in human capital growth and its labor productivity grew more than three times by 321 percent. Malaysia and Thailand presented human capital growth of 38 percent and 31 percent, respectively. The growth of human capital in other ASEAN countries remained below 30 percent over the same period. Brunei Darussalam recorded only a 14 percent increase in human capital.

<Figure 3-1> Human capital and labor productivity: Brunei Darussalam



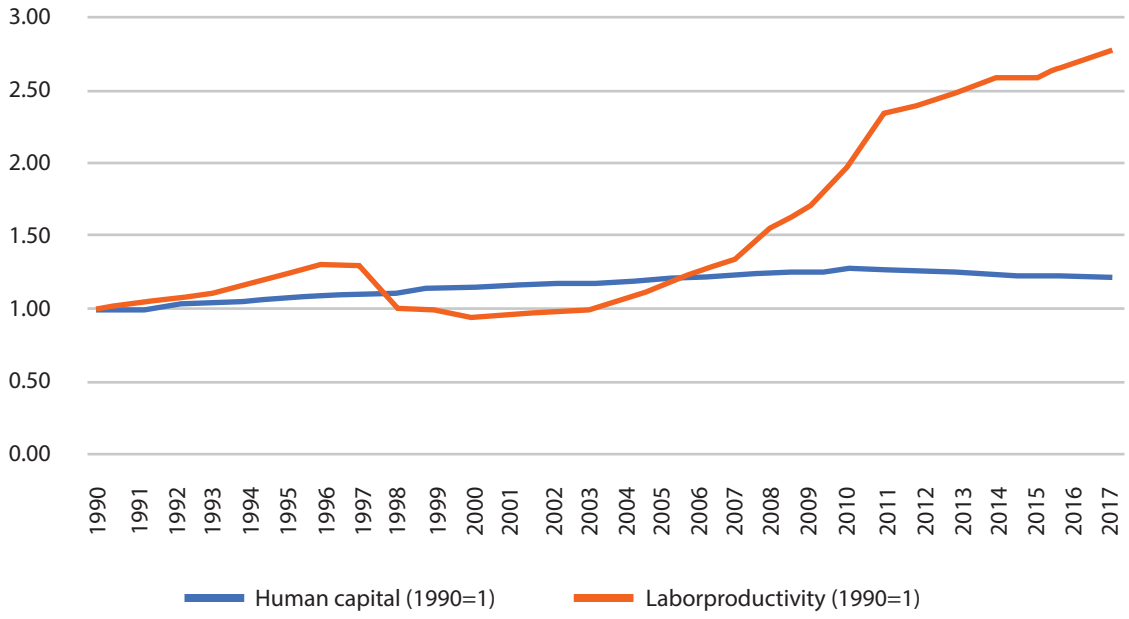
Source: author's calculations based on PWT

<Figure 3-2> Human capital and labor productivity: Cambodia



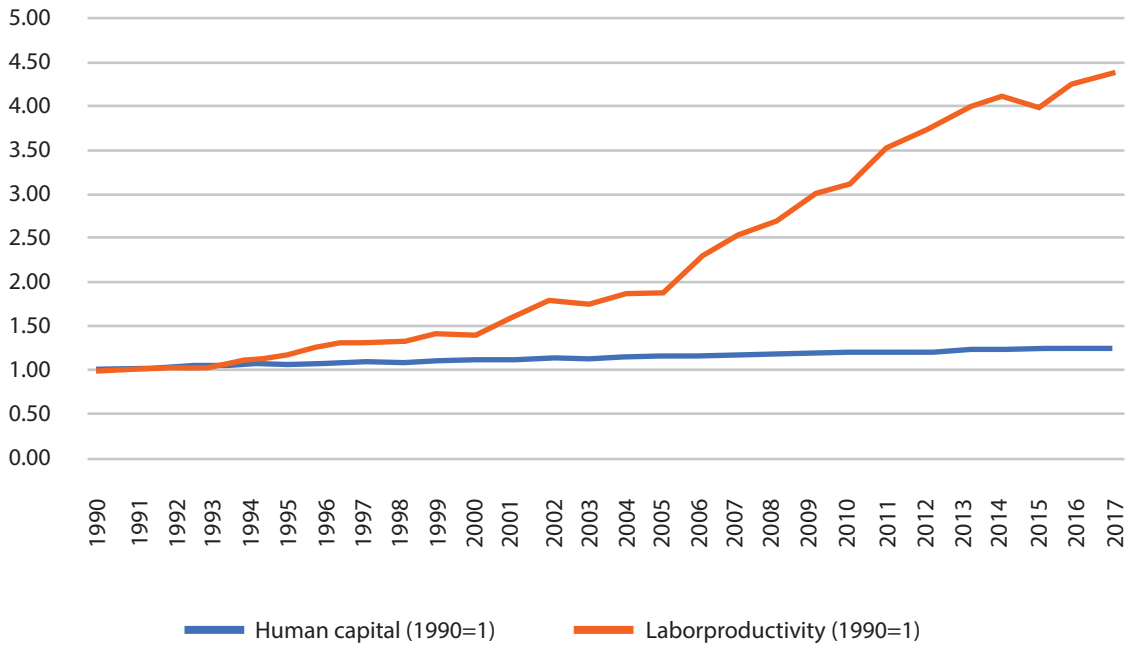
Source: author's calculations based on PWT

<Figure 3-3> Human capital and labor productivity: Indonesia



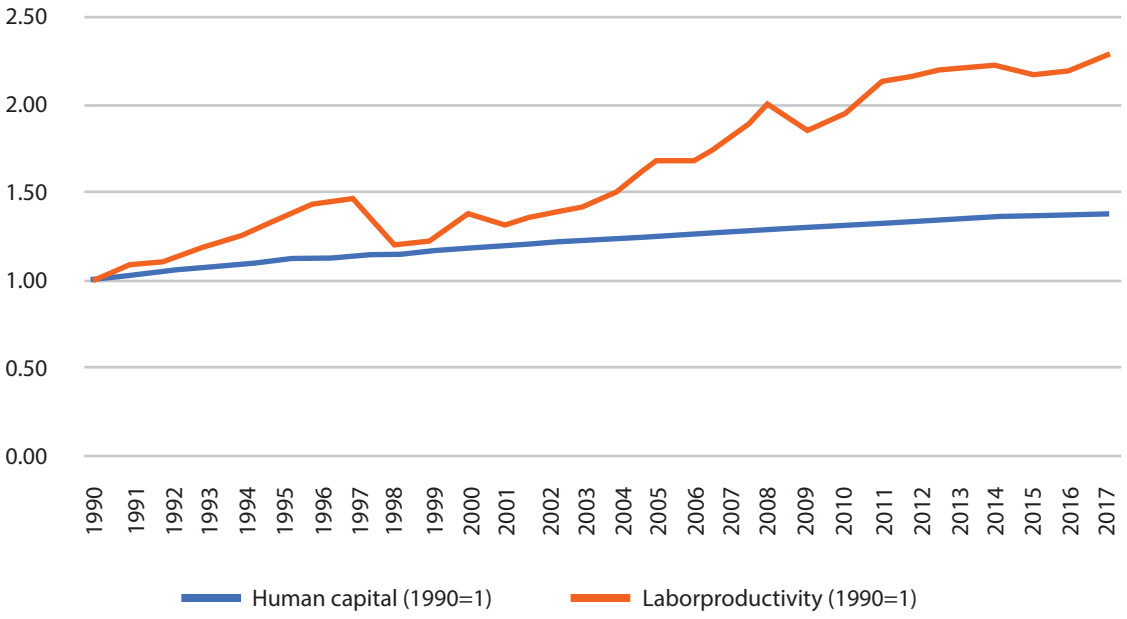
Source: author's calculations based on PWT

<Figure 3-4> Human capital and labor productivity: Lao PDR



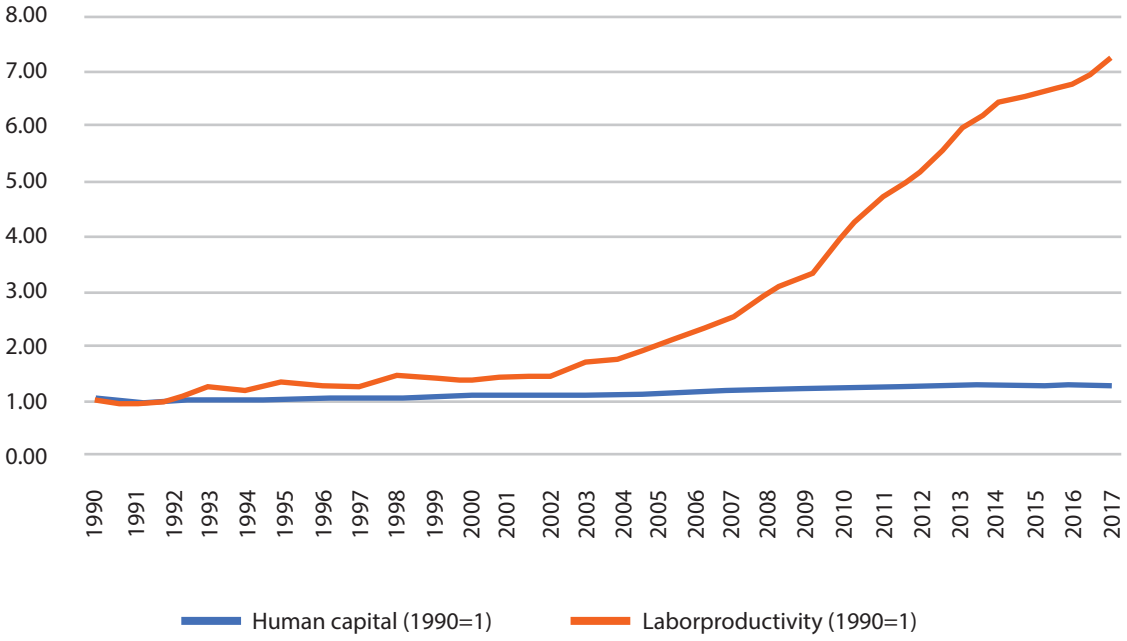
Source: author's calculations based on PWT

<Figure 3-5> Human capital and labor productivity: Malaysia



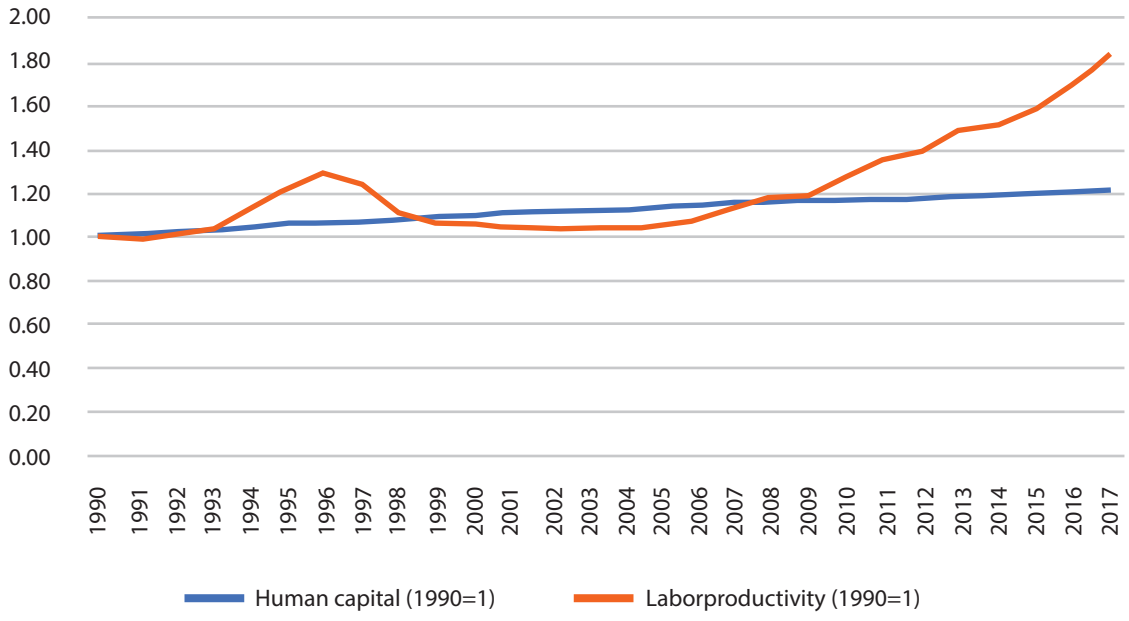
Source: author's calculations based on PWT

<Figure 3-6> Human capital and labor productivity: Myanmar



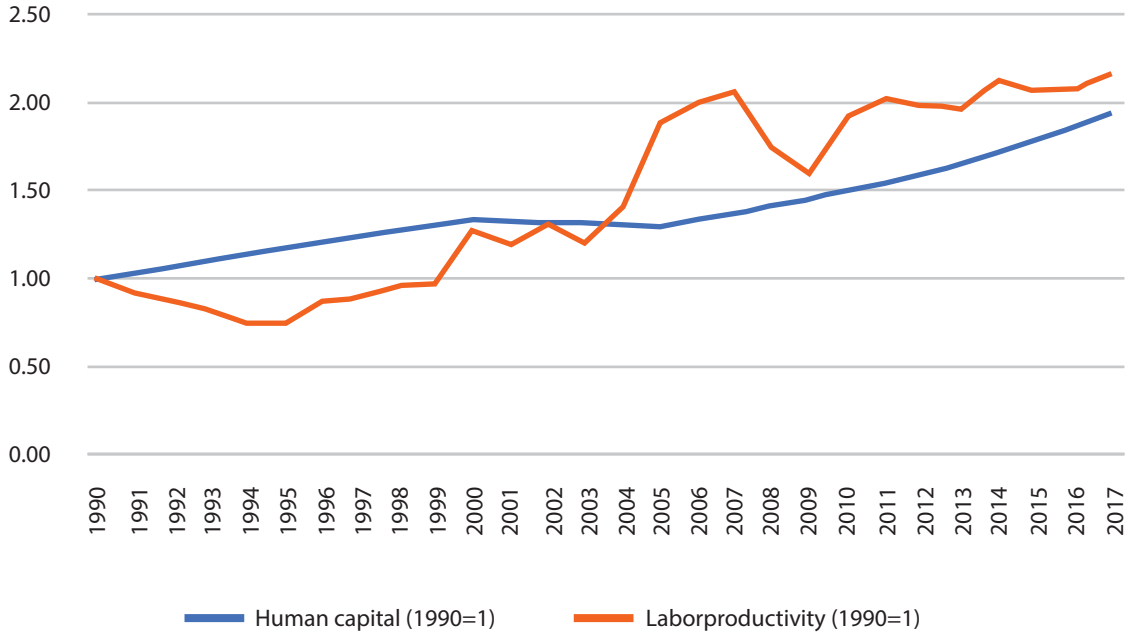
Source: author's calculations based on PWT

<Figure 3-7> Human capital and labor productivity: The Philippines



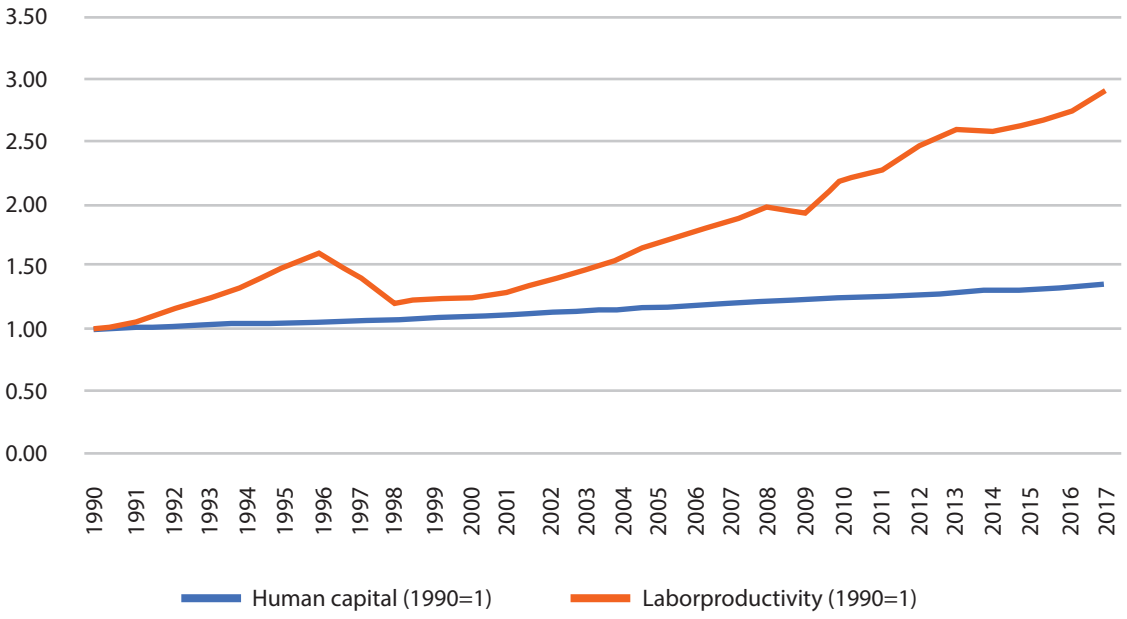
Source: author's calculations based on PWT

<Figure 3-8> Human capital and labor productivity: Singapore



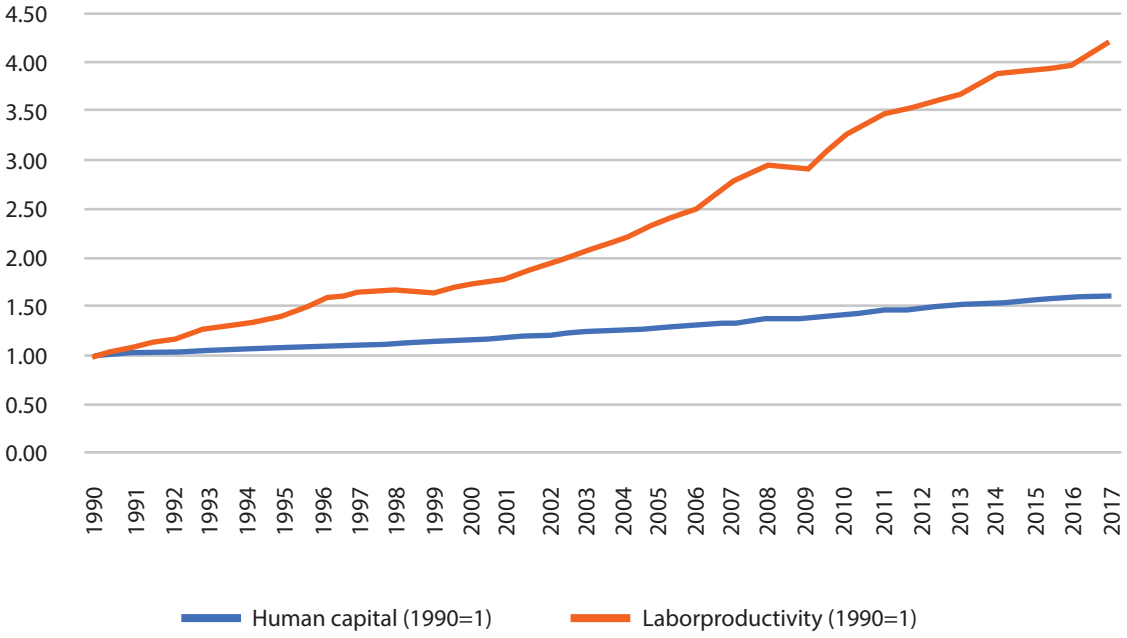
Source: author's calculations based on PWT

<Figure 3-9> Human capital and labor productivity: Thailand



Source: author's calculations based on PWT

<Figure 3-10> Human capital and labor productivity: Viet Nam



Source: author's calculations based on PWT

3.2. Analysis of the Impact of Human Capital on Labor Productivity in ASEAN: Cross-Country Analysis

This section analyses the impact of human capital on labor productivity in ASEAN Member States. There are many determinants of labor productivity. Physical capital, labor and human capital, and intermediate input such as materials are main inputs for output, and they are the major determinants of labor productivity.[2] Total factor productivity is also a key determinant of output and it is affected by various factors. Among others, these include technological progress, globalization, institutional, and market environmental factors. Technological progress shifts the production function upward for a given level of production input and increases the output level. Globalization can be defined as the integration process of domestic economies into international economic systems. Globalization can be linked with labor productivity through various ways, including trade liberalization and exposure to new technology and foreign direct investment (FDI). Domestic firms learn by exporting and investing in foreign countries and this can boost their productivity levels. The entry of foreign firms into domestic markets often involves productivity improvements in domestic firms via mergers and acquisitions and through spillovers from multinational enterprises. Increases in the variety of foreign imports can affect the productivity improvement of importers but can also lead to the closure of less productive domestic firms. Creating a market environment where productive businesses can thrive through sound market regulations will increase productivity by facilitating the wider penetration of available technologies. Rigid regulations reduce flexibility in resource allocation in markets and decrease productivity. Strengthening labor mobility and minimizing labor market risk by increasing labor freedom can stimulate productivity growth through productivity-enhancing reallocation of workers.

Institutions act as constraints, as they set the rules to regulate the interaction among economic organizations (North, 1990). Institutions shape the structure of a society, thus influencing the behavior and performance of individual economic actors and consequently, the development and growth paths of countries (North, 1990; Putnam, 1995). The heterogeneity in institutional quality and economic freedom can explain cross-country differences in entrepreneurship and entrepreneurial activities, as well as in productivity and economic performance (Acemoglu et al., 2001; Hall & Jones, 1999).

[2] Output can be specified as $Q=A(t)f(K,L,H,M)$, where Q is output, K is capital, L is labor and $\boldsymbol{H}$ is human capital and M is intermediate input. In the equation, A(t) represents total factor productivity. Labor productivity is Q/L and therefore it should be determined by the factors that affect output.

This report specifies econometric models for labor productivity and evaluates the impact of human capital on labor productivity controlling for the effects of aforementioned variables. These include technological progress, which is typically proxied by R&D activities. To incorporate the impacts of globalization on productivity growth, this report introduces FDI as explanatory variables in the analysis. It also includes regulatory quality variables in the estimation of productivity. To evaluate the effects of institutional quality, this study includes diverse institutional variables such as corruption as determinants of productivity growth. The estimation equation can be specified as follows:

$$\ln\left(\frac{Q}{L}\right) = \beta_0 + \beta_1 \ln\left(\frac{K}{L}\right) + \beta_2 \ln(hc) + \beta_3 \ln(energy) + \beta_3 R\&D + \beta_4 FDI + \beta_5\, Regulatory\ quality + \beta_6\, Corruption + \varepsilon_{it}.$$

In the equation, $\frac{Q}{L}$ is labor productivity; $\frac{K}{L}$ is capital per worker; $energy$ is energy consumption; $R\&D$ is R&D intensity as a percentage of GDP; FDI is foreign direct investment as a percentage of GDP; $Regulatory\ quality$ is regulatory quality index. The specific details of the variables are explained in Table 3-1.

Table 3-1 shows the definitions of the variables and data sources used to evaluate the impacts of human capital on labor productivity.[3] Table 3-2 presents the result of the estimation. The result shows that human capital is statistically significant factor for enhancing labor productivity in the countries. There are three specifications in the results. The first column shows the result of the base equation that includes only three independent variables: capital, human capital, and energy. The three variables are key economic factors that determine the level of labor productivity. The second column shows the full model that include all the independent variables explained. The third column include school enrollment as a proxy of human capital.

[3] The equation was estimated by the generalized methods of moment (GMM). The lag variables of independent variables were used as instrumental variables and the linear dynamic panel method was used to estimate the model (Arellano and Bover, 1995; Blundell and Bond, 1998)

<Table 3-1> Definition of the variables and data sources

Variable	Definition	Expected sign	Source
(log) labor productivity	Output per worker	Dependent variable	International Labor Organization & PWT
Human capital Index	Human capital index	+	PWT 9.1
R&D (percent of GDP)	total intramural expenditure on R&D performed in the national territory during a specific reference period expressed as a percentage of GDP of the national territory.	+	UNESCO
School enrollment, secondary (percent net)	ratio of children of official school age who are enrolled in school to the population of the corresponding official school age.	+	World Bank World Development Indicators
Energy use (kg of oil equivalent per capita)	equivalent to the approximate amount of energy that can be extracted from one kilogram of crude oil (41868 kilojoules)	+/-	World Bank World Development Indicators
Trade (percent of GDP)	sum of exports and imports of goods and services measured as a share of GDP	+	World Bank World Development Indicators
FDI, net inflows (percent of GDP)	foreign direct investment is the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor.	+/-	World Bank World Development Indicators
Regulation quality	perceived ability of government to formulate and implement sound policies and regulations. Index distributed between -2.5 and 2.5	+	World Bank Governance Indicators
Corruption	Extent to which corruption is perceived to exist among public officials and politicians. Index distributed between 0 (highly corrupt) to 100 (very clean)	+	Transparency International

The coefficient of 0.385 of human capital variable represents the percentage increase of labor productivity corresponding to a one percent increase in human capital. Therefore, a one percent increase in human capital will lead to a 0.385 percent increase in labor productivity. The magnitude is even greater than the impact of capital per worker, which is 0.320. When school enrollment was used instead of human capital index, the magnitude of the coefficient, which is 0.254, was decreased.

<Table 3-2> Impact of human capital on labor productivity

Independent variables	Labor productivity 1)	Labor productivity (2)	Labor productivity (3)
Ln (capital per worker)	0.426 (0.011)***	0.320 (0.018)***	0.316 (0.015)***
Ln (human capital)	0.485 (0.082)***	0.385 (0.108)***	
Secondary School Enrollment(percent)	-	-	0.254 (0.037)***
Ln (energy consumption)	0.152 (0.034)***	0.106 (0.037)***	0.107 (0.036)***
R&D (as a percentage of GDP)	-	0.245 (0.027)***	0.330 (0.027)***
FDI (as a percentage of GDP)	-	0.012 (0.002)***	0.012 (0.002)***
Corruption*	-	0.226 (0.051)***	0.165 (0.048)***
Regulatory quality	-	0.092 (0.059)	0.155 (0.059)***
Constant term	3.795 (0.216)	4.181 (0.227)***	3.637 (0.218)***

Note: the equation was estimated using the generalized methods of moment (GMM) alongside the linear dynamic panel data technique.

*** significant at 1%, ** significant at 5%, * significant at 10%

Other determinants of labor productivity were mostly statistically significant, and they all contributed to the increase of labor productivity of ASEAN Member States. The results indicate that facilitating technology diffusion through R&D is crucial to improving labor productivity of the member countries. Productivity growth via the diffusion of technology can be facilitated through trade openness and FDI inflows. Lifting the barriers to trade and FDI inflows will benefit ASEAN member countries. The accumulation of human capital through education and training programs is highly important for a sustainable productivity growth. An increase in the number of highly educated workers has significantly boosted labor productivity in many countries over the past few decades. However, with the aging of the population, it is expected that the rate of increase in human capital accumulation will slow down. In particular, knowledge base growth in the future will require an increasingly skilled labor. Skill requirements will increase as a

consequence of skill-biased technological changes. High quality primary and secondary education will become prerequisites for raising skill levels. The aging of workers will increase the need for retraining, as acquired education and skills become obsolete.

Rigid regulations reduce flexibility in resource allocation in markets and decrease productivity. Strengthening labor mobility and minimizing labor market risk by improving regulatory quality can increase productivity growth through a productivity-enhancing reallocation of workers. Creating a market environment where productive businesses can thrive through sound market regulations will increase productivity by facilitating the wider penetration of available technologies. Institutions shape the incentives for both factor accumulation and innovation and thus, improve the overall allocation efficiency of the factors of production. Corruption affects total factor productivity via a misallocation of public and private resources. Corruption also disincentivizes investment in human and physical capital, especially those with a high risk and high return profile, by increasing overall uncertainty and reducing contract enforcement. In countries with lower institutional quality, the return to firms' innovation is lower, thereby discouraging investment in research and the adoption of new products. To catch up with the leading countries in terms of productivity, it is important to improve institutional quality.

3.3. Effectiveness of Human Capital in the Promotion of Labor Productivity in ASEAN: Cross-Country Analysis

The empirical result in the previous section indicates that human capital is a crucial factor in enhancing labor productivity in ASEAN Member States. This section explores how the performance of human capital differs across the countries in the promotion of labor productivity. The same level of human capital can contribute to the increase in labor productivity differently across the different countries. The human capital performance index evaluates the relative effectiveness of human capital in the promotion of labor productivity in ASEAN. The index ranges from zero to one, and one presents the maximum efficiency of technology in transforming human capital input to labor productivity. Productivity is defined as output per input while the efficiency is calculated as an individual unit's productivity against the productivity of the benchmark unit. In this section, the benchmark unit is the most efficient country that utilizes human capital most efficiently to improve labor productivity. The human capital performance index measures the efficiency of human capital of ASEAN Member States. To estimate the technical efficiency, this report uses data envelopment analysis (DEA), the specific details of which are outlined in the supplement.

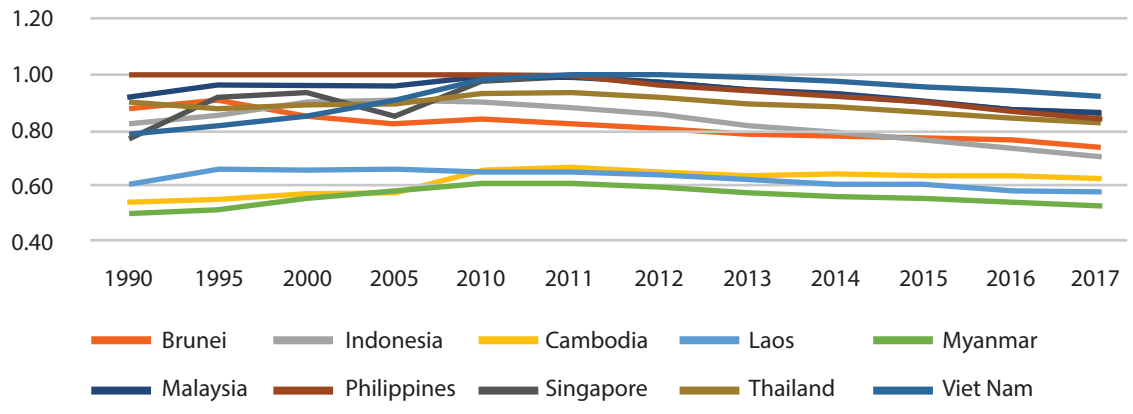
Table 3-3 shows the performance of human capital in ASEAN. As of 2017, Singapore achieved the best performance of human capital among the member countries, followed by Viet Nam, Malaysia, The Philippines, and Thailand. The Philippines used to be the leading country in the performance of human capital, but its performance has weakened recently since 2015. In fact, Viet Nam has made consistent progress, improving its ranking within the human capital performance index. Malaysia remained at the high level in the index over 1990-2017 period.

<Table 3-3> Human capital performance index in ASEAN

Country	1990	1995	2000	2005	2010	2015	2017
Brunei Darussalam	0.88(4)	0.88(4)	0.91(4)	0.86(6)	0.82(7)	0.84(7)	0.74(6)
Indonesia	0.82(5)	0.82(5)	0.86(6)	0.91(4)	0.92(3)	0.91(6)	0.71(7)
Cambodia	0.54(9)	0.54(9)	0.55(9)	0.57(9)	0.58(10)	0.65(8)	0.63(8)
Lao PDR	0.60(8)	0.60(8)	0.66(8)	0.66(8)	0.66(8)	0.65(9)	0.58(9)
Malaysia	0.92(2)	0.92(2)	0.97(2)	0.96(2)	0.96(2)	0.99(2)	0.87(3)
Myanmar	0.51(10)	0.51(10)	0.52(10)	0.56(10)	0.59(9)	0.61(10)	0.53(10)
The Philippines	1.00(1)	1.00(1)	1.00(1)	1.00(1)	1.00(1)	1.00(1)	0.84(4)
Singapore	0.77(7)	0.77(7)	0.92(3)	0.94(3)	0.86(6)	0.97(4)	1.00(1)
Thailand	0.90(3)	0.90(3)	0.88(5)	0.89(5)	0.90(5)	0.93(5)	0.83(5)
Viet Nam	0.79(6)	0.79(6)	0.82(7)	0.85(7)	0.91(4)	0.98(3)	0.93(2)

Note: author's estimation

<Figure 3-11> Trend of human capital index (1990-2017)



Note: author's estimation

Supplement

Data Envelopment Analysis

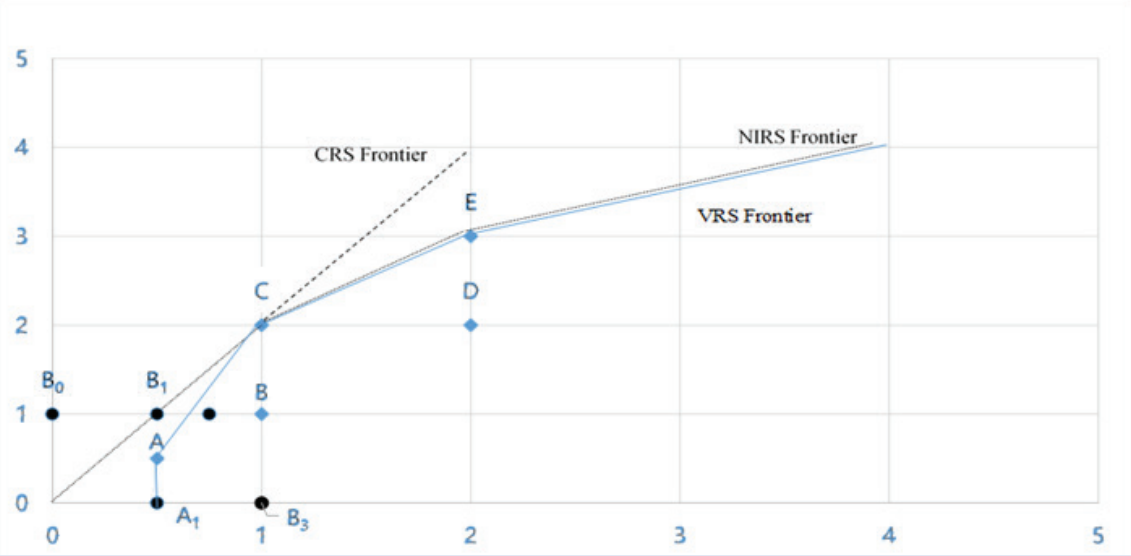
To evaluate the performance of human capital, this report sued the data envelopment analysis (DEA). DEA, a non-parametric approach, uses linear programming methods to construct a linear envelope bounding the data relative to which efficiencies can be calculated. If x_i and y_i are inputs and outputs, and u and v are scalar values chosen for each production unit, such that the efficiencies of each unit are maximized, but they are not greater than 1, then:

$$maximize_{u,v}(u' y_i)$$

$$\text{Subject to } v\text{^}' x_i = 1,$$

$$u' y_i - v' x_i \leq 0, j = 1,\ldots, N \text{ and } u,v \geq 0$$

Figure A Production Frontier



The x-axis and the y-axis in the figure represent input level and output level, respectively. The assumptions of returns to scale affect the productivity performance of individual countries. The CRTS frontier represents the most efficient output level given the input levels under the assumption of CRTS. The non-increasing returns to scale (NIRS) frontier is the frontier curve under

the assumption of NIRS. The variable returns to scale (VRS) frontier is the frontier curve under the assumption of VRS. If technology represents CRTS, countries C and B1 are efficient because they are on the production frontier, but A and E are not efficient. On the contrary, if we assume VRS, countries A and E are on the efficient path. Assuming an input level of 1, the relative productivity of country B is measured by BB3/CB3. In our case, to measure the performance of human capital, it is assumed that technology represents CRS.

Source: Kim et al.(2018)

Policy Measures to Improve Labour Productivity in ASEAN Member States: A Holistic Approach to Management of Human Capital Productivity

4.1. High Priority Accorded to Human Capital Development in ASEAN

The importance of human capital[4] is firmly entrenched in the ASEAN Charter, which stipulates that one of the purposes of ASEAN is to "develop human resources through closer cooperation in education and life-long learning, and in science and technology, for the empowerment of the peoples of ASEAN and for the strengthening of the ASEAN Community". It is also emphasized in the ASEAN Labour Ministers Meeting, where "to promote the development of productive, competent and capable workforce" is part of its terms of reference; and in the ASEAN Labour Ministers' Work Programmes 2016-2020 and 2021-2025 which have the overall objective of "a better quality of life for ASEAN people through workforce with enhanced competitiveness and engaged in safe and decent work derived from productive employment, harmonious and progressive workplace, and adequate social protection". The ASEAN Socio-Cultural Community Blueprint 2025 includes the strategic measure of "to promote human capital development, economic self-reliance and sustainable livelihood, especially among the poor, through access to education, employment opportunities, entrepreneurship and micro-finance;" and the ASEAN Economic Community Blueprint 2025 envisions fostering "robust productivity growth through innovation, technology and human resource development".

Recent commitments related to human capital development are the Vientiane Declaration on Transition from Informal Employment to Formal Employment towards Decent Work Promotion in ASEAN, adopted on 6 September 2016; the ASEAN Labour Ministers' Statement on the Future of Work: Embracing Technology for Inclusive and Sustainable Growth, adopted on 29 April 2019; the ASEAN Declaration on Human Resources Development for the Changing World of Work, adopted by Heads of State and Government of ASEAN on 26 June 2020; and establishment of the ASEAN TVET Council in 2020. All these commitments support the resolve of the ASEAN Community Vision 2025 "to consolidate our Community, building upon and deepening the integration process to realize a rules-based, people-oriented, people-centered ASEAN Community". They are also consistent with the Centenary Declaration for the Future of Work in 2019 by the International Labour Organization (ILO), which called for a "human-centered approach for the future of work" focusing on increasing investment in people's capabilities, in the institutions of work, and in productive employment and decent work.

The various commitments on human capital development are intended to prepare ASEAN's human capital for the future of work. A key aspect of this endeavor is how

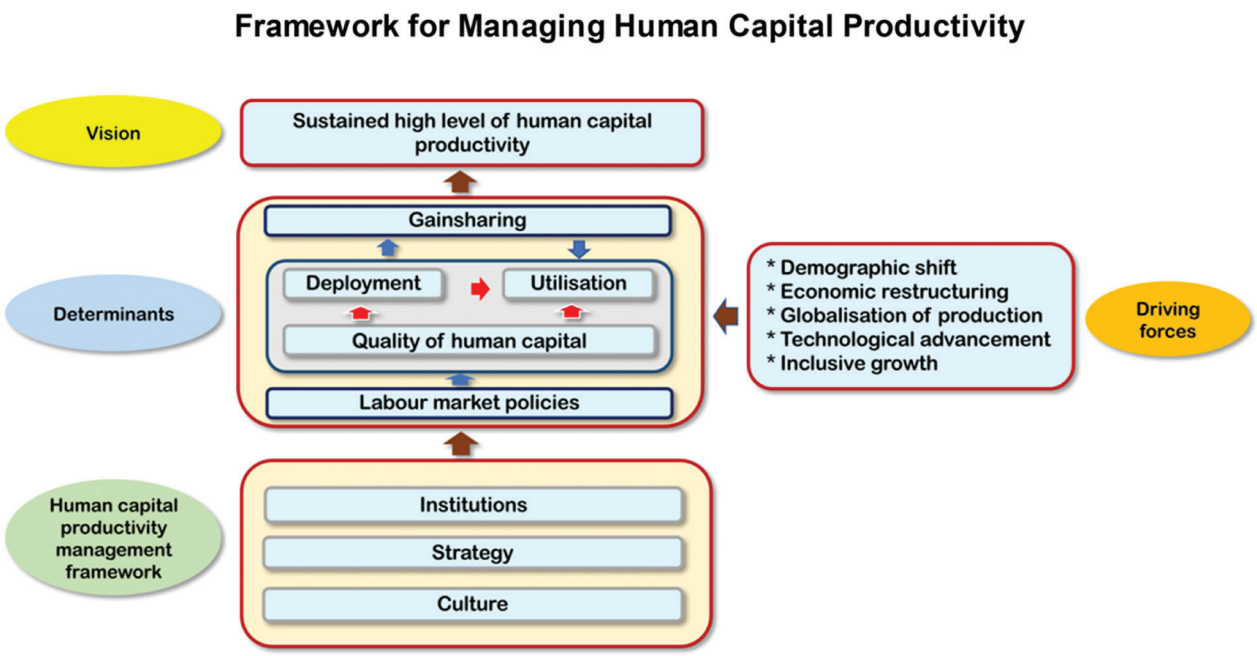
[4] This chapter focuses on the human capital aspect of labour productivity covered in the previous chapters. The term "human capital" is synonymous with "human resources" that is also used in ASEAN. Accordingly, the productivity of human capital or human resources is termed "human capital productivity".

human capital productivity in ASEAN can be sustained in the midst of the changing world of work. A focus on human capital productivity is, in effect, a focus on human-centered productivity or the human aspect of labour productivity.[5] This chapter proposes how this aspect of productivity can be managed in a holistic manner in ASEAN.

4.2. Architecture for Holistic Approach to Managing Human Capital Productivity in ASEAN

Figure 4-1 shows the proposed architecture for the holistic approach to managing human capital productivity in ASEAN. The architecture is for ASEAN as a whole. This serves as a baseline for further detailed studies at the level of the individual Member States, taking into account their current situation, capacities and resources.

<Figure 4-1> Architecture for holistic approach to managing human capital productivity in ASEAN



At the apex is the vision, which is then cascaded down into three parts to understand what need to be addressed and to derive policy implications. The three parts are the determinants of human capital productivity, the driving forces that impact the

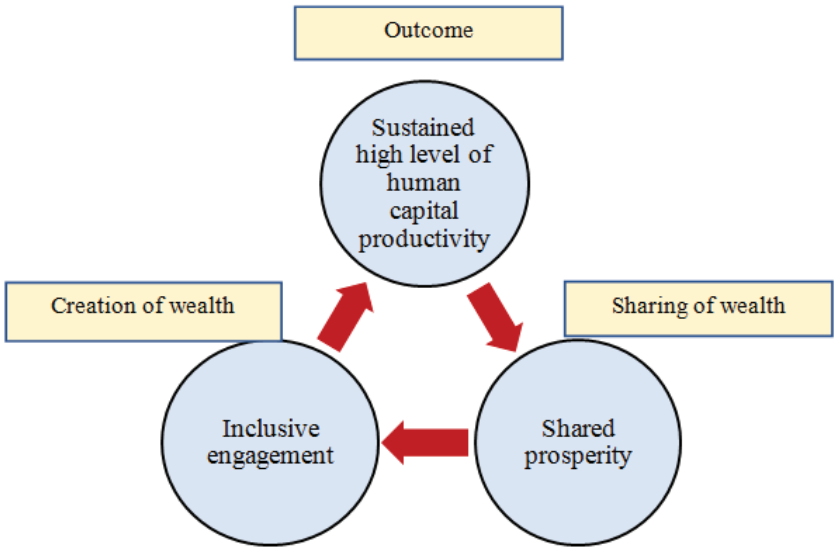
[4] Singapore is the first among the Member States to emphasize the human aspect of productivity in the national Productivity Movement in view of the critical role of human capital in sustaining the country's productivity growth. Following the experience of Japan, it launched the Productivity Movement in 1981 and promoted the human aspect of productivity throughout the 1980s. From 1983 to 1990, it received assistance from Japan through the Productivity Development Project. Details can be found in Woon, K.C. and Loo, Y.L. (2018), *50 Years of Singapore's Productivity Drive*, World Scientific, Singapore.

determinants, and the framework for managing human capital productivity. A 5-year time frame till 2025 is adopted for the analysis to align with the ASEAN Socio-Cultural Community Blueprint 2025, as well as the ASEAN Economic Community Blueprint 2025. The details of each of the four parts are elaborated below.

4.2.1. Vision for Human Capital Productivity

The vision to be achieved is a sustained high level of human capital productivity. This can be gauged broadly in terms of the wealth created in the economy (gross domestic product, or GDP in short) in relation to the human capital involved in creating the wealth. This is similar to the measurement of labour productivity for the economy, except that the focus is on the specific contribution of human capital to the creation of wealth. The difference is that human capital productivity, being people-centered, goes beyond the narrow concentration on the traditional input-output ratio. Importantly, it also emphasizes the importance of inclusive engagement of human capital in the wealth generation process and equitable sharing of the wealth created. This is illustrated in Figure 4-2.

<Figure 4-2> Vision and its integral components



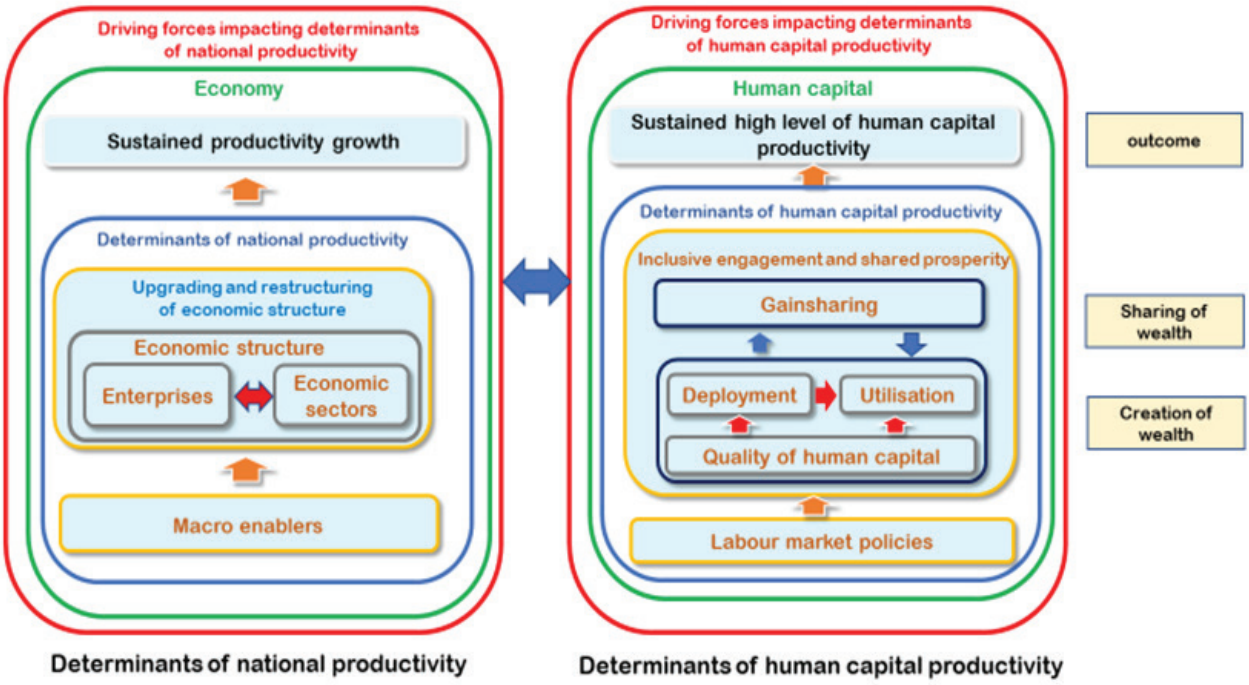
The two components of inclusive engagement and shared prosperity are integral to the vision. A virtuous circle is created as inclusive engagement leads to the outcome of sustained high level of human capital productivity (creation of wealth), which enables shared prosperity (sharing of wealth) and leads to even greater inclusive engagement. This representation of the vision and its two components is aligned with the vision of the ASEAN Socio-Cultural Community Blueprint 2025, which is "for an ASEAN Community

that engages and benefits the peoples and is inclusive, sustainable, resilient, and dynamic".

4.2.2. Determinants of Human Capital Productivity

The determinants of human capital productivity are the leverage points that must be given focused attention for the vision to be achieved. This is shown diagrammatically in Figure 4-3.

<Figure 4-3> Determinants of human capital productivity



There are five determinants of human capital productivity. Three of them – quality, deployment, and utilization of human capital – affect the amount of wealth that can be created. The fourth, gainsharing, influences the extent to which the wealth created is shared. Supporting these four proximate determinants are labour market policies, which make up the fifth determinant.

Quality of human capital is dependent on the education and skills of those in employment, termed the workforce, and those who can potentially join the workforce. The higher the quality, the greater is its contribution to the wealth creation process. At any point in time, the quality is fixed; but there is the possibility of improving it over time as the stock and flow of people in the economy are upgraded.

Deployment of human capital refers to the specific sectors and industries to which people are channeled for the wealth creation process. The possibility of creating more wealth is greater if the deployment is towards high value-added sectors and industries. Deployment starts with identifying the priority sectors and industries, influencing skills development to meet the skills requirements of the industries, and deploying the skills to these industries. It is thus a dynamic process, depending on the relative growth and attrition of various parts of the economy and the economic priorities of the country.

Utilization of human capital refers to the degree to which people are used efficiently and effectively in the wealth creation process, wherever they are deployed. This depends very much on the management practices adopted at the workplace. The management practices determine what strategy is taken, how operations are run, what technologies are adopted, and how people are managed. All these affect the capacity and capability of the people to produce.

Gainsharing, or more specifically productivity gainsharing, refers to the distribution of the wealth created, as well as the active engagement of people in the wealth-creation process. The underlying basis of gainsharing is a comparison of actual productivity with a baseline target performance; when the actual productivity is greater than the baseline, a percentage of the gains is shared with employees. The greater the extent of inclusive engagement and shared prosperity, the higher will be the commitment by everyone to the further creation of wealth.

Labour market policies that support the four proximate determinants of human capital productivity refer to all the policies taken to improve the efficient functioning of the labour market, as well as to offer social protection to the employed. They include aspects such as ease of movement between jobs, flexibility of wage determination, and compensation for work injuries.

In Figure 4-3, the determinants of human capital productivity are positioned next to the determinants of national productivity (conventionally measured in terms of labour productivity). This emphasizes the fact that human capital productivity contributes significantly to the productivity of the economy, and hence any policies directed at the determinants of human capital productivity must be aligned with the pursuit of national productivity.

There are three proximate determinants of national productivity, viz. enterprises, economic sectors, and economic structure, supported by certain macro enablers (such as business environment, infrastructure, and macroeconomic policies). At any point in time, a country's productivity is determined by the state of productivity of enterprises and the economic sectors in which they operate, within a given economic structure. The

more the current economic structure is upgraded through the productive activities of enterprises and economic sectors, the higher is the economy's productivity. Over time, restructuring of the economic structure towards higher value-added activities is critical for sustaining high productivity.

The processes of upgrading and restructuring of the economic structure can achieve significant outcomes only when human capital productivity is high, and its determinants are addressed in conjunction with economic priorities. At the same time, human capital productivity is influenced by the types of productive activities undertaken in the economy.

4.2.3. Driving Forces Impacting Determinants of Human Capital Productivity

The determinants of human capital productivity are impacted by certain driving forces, that is, forces that shape how the determinants evolve. If they are leveraged well, the driving forces will boost performance of the determinants; conversely, if they are poorly managed or ignored, they will constrain performance.

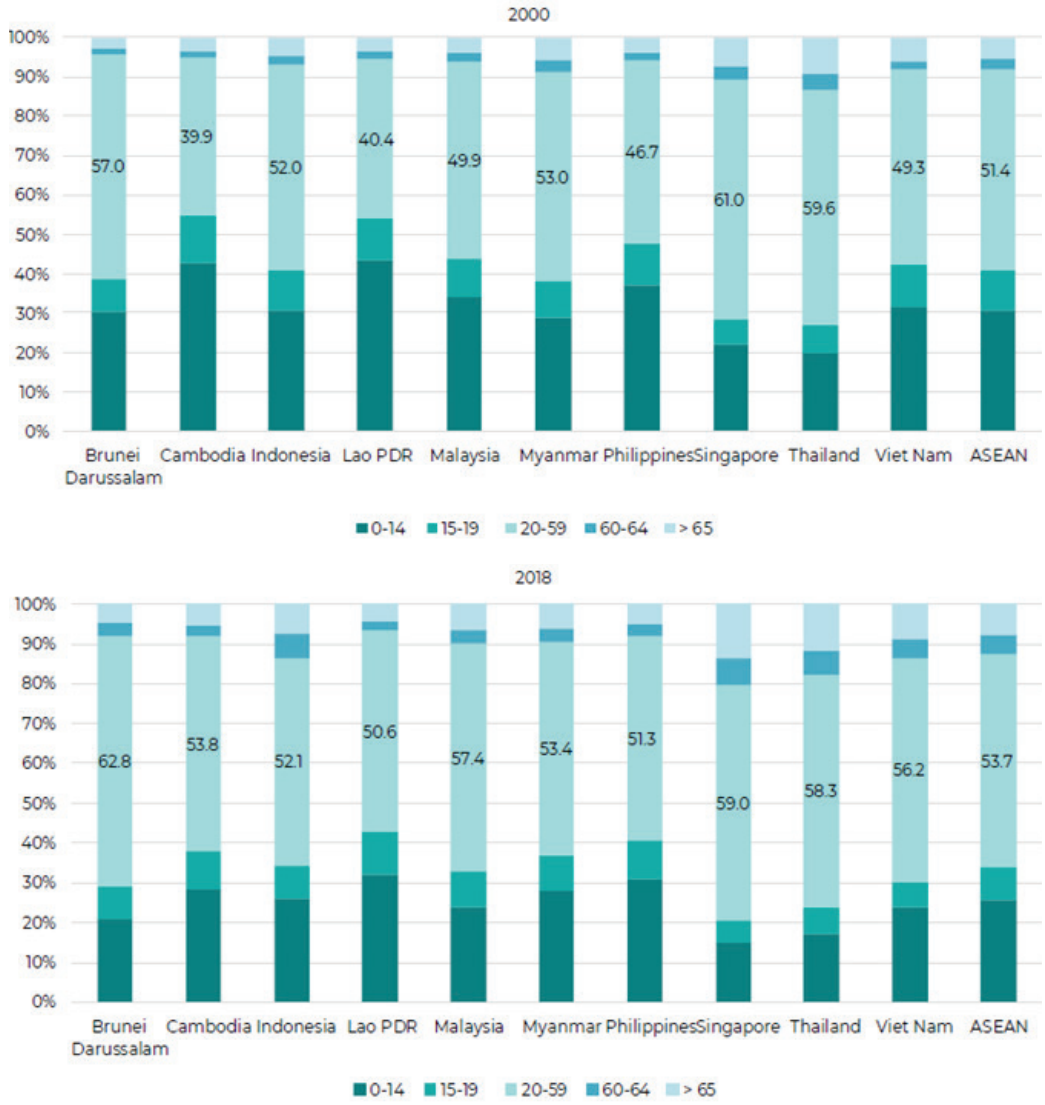
The five main driving forces that will impact the determinants of human capital productivity in ASEAN are demographic shift, economic restructuring, globalization of production, technological advancement, and inclusive growth. These driving forces impact all the determinants, albeit to different degrees. They also impact the determinants of national productivity, which, in addition, are affected by rising geopolitical tensions and economic uncertainties; rapid urbanization; infectious disease outbreaks; and concerns about sustainable development, particularly green productivity and climate change.[6]

[6] The issue of green productivity and climate change has risen to prominence with the adoption of the UN's 2030 Agenda for Sustainable Development. Countries have addressed this by incorporating it in their national development plans and, in some cases, in their national employment policies as well. The aim is to enable a transition to a green economy by "greening" traditional industries and creating green jobs. The impact is primarily on the methods of production (e.g. use of renewable energy instead of fossil fuel) rather than on human capital productivity per se.

4.2.3.1. Demographic Shift

There is a clear pattern of demographic shift in ASEAN. Figure 4-4 shows the shift from 2000 to 2018 for ASEAN as a whole and for its Member States.

<Figure 4-4> Demographic shift in ASEAN



Source: ASEAN Secretariat (2019), *ASEAN Key Figures 2019*, Jakarta.

Overall, there is a shift of the population structure away from the youth population due to a fall in the total fertility rate. In 2000, the share of the youth population (aged 0-19 years old) was 40.7 percent. In 2018, this declined to 33.9 percent. At the other extreme, the share of the elderly population (aged 65 years and above) increased from 5.3 percent in 2000 to 7.5 percent in 2018. Correspondingly, the share of the population in the 20-64 years old bracket increased from 54.0 percent in 2000 to 58.6 percent in 2018.

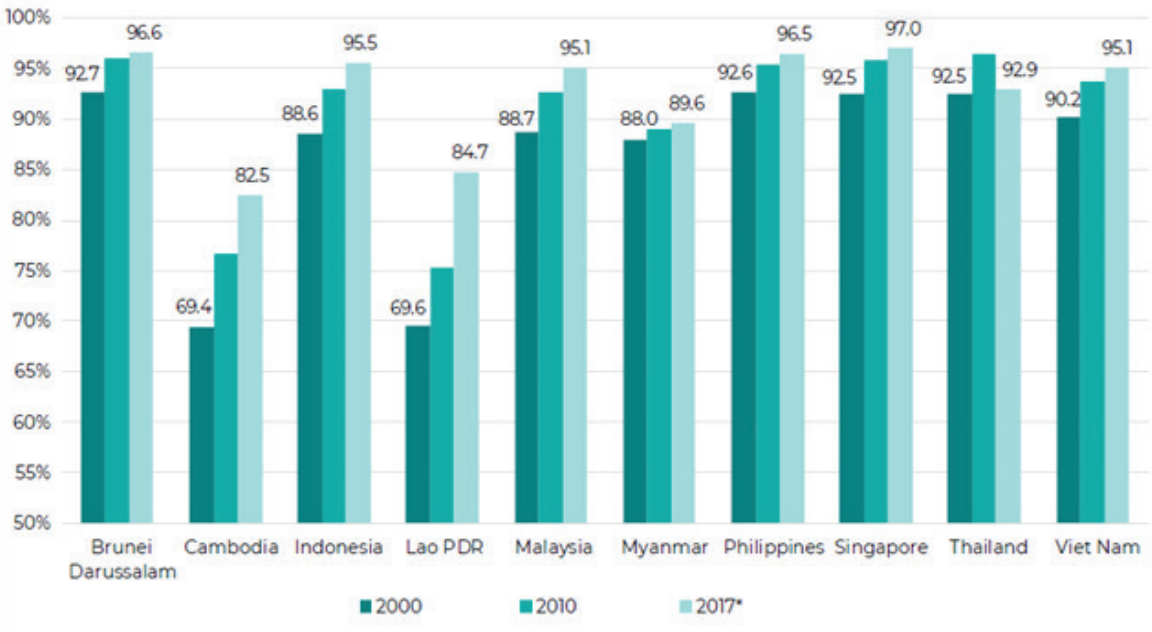
All the Member States experienced an increasing share of elderly population and a declining share of youth population between 2000 and 2018. However, there are wide

variations. At one extreme are Singapore and Thailand with share of youth population below 25 percent and share of elderly population above 10 percent in 2018. They are the ones with the largest increase in the share of elderly population between 2000 and 2018 – from 7.2 percent to 13.7 percent for Singapore and from 9.1 percent to 12.0 percent for Thailand. At the other extreme are Lao PDR and the Philippines with share of youth population above 40 percent and share of elderly population less than 6 percent in 2018. For the 20-64 age group, the share is less than 60 percent in Cambodia, Indonesia, Lao PDR, Myanmar, and the Philippines.

From 2000 to 2018, the share of the working-age population (aged 15-59 years old) in ASEAN remained fairly constant (61.4 percent in 2000 and 61.8 percent in 2018). At the individual Member State level, however, the share of the working-age population increased in seven of them, namely, Brunei Darussalam, Cambodia, Lao PDR, Malaysia, Myanmar, the Philippines, and Viet Nam.

Besides a shift in the population structure, the educational level of the population has increased due to greater access to education opportunities. Figure 4-5 shows that the literacy rate has improved significantly in all the Member States over time. In 2017, the adult literacy rate in seven of the Member States exceeded 90 percent. Singapore had the highest literacy rate (97.0 percent) followed by Brunei Darussalam (96.6 percent), the Philippines (96.5 percent), and Indonesia (95.5 percent).

<Figure 4-5> Increasing literacy rate in ASEAN



Source: ASEAN Secretariat (2019), *ASEAN Key Figures 2019*, Jakarta.

Note: *The latest available data for Brunei Darussalam and Thailand are for 2016; for Lao PDR, Myanmar, and Thailand, 2015; and for the Philippines, 2013.

In 2017, all the Member States had a net enrolment in primary education rate of more than 90 percent. Singapore had the highest rate of 100 percent, followed closely by Brunei Darussalam and Viet Nam with 98.0 percent. As for the net enrollment in secondary education rate, almost all the Member States experienced an increase over the years. Significant increases of more than 30 percent were recorded in Cambodia, Indonesia, Malaysia, and the Philippines. Nevertheless, there is still room for improvement, given that the rate was still below 80 percent in half of the Member States – Indonesia (78.7 percent) and the Philippines (76.0 percent) and, at much lower levels, Cambodia (37.1 percent), Lao PDR (34.7 percent) and Myanmar (54.0 percent).

A consequence of the changing demographics is that the working-age population will become more diverse. Some of the Member States will have to cope with a slow-growing and ageing workforce; while others have the opportunity to reap the benefits of a "demographic dividend" as a burgeoning segment of the population enters the workforce. Because of expanded attainments of primary and lower secondary education, new entrants to the workforce will be markedly better educated than those who entered the workforce in earlier decades. Hence, there will be a large pool of young workers with at least basic skills, in particular literacy and numeracy, making them better prepared to function in a modern workplace and to acquire technical skills for high value-added jobs in complex industries. At the same time, the younger generation of workers, in particular the millennials, have vastly different expectations regarding work and the workplace. Ingenious measures need to be taken and appropriate investments made to tap the full potential of various segments of the population for the needs of the economy.

4.2.3.2. Economic Restructuring

Following the experience of the developed countries, the ASEAN Member States have undergone economic restructuring over the years. The pattern is one where the composition of the three major sectors, viz. agriculture, industry, and services, shifts in a direction that leads to higher productivity. In terms of sectoral share of GDP, the agriculture sector dominates initially. As the country develops, the share of the more productive industry sector, particularly manufacturing, increases rapidly. Subsequently, this is overtaken by the share of high-productivity services. A similar trend is observed for the share of employment by sector. Besides changes at the sector level, structural changes take place in terms of the types of industries within the sector. Typically, high value-added, knowledge-intensive, and capital-intensive modern industries replace low value-added, labour-intensive traditional industries during the course of development.

An increase in economic complexity is yet another phenomenon that occurs in the process of economic restructuring. Economic complexity refers to the sophistication of a

country's productive structure and the mix of its products. These depend, in turn, on the availability of the requisite capabilities, including skills. A country progresses by building up its capabilities, which enable the production and export of more sophisticated, higher value-added goods and services. This leads to higher productivity and economic growth.

Table 4-1 shows the changes in GDP and employment shares of the three sectors in ASEAN from 2000 to 2018, and changes in the economic complexity from 2008 to 2018. The structural shifts are at different stages in the Member States; nevertheless, they have generally conformed with the experiences of the developed countries.

<Table 4-1> Changes in sectoral shares of GDP and employment and economic complexity in ASEAN

Member State	Sectoral share of GDP (%)						Sectoral share of employment (%)						Sectoral employment (%)	
	Agriculture		Industry		Services		Agriculture		Industry		Services			
	2000	2018	2000	2018	2000	2018	2000	2018	2000	2018	2000	2018	2000	2018
Brunei Darussalam	1.6	0.8	57.0	62.9	41.4	38.0	2.01	1.1	64.1[1]	25.8	33.9[1]	73.1	-	-
Cambodia	42.6	16.3	23.2	32.1	34.2	43.1	76.32	55.93	6.4[2]	18.5[3]	17.3[2]	25.6[3]	-0.78	-0.56
Indonesia	16.6	12.5	43.7	39.8	39.7	43.6	45.3	28.8	17.5	21.4	37.2	49.8	0.05	0.02
Lao PDR	52.1	14.5	22.7	35.7	25.2	39.6	-	71.7[4]	-	15.6[4]	-	12.7[4]	-0.78	-0.73
Malaysia	8.2	7.3	44.3	37.5	47.6	54.0	18.4	10.6	32.2	29.6	49.4	59.8	0.92	1.03
Myanmar	42.9	24.6	17.3	32.1	39.7	43.2	66.6[5]	51.6	11.8[5]	18.1	21.6[5]	30.3	-1.05	-0.97
The Philippines	19.9	8.1	34.7	34.1	45.4	57.8	39.1[6]	32.0	15.6[6]	26.4	45.3[6]	41.6	0.47	0.67
Singapore	0.1	0.0	34.0	25.1	65.9	64.4	0	0	34.5	16.1	65.5	83.9	1.91	1.85
Thailand	10.1	6.1	44.9	34.7	44.9	58.7	47.4[7]	35.8	19.3[7]	28.4	33.3[7]	35.8	0.85	1.17
Viet Nam	23.3	14.3	35.4	35.6	41.3	38.8	-	41.9	-	25.1	-	33.0	-	0.14

Sources: 1. ASEAN Secretariat (2003 and 2019), *ASEAN Statistical Yearbook 2003* and *ASEAN Statistical Yearbook 2019* (for sectoral shares of GDP and employment).

2. Harvard University, *The Atlas of Economic Complexity*, https://atlas.cid.harvard.edu, retrieved on 9 October 2020 (for economic complexity index).

Notes: 1. 1 = 1995, 2 = 1999, 3 = 2012, 4 = 2015, 5 = 1996, 6 = 1999, 7 = 1999.

2. The sum of GDP shares of Agriculture, Industry and Services may not equal to 100% due mainly to the separate treatment of balancing items from the total GDP including items on taxes and subsidies on particular products and services.

3. The degree of economic complexity increases when there is a rightward shift of the economic complexity index from a scale with a high negative value on the left to a high positive value on the right. There are no data for Brunei Darussalam.

In all the Member States, the agricultural shares of GDP and employment declined from 2000 to 2018, although the shares were still comparatively high in Cambodia, Lao PDR, Myanmar, and Viet Nam. Thus, in relative terms, the contribution of agriculture to the economy had declined.

The employment shares of industry and services clearly reflect the structural shift in employment during the course of development. The increases in the employment share of the industry sector from 2000 to 2018 were highest in Cambodia, the Philippines, and Thailand as the pace of industrialization accelerated. At the other extreme, the largest declines were in Brunei Darussalam and Singapore, both of which experienced the highest increase in the employment share for services as servicification of their economies intensified. Overall, the economic complexity of ASEAN increased between 2008 and 2018. Singapore, Thailand, and Malaysia have the most complex economies.

The implication of the structural shifts is that there is potential for higher productivity growth in the ASEAN economies as the high value-added sectors, industries and products grow over time. This can be realized only when there is continuous upgrading of skills and deployment of the skills to the priority industries.

4.2.3.3. Globalization of Production

According to an estimate by the Organisation for Economic Cooperation and Development (OECD), only 30 percent of all trade in goods and services in the global economy today comprise final products produced in a country and exported to consumers (based on the traditional view of international trade that each country produces and exports products according to their comparative advantage). An overwhelming 70 percent of international trade now stems from the globalization of production.[7] This involves global value chains (GVCs), where different stages of the production process are located across countries to capitalize on their comparative resource, capability and cost advantages. Consequently, raw materials, parts, components and products in different stages of production cross several borders as intermediate goods before they are incorporated into final products and shipped to consumers. Both transnational corporations and local enterprises are involved in these GVCs.

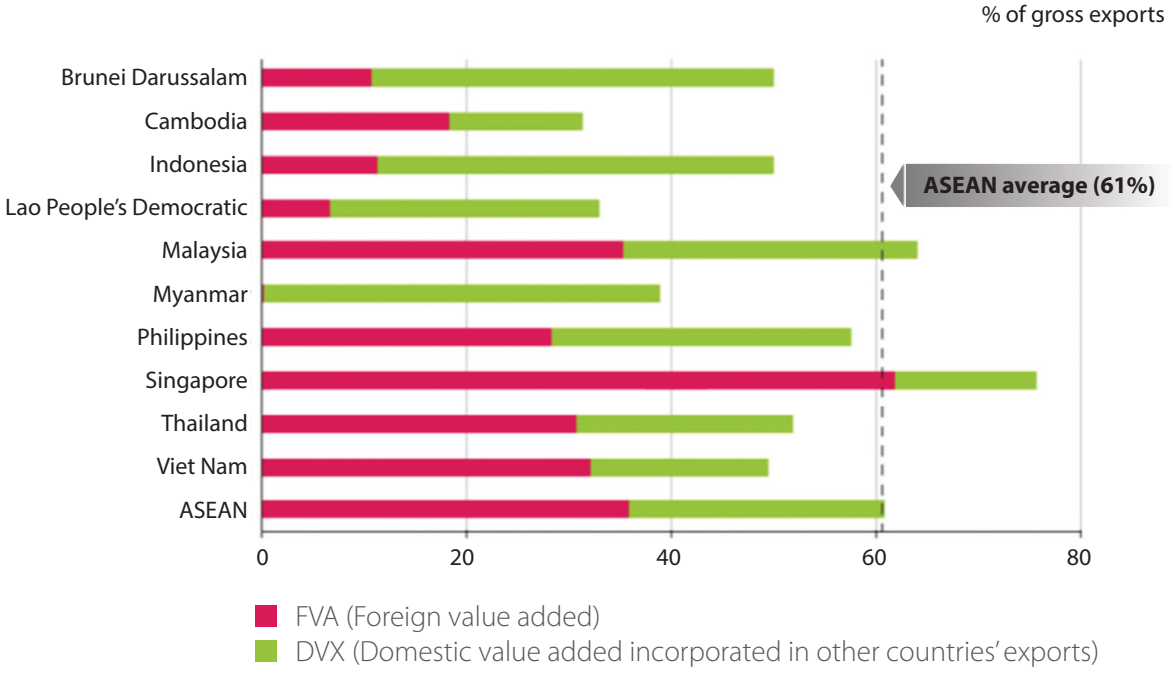
Economies all over the world, including the ASEAN Member States, have leveraged GVCs to accelerate their industrial upgrading and economic restructuring. This is done by engaging in either backward or forward linkages in the GVCs. Backward linkages are created when a country uses inputs from another country for domestic production (i.e.

[7] The estimate by the OECD is taken from https://www.oecd.org/trade/topics/global-value-chains-and-trade/, retrieved on 1 October 2020.

foreign value-added, or FVA). This is important if the inputs required for production are either not available locally or available but deficient in some respects, such as quantity and quality. Forward linkages are created when a country supplies inputs that are used for production in another country (i.e. domestic value-added used as inputs to exports from another country, or DVX). This is important for countries seeking entry into new industries and producing goods for export markets. A summation of the two components of value-added gives an indication of a country's GVC participation both upstream and downstream, that is, the degree to which a country's exports are integrated into international production networks and are a part of a multi-stage trade process.

Figure 4-6 shows the GVC participation of the Member States in 2018. Variations in the level of development and industrial policies have led to differences in the extent of GVC participation. Singapore and Malaysia are most integrated into GVCs, above the ASEAN average of 61 percent. Cambodia, Lao PDR, and Myanmar are the least integrated. More than half of the GVC participation in Malaysia, Singapore, Thailand, and Viet Nam comes from the upstream part of value chains (FVA). In contrast, Brunei Darussalam, Indonesia, and Lao PDR derive more than half of their GVC participation from the downstream part of value chains (DVX). These differences reflect variations in the nature of products produced and exported, in particular manufacturing-dependent products compared with commodity-dependent products.

<Figure 4-6> GVC participation in ASEAN



Source: ASEAN-Japan Centre (2019), *Global Value Chains in ASEAN – A Regional Perspective*, Tokyo.

Data from the latest (2018 edition) OECD Trade in Value-Added database show that the average annual increase in GVC participation during 2005-2015 exceeded 10 percent in Viet Nam (16.5 percent) and the Philippines (10.4 percent). Next in line were Cambodia (8.4 percent), Singapore (7.5 percent) and Thailand (6.5 percent). These compared favorably with the average of 6.5 percent for developing economies and 4.1 percent for developed economies.

An integral part of GVCs comprises regional value chains (RVCs) within the ASEAN region itself. The RVCs (FVA created within ASEAN + DVX incorporated within ASEAN) are typically led by firms from advanced Member States or by foreign affiliates of firms in developed countries. The growing importance of RVCs is reflected by their increase from 14 percent of all GVCs in ASEAN in 1990 to 25 percent in 2018. This has been facilitated by ASEAN integration frameworks such as the ASEAN Economic Community and its regional policy mechanisms and measures.

The current state of participation of the Member States shows that there is much potential for reaping greater gains from GVCs.[8] This covers two aspects. The first aspect is to increase the participation rate in GVCs. The second aspect is to progress from the low value-added parts of GVCs where many of the Member States participate today to the high value-added parts. For both aspects, continuous skilling, reskilling, and upskilling are required.

4.2.3.4. Technological Advancement

The application of simple technologies such as farm mechanization and automation of manufacturing processes can be game changers in traditionally labour-intensive operations. Beyond the simple technologies, however, are the much more advanced digital technologies that have come to the forefront. They include artificial intelligence, advanced robotics, cyber-physical systems, internet of things, additive manufacturing, augmented reality, blockchain technology, and big data analytics. These technologies have spawned the 4th industrial revolution or Industry 4.0, affecting and disrupting all sectors of the economy. They transform the way business and production methods are run and how work is done; create new business models and value propositions; and replace old management practices with new innovations. They also drive the development of new industries, products and services; and fuel the growth of the sharing economy, that

[8] In recent years, some countries have adopted increasingly insular policies, resulting in calls for reshoring and nationalization of GVCs. The COVID-19 outbreak has also exposed the vulnerabilities of GVCs, as various parts of the production and distribution chains are disrupted because of closures of enterprises and borders. Consequently, there may be a rethink of a growth strategy that relies too much on GVCs. Nevertheless, GVCs are likely to continue to be important in the long run. As the OECD emphasized in its *OECD Policy Responses to Coronavirus (COVID-19)* on 3 June 2020, "Ultimately, given the lack of evidence that domestic supply chains fared any better than international supply chains during the COVID-19 crisis, the additional economic and social risks of extensive reshoring policies and nationalisation far outweigh any perceived gains in terms of security of supply". (http://www.oecd.org/coronavirus/policy-responses/covid-19-and-global-value-chains-policy-options-to-build-more-resilient-production-networks-04934ef4/, retrieved on 9 October 2020).

is, an economic system in which assets or services are shared between private individuals, either free or for a fee, typically by means of the internet. All these have the potential of increasing productivity, reducing costs, increasing speed to market, and improving customer experience.

The increasing pace of technological advancement brought about by Industry 4.0 will also have a huge impact on employment. In its *The Future of Jobs Report 2018*, the World Economic Forum projected that 75 million jobs will be displaced worldwide by 2022 due to technological advancement. At the same time, however, there will be 133 million new jobs created. This is the result of two countervailing forces occurring at the same time: large-scale decline in some roles as tasks within these roles become automated or redundant; and large-scale growth in new products and services, and the associated new jobs and tasks, generated by the adoption of new technologies.

Table 4-2 illustrates the point that jobs in which the tasks are predominantly routine are more susceptible to automation (quadrants A and C). The result could be serious jobs displacements, as concluded by a 2016 ILO study titled *ASEAN in Transformation: The Future of Jobs at Risk of Automation*. The study covered Cambodia, Indonesia, the Philippines, Thailand, and Viet Nam, which collectively account for about 80 percent of the ASEAN workforce. About 56 percent of all employment in the five Member States are at high risk of displacement due to technological advancement in the decade ahead. These include jobs in hotels and restaurants, wholesale and retail trade, construction, and manufacturing, where the tasks are predominantly routine.

In contrast, jobs that involve tasks that are predominantly non-routine are less amenable to automation. These include manual jobs that demand a high degree of situational flexibility and human interaction (quadrant B); and jobs that involve extensive non-routine tasks requiring judgement and creativity (quadrant D). In fact, automation complements these jobs, particularly those in quadrant D. Thus, employment in jobs involving mainly non-routine, cognitive-intensive tasks can be expected to grow. As shown in Table 4-2, the top ten skills in demand in 2022 (a conclusion from the study by the World Economic Forum) fall largely in quadrant D.

<Table 4-2> Effect of technology on jobs and skills

Job at risk of automation		
Ease of automation / Nature of task	High (routine tasks)	Low (non-routine tasks)
Manual-intensive tasks	**A** **Cashiers, typiests, machine operators**	**B** **Landscapers, home health aides, security personnel**
Cognitive-intensive taks	**C** **Bookkeepers, proofreaders, clerks**	**D** **Doctors, lawyers, managers**

Top 10 skills in demand: 2018 and 2022		
2018	**2022 - Trending**	**2022 - Declining**
• Analytic thinking and innovation • Complex problem-solving • Critical thinking and analysis • Active learning and learning strategies • Creativity, originality and initiative • Attention to detail, trustworthiness • Emotional intelligence • Reasoning, problem-solving and ideation • Leadership and social influence • Coordination and time management	• Analytic thinking and innovation • Active learning and learning strategies • Creativity, originality and initiative • Technology design and programming • Critical thinking and analysis • Complex problem-solving • Leadership and social influence • Emotional intelligence • Reasoning, problem-solving and ideation • Systems analysis and evaluation	• Manual dexterity, endurance and precision • Memory, verbal, auditory and spatial abillities • Management of financial, material resources • Technology installation and maintenance • Reading, writing, math and active listening • Management of personnel • Quality control and safety awareness • Coordination and time management • Visual, auditory and speech abillities • Technology use, monitoring and control

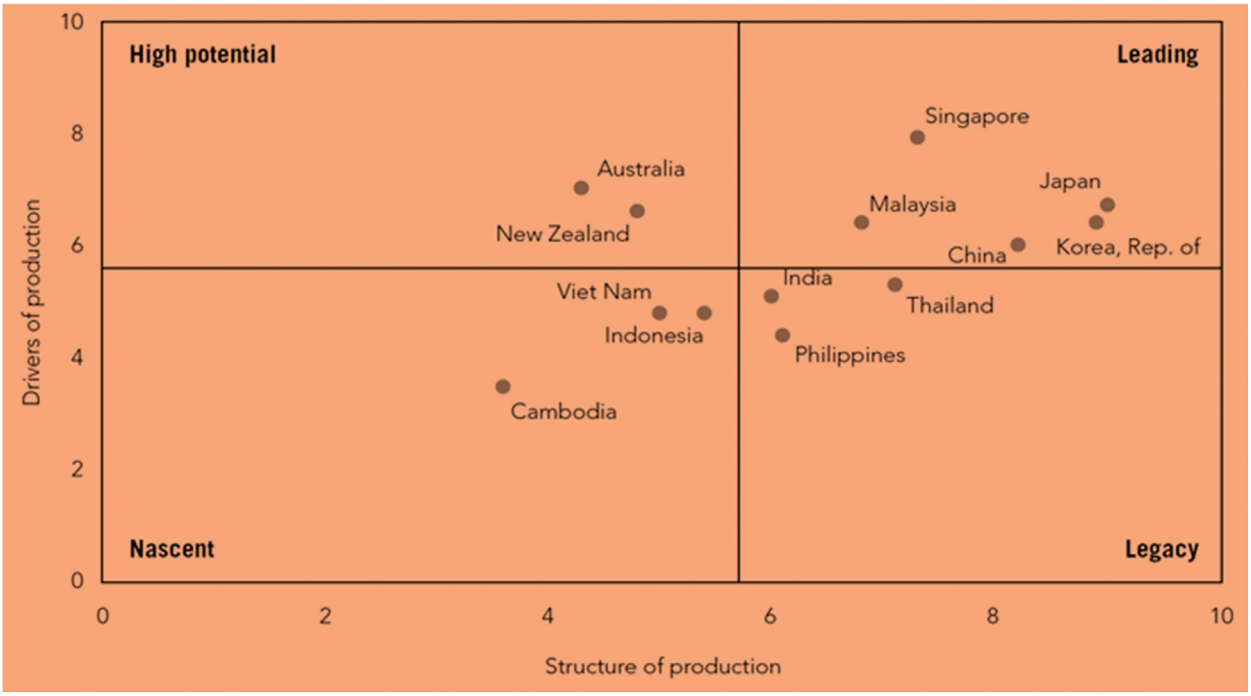
Sources: 1. Adapted from International Labour Organization (2016), *ASEAN in Transformation: The Future of Jobs at Risk of Automation*, Geneva (for jobs at risk of automation).

2. World Economic Forum (2018), *The Future of Jobs Report 2018*, Geneva (for top 10 skills in demand, 2018 and 2022).

The disruptive effects of technological advancement on employment, as well as the economy, are therefore immense. These effects can be highly positive if they are aptly managed. An indication of whether the Member States are well prepared is given in *Readiness for the Future of Production Report 2018* by the World Economic Forum. Figure 4-7 shows the findings for ASEAN, as well as its six principal trading partners. Of the seven Member States assessed, only Malaysia and Singapore are considered to be leading countries in their readiness for Industry 4.0 (strong current production base and well-positioned for the future). The Philippines and Thailand are classified as legacy economies (strong current production base but not well-positioned for the future); and

Cambodia, Indonesia, and Viet Nam are nascent economies (limited current production base and not well-positioned for the future).

Figure 4-7 Readiness to leverage Industry 4.0 as driver of future growth



Source: International Labour Organization (2019), *Preparing for the Future of Work: National Policy Responses in ASEAN + 6*, Geneva.

Notes:
1. Two indexes are used for the assessment. The first index is the national structure of production in terms of complexity and scale. The second index is based on the available drivers of production in the country, measured in terms of technology and innovation, human capital, global trade and investment, institutional framework, sustainable resources, and the demand environment. The scores range between 0 (unfavorable) and 10 (favorable). The lines dividing the four quadrants are drawn using the average scores of the indexes for the top 75 of the 100 countries assessed, based on the structure of production rankings. Nascent economies have a limited current production base and are not well-positioned to capitalize on Industry 4.0 to transform their production systems. Legacy economies have a strong current base but are also not well-positioned for the future. High-potential economies have a limited current base but are well-positioned for the future. Leading economies have a strong current base and are equally well-positioned for the future.
2. The assessment covers ASEAN +6 (the six principal trading partners of ASEAN, viz. Australia, China, India, Japan, New Zealand, and the Republic of Korea). Brunei Darussalam, Lao PDR, and Myanmar are not included.

What is critical is for all the Member States to embrace Industry 4.0 and take concerted efforts to build the capabilities to capitalize on the various technologies even if some appear to be remotely applicable at the moment. This includes building the requisite skills continuously to meet the demands of new jobs created by the new technologies. The importance of this is underlined by the adoption of the ASEAN Declaration on Industrial Transformation to Industry 4.0 in 2019.

4.2.3.5. Inclusive Growth

Inclusive growth, characterized by inclusive engagement and shared prosperity, is now a goal that is pursued worldwide as part of the larger call for sustainable development. Growth is inclusive when a wide segment of the population is engaged in productive employment that contributes to economic growth and shares its resulting benefits equitably. Inclusive economic growth is embedded in the UN's 2030 Agenda for Sustainable Development, which aims to balance the three dimensions of social well-being, economic prosperity and environmental protection. At the heart of the Agenda are 17 Sustainable Development Goals (SDGs) to be achieved by 2030. Two of them relate directly to inclusivity: SDG 4 – "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"; and SDG 8 – "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all".

Inclusive engagement involves proactive outreach to those who are employed but underutilized and those who are at the fringe of economic activities. These include workers in micro, small, and medium enterprises (MSMEs), those working in the informal economy, women undertaking activities in households or family-owned concerns but not in the formal labour force[9], and persons with disabilities. Table 4-3 shows the large extent of these vulnerable and marginalized groups in ASEAN.

MSME employment as a proportion of total employment shows wide variation among the Member States. In Brunei Darussalam, Malaysia and Viet Nam, the proportion is in the 50-60 percent range. At the other extreme are Indonesia and Lao PDR, where the proportion exceeds 80 percent. Regardless, the number of people engaged in MSMEs, which are predominant in the Member States, is large. In most of the Member States, MSMEs are found mainly in labour-intensive and low value-added sectors of the economy, particularly retail, trade, and agricultural activities. Hence, they account for a low share of gross value-added but have a proportionately higher share of employment. Many of the workers in the MSMEs have low skills and have little access to opportunities to improve their productivity.

The proportion of workers in informal employment (comprising mainly persons engaged in own-account unregistered enterprises, unpaid work in a family enterprise, casual-wage work, home-based work, and street vending) also shows wide variation among the Member States. It ranges from a low 10.6 percent in Malaysia to a high 90.3 percent in Cambodia. The proportion is higher in the rural areas in all the Member States, except Brunei Darussalam (no doubt, it would be much higher if data for the agriculture sector

[9] *Labour force* refers to persons in employment (workforce) and unemployed persons seeking employment.

were available). Nevertheless, informal employment in the urban areas could increase with poorly managed urban expansion creating few jobs in the formal sector. The informal economy is of concern as it soaks up valuable human capital in unproductive, low value-added economic activities; and it diminishes the government's capacity for oversight, including provision of opportunities for improving the productivity of the workers. Recognizing the seriousness of this, the Vientiane Declaration on Transition from Informal Employment to Formal Employment towards Decent Work Promotion in ASEAN was adopted in 2016.

<Table 4-3> Indicators showing potential for greater inclusive engagement and shared prosperity in ASEAN

Member State	Inclusive Engagement							Shared prosperity	
	MSME employment (% of total)	Informal employment, excluding agriculture (% of total)			Labour force participation rate (%)			Disability prevalence (% of population)	% of population below national poverty line	Gini coefficient
		2018	2000	2018	2000	2018	2000			
Brunei Darussalam	58.0	46.6	43.3	47.6	65.4	57.3	72.7	1.1	N.A.	-
Cambodia	72.9	90.3	93.2	85.0	84.3	80.1	88.8	3.4	13.5	0.310
Indonesia	97.2	44.1	54.8	39.1	69.0	55.4	83.0	8.6	10.6	0.393
Lao PDR	81.4	75.4	80.9	70.8	68.0	69.0	62.0	2.8	23.4	0.364
Malaysia	57.4	10.6	12.5	10.3	68.5	55.2	80.4	1.4	0.4	0.463
Myanmar	N. A.	84.1	90.2	78.1	62.0	49.6	76.8	4.6	24.8	0.381
The Philippines	61.0	N. A.	N. A.	N. A.	60.1	46.3	73.9	1.6	21.6	0.401
Singapore	68.0	N. A.	N. A.	N. A.	67.7	60.2	75.6	3.0	N.A.	0.459
Thailand	76.7	37.1	40.0	35.0	68.3	60.1	77.1	2.6	7.9	0.378
Viet Nam	51.7	57.2	65.2	48.5	76.8	71.6	82.3	7.8	9.8	0.348

Sources:
1. Economic Research Institute for ASEAN and East Asia (2014), *ASEAN SME Policy Index 2014* (for MSME employment).
2. ASEANStatsPortal and ASEAN Secretariat (2019), *ASEAN Statistical Yearbook 2019* (for informal employment, labour force participation rate, population below national poverty line, and Gini coefficient).
3. United Nations ESCAP (2019), *Disability At A Glance 2019*, Bangkok (for disability prevalence).

Notes:
1. The informal employment data are for latest years available from the Member States. The data for labour force participation rate are for 2018, except for Cambodia (2017) and Lao PDR (2015). The data for population below national poverty line are for 2017. The data for Gini coefficient are for 2017, except for Cambodia (2016).
2. N. A. = not applicable.
3. Informal employment and disability prevalence are defined according to the official operational definition of each Member State.

The female labour force participation rate is lower than that for males in all the Member States, except Lao PDR. In Brunei Darussalam, Indonesia, Malaysia, Myanmar, and the Philippines, the participation rate is less than 60 percent. In contrast, the male labour force participation rate in all the Member States, except Lao PDR, exceeds 70 percent. Reasons for the low participation rate of women include the traditional belief regarding women's roles being at home, and the withdrawal of women from the labour force when they have children. The result is that a vast number of women in the Member States is excluded from contributing to productive activities. In the Member States with a large working-age population emerging, the low participation of women in the labour force negates the potential of enjoying a demographic dividend. At the other extreme, Member States with an ageing population are deprived of a larger workforce when the participation of women in the labour force is low.

The proportion of disability prevalence varies widely among the Member States. At one extreme are those with less than two percent of the population, namely, Brunei Darussalam, Malaysia, and the Philippines. At the other extreme are those with more than 5 percent, viz. Indonesia and Viet Nam. Regardless, the numbers are large in absolute terms. Persons with disabilities, or PWDs (defined as those who have long-term physical, mental, intellectual, or sensory impairments), can be meaningfully engaged as part of the labour force in many productive activities. Policies can be designed to accommodate their participation and to equip them with the requisite skills, bearing in mind the diversity of disabilities.

Shared prosperity is reflected by a reduction of poverty and income inequality. According to the latest data from the ASEAN Statistical Yearbook 2019, all of the Member States were able to reduce the proportion of the population below the national poverty line between 2008 and 2017 (not applicable to Brunei Darussalam and Singapore which do not have national poverty lines). The reductions were highest for Cambodia and Thailand, each with more than 10 percentage point reduction. Nevertheless, as shown in Table 4-3, the incidence of poverty was still high in a number of the Member States, half of which had more than 10 percent of the population living below the national poverty line in 2017. The proportions exceeded 20 percent in Lao PDR, Myanmar, and the Philippines; and were between 10 percent and 20 percent in Cambodia and Indonesia.

Income inequality, measured by the Gini coefficient, was relatively high in Malaysia, the Philippines, and Singapore. All of them had a Gini coefficient in the 0.4-0.5 range in 2017. Between 2008 and 2017, only Thailand and Viet Nam were able to bring down their respective Gini coefficient significantly, from the 0.4-0.5 range to the 0.3-0.4 range.

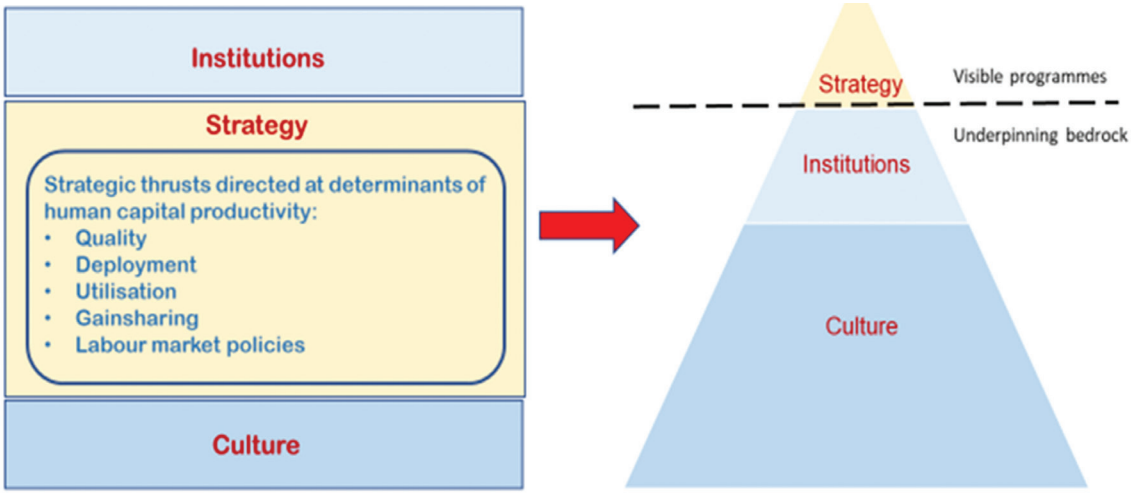
The push for inclusivity in the economic growth process is a core part of the ASEAN Community vision. Engaging more MSME workers, workers in informal employment,

women and PWDs, and sharing the productivity gains with them equitably will contribute significantly to this vision. Further progress in poverty and income reduction can be accelerated if there is more inclusivity in the economic growth process. This requires not just shared prosperity but, just as importantly, inclusive engagement. Inclusive growth will also give a boost to human capital productivity, as more people are engaged in productive employment and higher value-added economic activities and are motivated to give of their best. Thus, all Member States will benefit by giving high priority to inclusive growth.

4.2.4. Human Capital Productivity Management Framework

To effectively address the determinants of human capital productivity, leveraging the driving forces, a comprehensive framework is required. Figure 4-8 shows the proposed people-centered human capital productivity management framework for ASEAN.

<Figure 4-8> Human capital productivity management framework



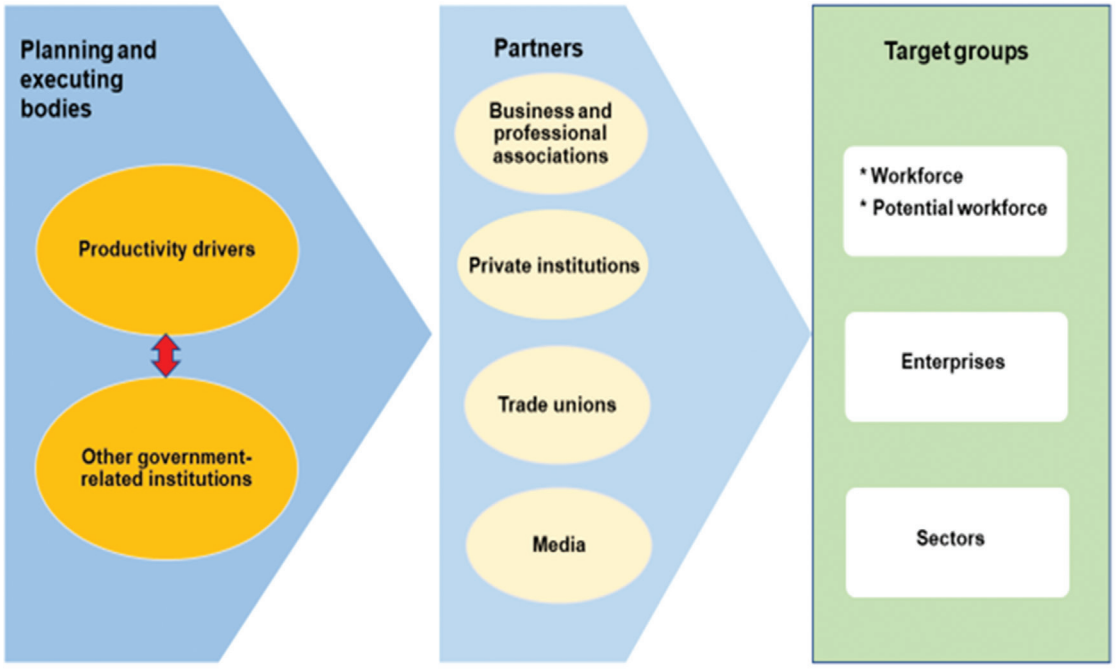
The framework, on the left side of Figure 4-8, comprises three levers, viz. institutions, strategy, and culture. Institutions refer to the various types of organizations involved in managing human capital productivity in the country; strategy encompasses the strategic thrusts and supporting programs to boost productivity; and culture covers the shared values that support all the efforts undertaken. The right side of Figure 4-8 shows what may be termed a human capital productivity management iceberg. The analogy of an iceberg is instructive in that only about 10 percent of its volume is above water while an overwhelming 90 percent is submerged and hidden from view. Similarly, the human capital productivity management framework in Figure 4-8 comprises a small visible part and a large unseen part. Strategy is the visible part of the iceberg because this is

the component that comes into contact with the public. Below it is the underpinning bedrock of institutions and culture which is invisible to the public but critical to the successful implementation of the programs, including the outcomes achieved.

4.2.4.1. Institutions

In any country, there are many institutions that are directly or indirectly involved in improving human capital productivity. These institutions are vital to the successful implementation of the human capital productivity management framework. The key institutions shape decisions within the public and private sectors; set the directions to be taken; and determine the types of programs implemented. Figure 4-9 proposes a framework for organizing the key institutions in ASEAN. These institutions fall under two broad categories.

<Figure 4-9> Framework for organizing institutions with a stake in human capital productivity management



The first category of institutions comprises the planning and executing bodies, which are typically government-related institutions. These include standing bodies, advisory councils, government ministries, statutory agencies (including local government organizations) and publicly funded think tanks. Among these are the productivity drivers, that is, the lead institutions in the pursuit of human capital productivity; the rest consists of other government-related institutions that have specific roles to play.

In all the Member States, the productivity drivers are typically the ministries and agencies in charge of labour[10] and education; or, as in the case of Singapore, the promotion of productivity is a multi-ministry/agency effort, involving more than the manpower and education ministries and agencies (see Annex).

The second category of institutions comprises the partners with which the planning and executing bodies work to implement their programs. These are usually non-government organizations. Four major partners are business and professional associations, private institutions, trade unions and media.

The range of institutions is wide in view of the many determinants of human capital productivity and their driving forces and the fact that they cut across administrative silos and boundaries. Together, the planning and executing bodies and the partners implement programs that are directed at three target groups. These are the workforce and the potential workforce, enterprises, and sectors. These are distinguished by the fact that programs for the first group reach out directly to them, while programs for the second and third groups are executed through enterprises and sectors respectively.

Table 4-4 shows an assessment of the effectiveness of the planning and executing institutions, as well as the partners. There are three measures of effectiveness of the institutions; the stronger a measure is, the more effective is the institution with respect to that measure. The first measure is the degree of linkages to policy-making mechanisms. As can be expected, the government-related institutions have closer linkages to the policy-making mechanisms than the non-government institutions. The second measure is the mandate to achieve the desired outcomes. In general, the government-related institutions have a stronger mandate than the non-government institutions. The third measure is the capacity to achieve the desired outcomes. This is the measure where the non-government institutions can play a role that is as effective as that of government-related institutions.

[10] The term "labour" is used in some Member States. Alternative terms used in other Member States are "human resources" and "manpower".

<Table 4-4> Assessment of effectiveness of key institutions

Category of institution	Type of institution	Linkages to policy-making mechanisms	Mandate to achieved desired outcomes	Capacity to achieve desired outcomes
Planning and executing bodies Government-related institutions	Standing bodies			
	Advisory councils			
	Government ministries			
	Statutory agencies			
	Publicly-funded thind tanks			
Partners Non-government institutions	Business and professional associations			
	Private institutions			
	Trade unions			
	Media			
Implications of driving forces	As the determinants of human capital productivity and the driving forces are diverse an cut across administrative silos and boundaries, the range of institutions involved is wide. Similarly, representation on the standing bodies should be wide; the government representatives should include minimaly the ministries and agencies, in charge of labour, education, and trade and industry.			

strong moderate weak

Sources: 1. Adapted from Banks, G. (2015), *Institutions to Promote Pro-Productivity Policies: Logic and Lessons*, OECD Productivity Working Papers 2015-01, OECD Publishing, Paris.

2. Based on the experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization

At the institutional type level, the effectiveness of the institutions on the three measures varies greatly. What is therefore important is for the various institutions to work together, play complementary roles, and combine their strengths. Over time, the productivity drivers, as well as all the other institutions, should build up their institutional capacities and capabilities.

A non-executive standing body in the form of a tripartite national council, chaired by a high-level government leader and comprising representatives from employers, trade unions and the government, is a useful mechanism. Its remit may cover the country's economic strategy, that is, not just human capital productivity. The body will have the mandate and clout to formulate policies, assign responsibilities and accountabilities, direct institutions to work together, and coordinate the policies of all the institutions. Examples of such standing bodies are the National Productivity Council in Malaysia,

National Competitiveness Council in the Philippines, and Future Economy Council in Singapore (see Annex). Nevertheless, being non-executive in nature, a standing body will not have a strong capacity to achieve the desired outcomes. It therefore needs the support of an executive statutory agency, typically the productivity driver, which will execute the plans of the standing body.

For the individual Member States, there may be variations of the categories and types of institutions, as well as their roles and effectiveness. Nevertheless, the general principles apply – there should be one or more productivity drivers given the responsibility for human capital productivity; a network of key institutions, both government-related and non-government, should be identified; and there should be an engagement plan to involve the various planning and executing bodies and partners.

4.2.4.2. Strategy

An overarching strategy for human capital productivity is critical. First, a strategy provides clarity on the directions and actions to be taken to achieve the desired vision and goals. Such clarity is important because it ensures alignment among the many institutions and the target groups. With such alignment, there is consistency of decisions and actions taken; everyone can be galvanized to achieve the common vision; and there is clarity on how individual activities contribute to the vision. Second, a strategy provides the basis for the deployment of resources in the most effective manner. Once the various parts of the strategy have been worked out, the resources can be deployed according to the national priorities for human capital productivity. Third, a strategy spells out how performance is measured based on certain key performance indictors; what monitoring and evaluation mechanism will be in place; and who is responsible for which part of the strategy, that is, there are clear accountabilities.

The human capital productivity strategy can be part of the national economic plan or a separate plan. In either case, it has to be closely aligned with the country's economic priorities to meet the skills requirements of industries. This point is well-recognized in the Member States, most of which have human capital-focused strategies as part of their national economic plans (see Annex).

Regardless of whether the human capital strategy is part of the national economic plan or a separate plan, it should spell out the strategic thrusts that are directed at the vital areas that will collectively attain the vision. The strategic thrusts are supported by concrete programs to be implemented. In this case, the vital areas are the determinants of human capital productivity. Table 4-5 shows the strategic thrusts that are directed at the determinants.

To give them a high profile and to underline that they are part of the national effort to improve human capital productivity, the various programs under the strategic thrusts can come under the umbrella of a national Productivity Movement. An elaboration of a country's Productivity Movement is given in the section on "Culture" below.

<Table 4-5> Strategic thrusts directed at the five determinants of human capital productivity

Determinants	Strategic Thrusts
Quality of human capital	Develop skills of human capital continuously to keep abreast of the changing world of work.
Deployment of human capital	Steer deployment of human capital to industries according to national economic priorities.
Utilization of human capital	Maximize efficiency and effectiveness of human capital at work.
Gainsharing	Foster inclusive engagement and shared prosperity.
Labour market policies	Develop robust labour market policies to sustain human capital productivity.

4.2.4.2.1. Strategic Thrust 1: Develop skills of human capital continuously to keep abreast of the changing world of work

Of the four proximate determinants of human capital productivity, quality of human capital is the one that has received the most attention by policymakers. Most of the programs implemented by the Member States fall in this area (see Annex). This is not surprising since a high quality of human capital is a prerequisite for high human capital productivity. Hence, it is essential that the quality is sustained over time, especially when there are vast changes in the world of work. Strategic Thrust 1 is therefore directed at developing the skills of human capital continuously to keep abreast of the changing world of work.

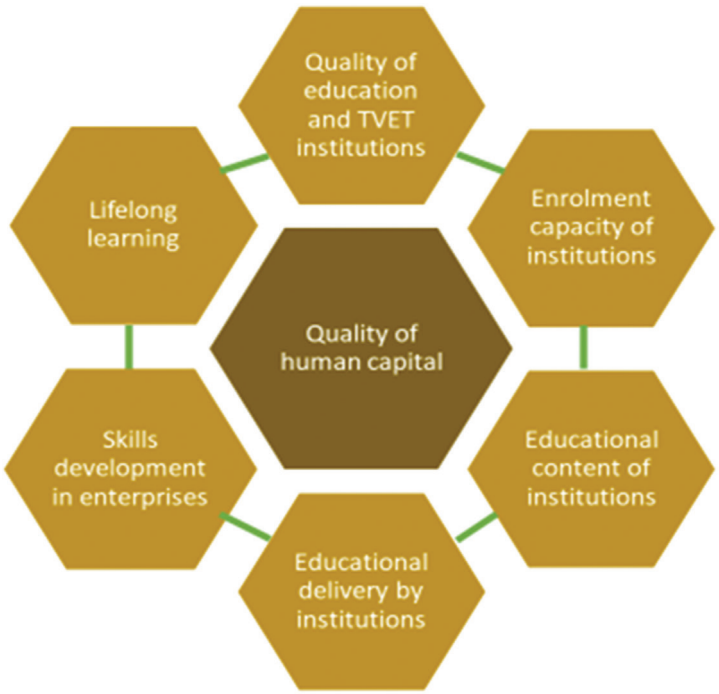
There are many different measures of the quality of human capital. Nevertheless, most of them focus on education and skills levels.[11] Skills, defined as the ability to apply knowledge and use knowhow to complete tasks and solve problems, fall into two categories, viz. hard skills and soft skills. Hard skills, also termed technical skills, refer to abilities to perform specific tasks, such as operating a machine. Soft skills or non-technical skills cover a broad range of applied knowledge and generic skills needed at the workplace. These can be divided into cognitive skills (basic knowledge and ability to

[11] Besides education and skills, human capital productivity is affected by the health of the population, a subject that is covered by many other studies, e.g. Human Development Index by the United Nations Development Programme, but outside the scope of this study.

apply it, including literacy and numeracy; and skills in problem solving, critical thinking, etc.); and non-cognitive skills (also termed personality traits) associated with intangible attributes such as discipline, ability to work in teams, and perseverance.

Figure 4-10 summarizes the main factors that affect the quality of human capital. The first factor is the quality of the general education and technical and vocational education and training (TVET) institutions. This has a bearing on the quality of learning by the students. The second factor is the enrolment capacity of the institutions. This impacts the potential supply of people who can acquire higher education and skills. The third factor is the educational content of the institutions. The degree of its alignment with economic priorities determines whether the graduates are able to meet the skills requirements of the economy. The fourth factor is educational delivery by the institutions. This affects the effectiveness and reach of what is being taught. The fifth factor is skills development in enterprises. This builds upon and complements learning in the institutions. The sixth factor is lifelong learning. This is the underpinning culture that sustains continuous improvement to the quality of human capital.

<Figure 4-10> Factors affecting quality of human capital



One of the most comprehensive assessments of the quality of a country's human capital, focusing on the workforce, is that undertaken by the World Economic Forum and published in the Global Competitiveness Report. The assessment covers both the current and future workforce using appropriate proxy indicators. The latest findings for ASEAN in 2019 are shown in Table 4-6.

There are wide variations in the quality of the workforce in ASEAN. On overall skills, gauged on the basis of assessments of the current and future workforce, Singapore and Malaysia are on the high extreme, while Cambodia and Lao PDR are on the low extreme.

On the overall quality of the current workforce, only Singapore, Malaysia, and the Philippines have a score of more than 60 out of 100. These are the same Member States in the top three for education and skills of the current workforce, each with a score of more than 60. Cambodia, Lao PDR, and Viet Nam are in the bottom three, and are below average for all the five measures of skills of the current workforce. In addition, Thailand is below par for the measure of skillset of graduates; and for the measure of ease of finding skilled employees, together with Brunei Darussalam. The general conclusion is that there is a lack in the quality of the current workforce in many of the Member States.

<Table 4-6> Assessment of quality of workforce in ASEAN

Member State	Overall skills	Current workforce								Future workforce				
		Overall	**A. Education of current workforce** (mean years of schooling)	**B. Skills of current workforce**	Extent of staff training	Quality of vocational training	Skillset of graduates	Digital skills among active population	Ease of finding skilled employees	**Overall**	**A. Education of future workforce** (school life expectancy)	**B. Skills of future workforce**	Critical thinking in teaching	Pupil to teacher ratio in primary education
Brunei Darussalam	67.0	57.4	58.5	56.3	50.8	57.7	58.7	64.3	49.9	76.7	79.9	73.5	47.4	99.5
Cambodia	42.7	37.2	30.7	43.5	48.4	42.1	44.2	42.8	41.7	48.1	65.8	30.4	39.9	20.8
Indonesia	64.0	56.3	53.2	59.4	60.3	60.1	59.0	58.5	59.2	71.7	74.2	69.3	53.7	84.8
Lao PDR	51.3	44.2	37.3	51.1	49.9	45.7	54.5	52.3	53.2	58.4	61.4	55.4	41.6	69.2
Malaysia	75.2	68.6	67.7	69.5	71.0	68.1	67.9	72.8	67.9	76.5	74.8	78.1	60.3	95.9
The Philippines	63.7	64.9	64.0	65.9	65.7	62.4	66.4	67.7	67.1	62.5	70.6	54.5	56.4	52.5
Singapore	78.8	76.1	79.2	73.1	73.3	73.3	73.4	76.4	68.8	81.4	90.7	72.1	56.9	87.4
Thailand	62.3	51.4	50.7	52.2	55.1	51.6	49.7	54.3	50.4	73.2	85.7	60.7	37.0	84.4
Viet Nam	57.0	48.3	50.7	46.0	49.4	44.0	41.2	46.1	49.3	65.6	76.8	54.4	32.9	75.9

Source: World Economic Forum (2019), *Global Competitiveness Report 2019*, Geneva.

Notes:
1. The scores are in the range of 0 – 100 (best).
2. Assessment of overall skills is based on assessments of current workforce and future workforce.
3. Myanmar is not covered in the report.

On the overall quality of the future workforce, the assessment is more sanguine. The scores for all the Member States are higher, except for the Philippines with a slight dip. Cambodia and Lao PDR are still the two Member States on the low end of the scale. On the high end, Singapore and Malaysia are now joined by Brunei Darussalam, Indonesia, and Thailand. An improvement in education of the future workforce is the main reason for the better overall quality of the future workforce. On skills of the future workforce, the assessment of critical thinking in teaching is not positive. Only Malaysia has reached the score of 60.

There is thus much for the Member States to do to uplift the quality of human capital by building skills and increasing the supply of the skills continuously. The range of operational strategies that can be carried out is wide. Table 4-7 provides a summary of the good-practice operational strategies for each of the factors affecting the quality of human capital.

<Table 4-7> Good-practice operational strategies for factors affecting quality of human capital

Factors	Good-practice operational strategies
Quality of general education and TVET institutions	• Emphasize educational quality and learning outcomes in all general education and TVET institutions, not just educational attainment, so that investments are translated into high-quality skills. • Improve quality of basic education and, concurrently, enhance higher education and TVET systems to develop high-quality technical skills. • Improve instructional quality – raise quality of teachers to impart knowledge effectively; upgrade pedagogical practices, shifting away from rote learning to stimulate creativity and experimentation; and reduce student-teacher ratio to enable closer attention to students. • Invest in learning environments (e.g., science and computer laboratories, libraries, and up-to-date industrial equipment used for practical lessons). • Revamp assessments of proficiency, shifting away from rote learning to emphasize mastery of competencies (hard technical skills and soft non-technical skills). • Improve governance of education and TVET institutions, including certifying them to international quality standards, monitoring their performance regularly, and requiring them to upgrade continuously to keep up with changes in the world of learning and the world of work.
Enrolment capacity	• Increase enrolment capacity of post-primary education and TVET institutions, while raising their quality concurrently, to raise the overall quality of human capital in the country. • Accredit private institutions, based on prescribed standards, to offer certain courses and monitor their quality regularly.
Educational content	• Align higher education and TVET curricula with economic development strategies to prepare students for the workplace and meet the skills requirements of industries, thereby bridging the gulf between the world of learning and the world of work. • Develop and deepen technical skills to meet current and future skills requirements of industries, and impart transferable non-technical skills (cognitive and non-cognitive) that serve as strong foundational skills for adapting to new opportunities and technical tasks driven by shifting occupational demands, throughout various stages of life. • Impart digital skills to all, including basic use of a computer and the internet, to maximize effectiveness in a digital age. • Make curricula for technical skills education industry-relevant by partnering with industry practitioners and experts, and engaging teachers with hands-on industry experience. • Introduce work-based learning programs, such as apprenticeship and internship in industry, to complement classroom learning with real work situations and to facilitate transition to employment.

Factors	Good-practice operational strategies
Educational delivery	• Introduce customized physical and online delivery modes, as well as educational content, to reach out to diverse segments of the population including those at the fringe of economic activities and the informal economy. • Introduce blended learning appropriately to substitute a portion of traditional classroom instruction with online learning, offering flexibility for teachers in how they present material and for students in the pace and variety of the learning approaches they experience. • Use technology to impart educational content appropriately to counter variations in teaching quality, keep students engaged and interested, and broaden educational access. • Collaborate with local government offices or communities to customize delivery so as to widen reach, especially in the rural and remote areas.
Skills development in enterprises	• Facilitate skills development of workers in enterprises through appropriate assistance programs, incentives, and recognition for both the enterprise and the worker. • Promote good human resource management practices that include training and development of workers, and linkage between reward and learning outcomes. • Promote structured on-the-job training to equip workers effectively with technical skills required at the workplace, as well as to develop soft skills such as communication, teamwork and problem-solving. • Train selected employees in enterprises to be training managers or productivity managers, who can then take the lead in promoting skills development as well as productivity improvement activities.
Lifelong learning	• Develop seamless learning pathways linking different types of general education and TVET programs, and between education and work, so as to offer opportunities to all for continuous learning throughout their lives. • Develop a skills-based qualification system with skills standards that are aligned with international norms to ensure quality assurance and wide recognition, support the various learning pathways for upskilling and lifelong learning, and facilitate mobility of workers across jobs. • Provide comprehensive and easily accessible information publicly, so that everyone can make informed decisions on education and skills development throughout their lives.
Implications of driving forces	
• Economic restructuring, globalization of production and technological advancement – The education and TVET institutions should upgrade themselves continuously so that they can effectively impart technical skills to meet the increasingly complex requirements of the industries; and to enable restructuring towards higher value-added industries and higher end of GVCs. Higher-order cognitive skills (involving analysis, evaluation, synthesis, judgement, and creativity) and non-cognitive skills (responsibility, perseverance, self-confidence, etc.) should also be actively imparted to complement the technical skills. Everyone must be equipped to be future-ready; and those not in the workforce yet should be educated to be job-ready as well. Digital skills must be considered as important as basic literacy and numeracy skills. Lifelong learning should be the norm. • Demographic shift and inclusive growth – The demographic dividend can be reaped only if the working-age population is more highly educated and skilled. There should therefore be a concerted effort to increase post-primary education and TVET enrolments, and to reskill and upskill the workforce continuously. In addition, special programs are needed to bring those currently at the fringe of economic activities and in informal employment into the formal sector; and this must be accompanied by educational and skills upgrading. The teaching delivery modes must be customized for the diverse segments of the population. Digital	

Source: Compiled from various sources and based on the experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization..

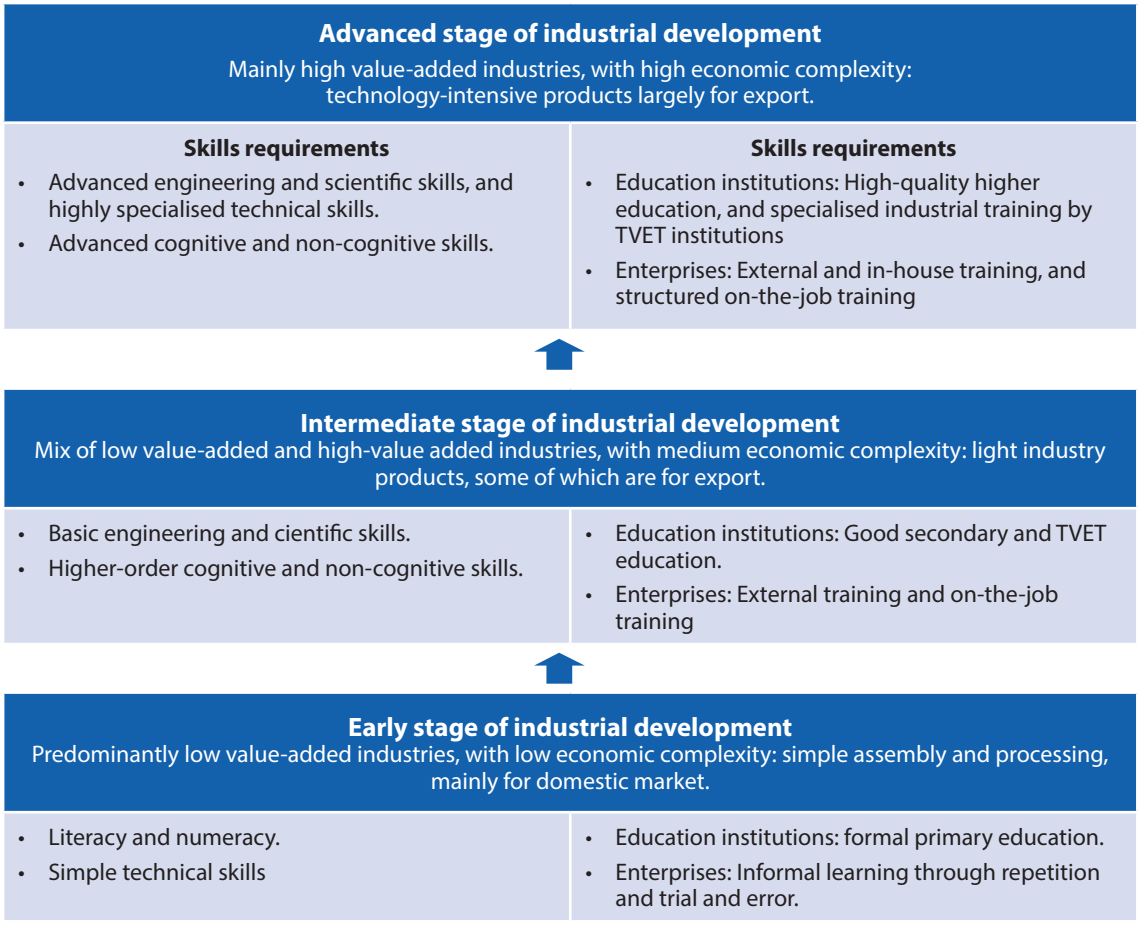
The operational strategies listed in Table 4-7 have been extensively studied, documented, and implemented in varying degrees in different countries. The Member States can therefore learn much from each other, as well as from the experiences of the developed countries in other regions. Two points are particularly important. First, the human capital development plan should be aligned with the national economic development plan to avoid any incongruence between the world of learning and the world of work. Second, the education and TVET institutions should upgrade themselves continuously to keep abreast of the changing world of work.

4.2.4.2.2. Strategic Thrust 2: Steer deployment of human capital to industries according to national economic priorities

Deployment of human capital in the economy is important because it determines whether scarce resources are put to optimal use. Strategic Thrust 2 is therefore directed at steering the deployment of human capital to industries according to national economic priorities. The process of deployment includes identifying the priority industries and their skills requirements, influencing skills development to equip sufficient people with the relevant skills, and finally steering employment towards these industries to meet the skills requirements. Compared with quality of human capital, the process has received less attention from the Member States, most of which do not have clear policies or mechanisms on deployment (see Annex).

Deployment is a dynamic process, as the skills requirements evolve according to the phase of development of the country. Figure 4-11 shows a highly stylized diagram on the changing skills requirements as an economy evolves.

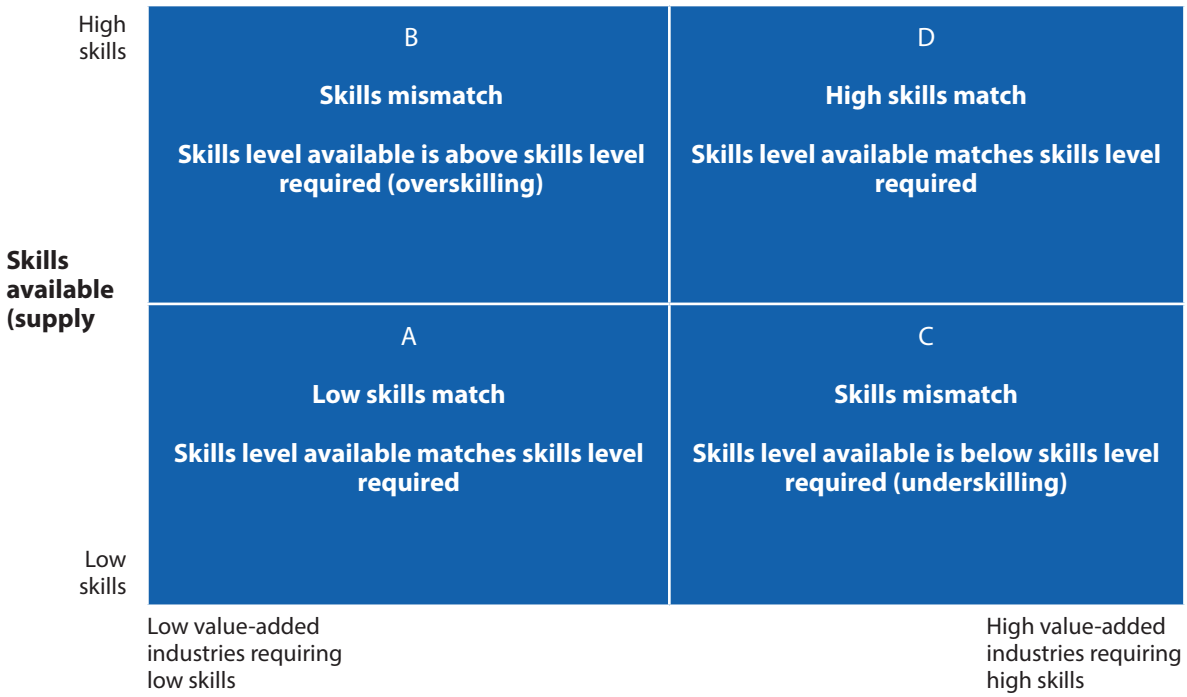
<Figure 4-11> Changing skills requirements as economy evolves



Sources: Adapted from United Nations Industrial Development Organization (2013), *Industrial Development Report 2013*, Vienna; and Ra, S., Chin, B. and Liu, A. (2015), *Challenges and Opportunities for Skills Development in Asia: Changing Supply, Demand, and Mismatches*, Asian Development Bank, Manila.

As the economy develops, the skills requirements of the industries become increasingly more complex. The implication is that skills development needs to be in congruence with the changing requirements of the economy to avoid any skills mismatch.[12] The importance of this is illustrated in Figure 4-12.

<Figure 4-12> Skills availability in relation to skills requirements of economic structure



Notes: 1. Many similar diagrams are found in the literature following the seminal article by Finegold, D. and Soskice, D. (1988), "The Failure of Training in Britain: Analysis and Prescription", *Oxford Review of Economic Policy* 4(3), pp. 21–53, which put forward the concept of a low skills equilibrium. The diagram here focuses on the skills level available in relation to the country's economic structure and skills requirements, and emphasizes the need for congruence between skills development and skills requirements.

2. The definitions of low and high skills are given in the ILO's document Employment by Occupation, https://www.ilo.org/ilostat-files/Documents/description_OCU_EN.pdf

In a country where low value-added industries dominate, there is a demand for low skills. This is readily met by a supply of low skills which are in abundance (quadrant A). If, however, skills development runs ahead regardless of the low skills requirements of industries and in the absence of plans for economic restructuring, there is overskilling. Consequently, the skills level available is above the skills level required (quadrant B). This skills mismatch leads to poor utilization of human capital and underemployment. As the

[12] The term "skills mismatch" is very broad, as highlighted in McGuinness, S., Pouliakas, K. and Redmond, P. (2017), *How Useful is the Concept of Skills Mismatch?*, International Labour Organization, Geneva. Following the general usage in policymaking, the term is taken here to mean a gap between the aggregate demand for and supply of skills in the labour market. At the enterprise level, a skills mismatch means that there is a gap between the skills that they require and the skills that are available to meet their requirements.

country develops and more high value-added industries begin to emerge, the demand for high skills increases. If this is not matched by skills development, the skills level available will be below the skills level required, which means that there is underskilling (quadrant C). Skills development should thus keep abreast of economic development so that the high skills required are met by an adequate supply of such skills (quadrant D). In addition, there should be adequate information provided about jobs available in the different industries; people must be willing to be deployed or redeployed to jobs that require use of their skills; and any barriers to mobility between jobs should be removed.

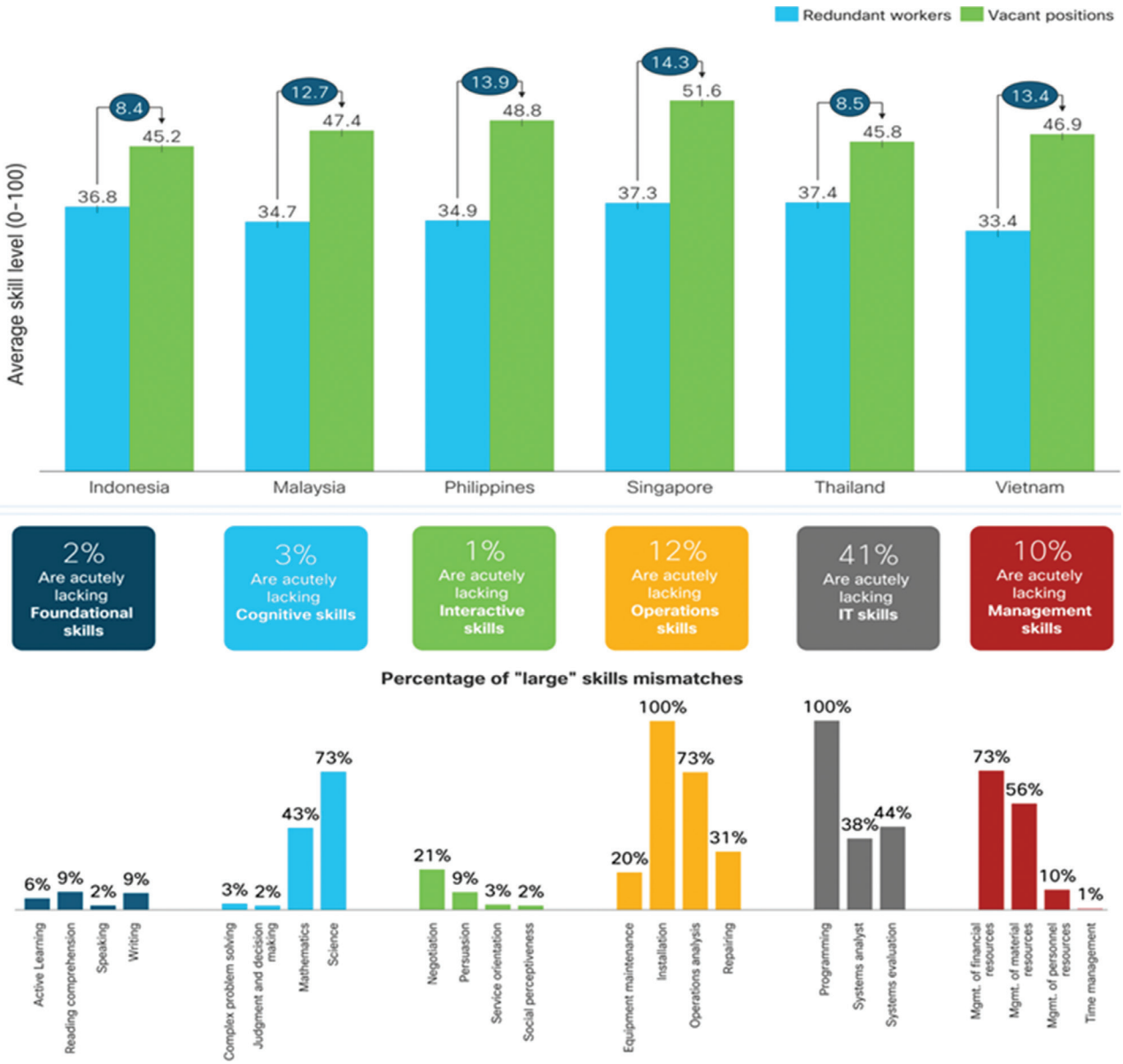
The possibility of skills mismatches is significantly greater with the increasing pace of technological advancement. A 2018 study by Oxford Economics and Cisco titled *Technology and the Future of ASEAN Jobs* provides insights into the scale of skills mismatches in ASEAN that will be caused by technological advancement. Focusing on the six largest ASEAN economies of Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam, the study projects a total net loss of 6.6 million current jobs (jobs created less jobs displaced) from 2018 to 2028. Figure 4-13 shows the large mismatches between the skills of the redundant workers and the skills demanded by vacant positions in these economies; and the skills with large mismatches.[13] The skills mismatch is largest in the fast-growing information technology (IT)-related occupations. Around 41 percent of the workers leaving redundant jobs have an acute lack of IT skills. Acute skills shortages are also found in other skills, including installation, science, operations analysis, and management.

The challenge for all the Member States is to progress to quadrant D from any of the other three quadrants that they may be in now in Figure 4-12. This requires both increasing the supply of high skills to meet the skills requirements of high value-added industries, and steering the deployment of the skills to these industries so that there is no skills mismatch. Workers who face job mismatches due to technological advancement or other reasons must be given and accept the opportunity to reskill or upskill themselves and be redeployed to take on new jobs. Nevertheless, it does not mean that skills development should respond passively to the skills requirements of the economy as it develops. In fact, it is critical that skills are developed not only to meet the current needs of industries but also to drive economic restructuring and increasing economic complexity. Thus, a Member State with mainly low value-added industries now can identify the high value-added industries for priority development in the future, and then concurrently scale up skills development to develop the required high-level skills. This

[13] Skills mismatches are divided into large, medium, and small categories. A large skills mismatch is defined by a difference of more than 25 skills points between a redundant worker and a vacant position. Skills points are calculated based on data from the U.S. Department of Labour's occupational information network, O*NET.

will break them away from a low value-added-low skills trap that may prevail, including being stuck in the low ends of GVCs.

<Figure 4-13> Incidence of large skills mismatches between redundant workers and vacancies caused by technological advancement



Source: Cisco (2018), *Technology and the Future of ASEAN Jobs*, Singapore.
Note: The skills mismatches are for the period 2018-2028.

There is no "one-size-fits-all" solution in steering the directions of skills development and deployment of human capital in the Member States to avoid skills mismatches. This is due to their diversity and different stages of development. Each Member State will have to formulate and implement policies that are grounded in their specific context. Nevertheless, lessons can be learned from the experiences of the developed countries.

Table 4-8 provides a summary of the good-practice operational strategies for the two parts of human capital deployment.

<Table 4-8> Good-practice operational strategies for the two parts of human capital deployment

Parts	Good-practice operational strategies
Analyzing skills demand and supply, and drawing up plans to bridge skills gaps	• Align skills development policies and plan with economic development and employment policies and plans, so that there are synergies between strategies for skills development, employment, and industrial development. • Analyze skills demand and supply in the economy – Work with employers' and workers' organizations to identify current and future skills requirements of industries in relation to development plans of the economy; project skills supply for different time periods based on information on the stock and flow of different types of skills; and identify current and future skills gaps. • Formulate education and skills development plans, as well as plans to attract foreign sources of supply, to bridge the skills gaps at progressive stages of the country's development, and to drive plans for economic restructuring towards high value-added industries.
Steering skills development and deployment	• Guide students towards enrolling for courses, including TVET education, that impart skills for the priority industries. • Influence students to take up jobs in the priority industries upon graduation, through promotional programs about the industries and jobs, work-based learning in these industries during the course of their study, and provision of incentives. • Reskill and upskill workers in declining and low value-added industries and those who currently face job mismatches for redeployment to the high value-added industries and emerging industries. • Facilitate transition from informal employment to the formal economy by broadening access to basic education, customizing skills development approaches, and combining vocational and entrepreneurship training. • Use labour market information system to generate, analyze and update sectoral and occupational information, including current and future skills supply and demand; and make available timely information to education and TVET institutions, private sector training providers, career guidance and employment services agencies, employers, trade unions, and the general public. • Work with public and private employment services agencies to improve the skills matching process through initiatives such as career guidance, vocational counselling, job-matching services, and use of new and innovative ways to match supply with demand, e.g. 'plug and play' approach using technology to match tasks to individuals with appropriate skills. • Remove any barriers, regulatory or otherwise, to mobility between jobs. • Complement local sources with foreign sources of supply of skills, if needed, for the priority sectors.
Implications of driving forces	
• Economic restructuring, globalization of production and technological advancement – Skills should be developed to drive economic restructuring, increased economic complexity, and upward movement in GVCs. Any mismatch between skills supply and demand will hinder economic transformation over time. As skills requirements will become more complex, government institutions need to work closely with employers' and workers' organizations and employers to determine these requirements. There should be close coordination between the agencies in charge of labour, trade and industry, and education to ensure that the current and future skills requirements are translated into suitable curricula quickly; and that there is adequate capacity to produce the supply of skills required. • Demographic shift and inclusive growth – Special effort should be made to reach out to those at the fringe of formal employment, and to reskill and upskill workers in declining and low value-added sectors and those who currently face job mismatches so that they can continue to be meaningfully engaged in productive employment.	

Source: Compiled from various sources and based on the experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization.

4.2.4.2.3. Strategic Thrust 3: Maximize efficiency and effectiveness of human capital at work

Good utilization of human capital, that is, application of skills of the workforce to maximize performance at the workplace, is as important as its optimal deployment. Yet, utilization of human capital has received comparatively little attention by policymakers compared with the quality and deployment of human capital. The Member States are no exception (see Annex). This is due to a focus on the traditional supply side to skills development, an area which is more amenable to public policy intervention than human capital utilization.[14] To emphasize the need to place equal importance on good utilization of human capital, Strategic Thrust 3 is directed at maximizing the efficiency and effectiveness of human capital at work. This has very much to do with improving the management practices in enterprises, as the practices determine the work environment in which jobs and specific tasks are performed and the motivation of the workers. Management practices have not only a direct impact on the utilization of human capital at the workplace, they also determine the extent to which the driving forces are leveraged to improve human capital productivity.

Management practices are wide-ranging. Besides the strategic aspect of management which is directed at the growth of the enterprise[15], there are workplace management practices that affect the utilization and productivity of human capital in the production and delivery of goods and services. A summary of the main management practices is given in Table 4-9. The list shows four major categories of management practices and 18 high-performance good practices. Although the practices are shown separately, what is important is that they are taken as a bundle and integrated with the strategy of the enterprise so that they will all pull in the same direction.

[14] The importance of moving beyond the traditional supply-side approach to skills development was emphasized in a 2017 report by the OECD, *Better Use of Skills in the Workplace: Why It Matters for Productivity and Local Jobs*. The OECD has also embarked on a new project called *Human Side of Productivity* to further study the issue of better utilization of skills in enterprises. A background paper on this project was presented at the 4th Annual Conference of the OECD Forum on Productivity, in Sydney, Australia on 20-21 June 2019.

[15] The strategic aspect of management covers a wide range of areas such as products to produce, markets and target groups to focus on, branding and corporate identity, and corporate social responsibility.

<Table 4-9> Four broad categories of management practices

Categories	Objectives	High-performance good practices
Operations management	Structures, systems, and processes that optimize production and delivery of goods and services, and maximize value.	• Adopt modern organization and work design approaches and management techniques, and appropriate technologies throughout the organization. • Use productivity tools and techniques to maximize value and reduce costs in production and delivery processes. • Improve structures, systems, and processes continuously.
Performance management	Systematic monitoring and review of performance of organization.	• Track performance consistently and systematically through appropriate metrics. • Review performance of the organization and its sub-units regularly. • Organize sessions to communicate performance and receive feedback on performance and any shortfall. • Address performance shortfalls swiftly through corrective or new actions.
Goal and target management	Goals and targets that align the efforts of the organization.	• Develop broad range of financial and non-financial key performance indicators (KPIs) and set targets. • Link KPIs and targets to organization's goals and cascade down to individual workers. • Link long-term and short-term goals and targets for alignment. • Set stretch targets to raise organizational and individual performance. • Communicate organizational goals and individual targets clearly.
People management	Systems and processes that maximize quality and performance of human capital.	• Give top priority to human resource management. • Create a distinctive value proposition to attract people to work in the organization. • Build a high-performance work culture that taps on employees' skills, initiative, and participation in implementing and improving business processes. • Develop employees to their full potential through continuous learning and skills upgrading and involvement in various areas of work. • Motivate and retain employees through innovative reward and recognition systems. • Reward and promote high performers, and deal with poor performers appropriately • Foster inclusive engagement, trust, and good labour-management relations.

Implications of driving forces

- Technological advancement transforming nature of work, the workplace and employment relationships – Instead of full-time work, there are now more options for part-time, contract, freelance, and project-based gig work; and flexible work arrangements not bound to physical work space, i.e. working anytime from anywhere, including working from home, are becoming more common. In addition, an enterprise can tap an extended workforce, going beyond physical boundaries of the organization, to aggregate expertise across geographical borders through virtual teams and collabourative technologies, as well as sub-contracting and outsourcing arrangements. The workplace has become dynamic, with shared spaces for individuals or teams to gather when they need to; and in a setting where the lines between work, socialization and recreation are blurred.
- Technological advancement transforming operations and performance management – There is now greater decentralization of production, manufacturing, and services (3-D printing, internet-based services, etc.). Sophisticated analytics are available at affordable cost, enabling enterprises to mine big data to obtain deep insights into their operations, markets, and performance in near real time. Examples of such insights are performance of the product groups, methods to increase sales, ways to get new customers and retain existing ones, and operations that need to be improved. Consequently, enterprises can enjoy faster and better decision-making, as well as take timely actions and interventions.
- Demographic shift and inclusive growth – The workforce is now multi-generational and more diverse. On the one hand, there is a growing group of older workers, who may be less adept at coping with new technologies. On the other hand, there are the younger workers who are better educated. These younger workers, especially millennials, are digital natives with different expectations of work (desiring more engaging work and worklife balance), workplaces, and forms of reward and recognition; and who will have multiple jobs and careers in their lifetime. Unlike previous

Categories	Objectives	High-performance good practices
		generations, the younger workers generally prefer a flatter organizational structure and deeper engagement with management and the organizational processes. The diversity of the workforce calls for innovative and customized human resource management practices.
		All these implications underline the need for changes in management practices. First and foremost, the leaders of the enterprise should embrace all the changes taking place in the world of work and adapt or change the management practices appropriately. In view of the different forms of employment relationships, employment policies and contractual terms will have to be customized accordingly. Human resource management policies will also have to be tailored to meet the needs of a more diverse workforce, with different work expectations. Deep and inclusive engagement of all levels of the workforce is critical. The organizational structure should be less hierarchical and more fluid; and the workplace needs to be structured to promote more autonomy, interaction, and creativity. Because of the varied nature of work and work arrangements, different measures of performance are required. There should also be involvement of the workers, who will expect greater transparency and openness, in goal and target setting. All these are critical for creating job satisfaction and motivating high performance.

Sources: 1. Adapted from Bloom, N., and Reenen, J.V. (2007), "Measuring and Explaining Management Practices Across Firms and Countries", November, *Quarterly Journal of Economics*.
2. Woon, K. C. and Loo, Y. L. (2017), *Prime.Pack: Lean Transformation and Competitive Advantage for Sustained Growth*, Singapore.
3. Based on the experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization.

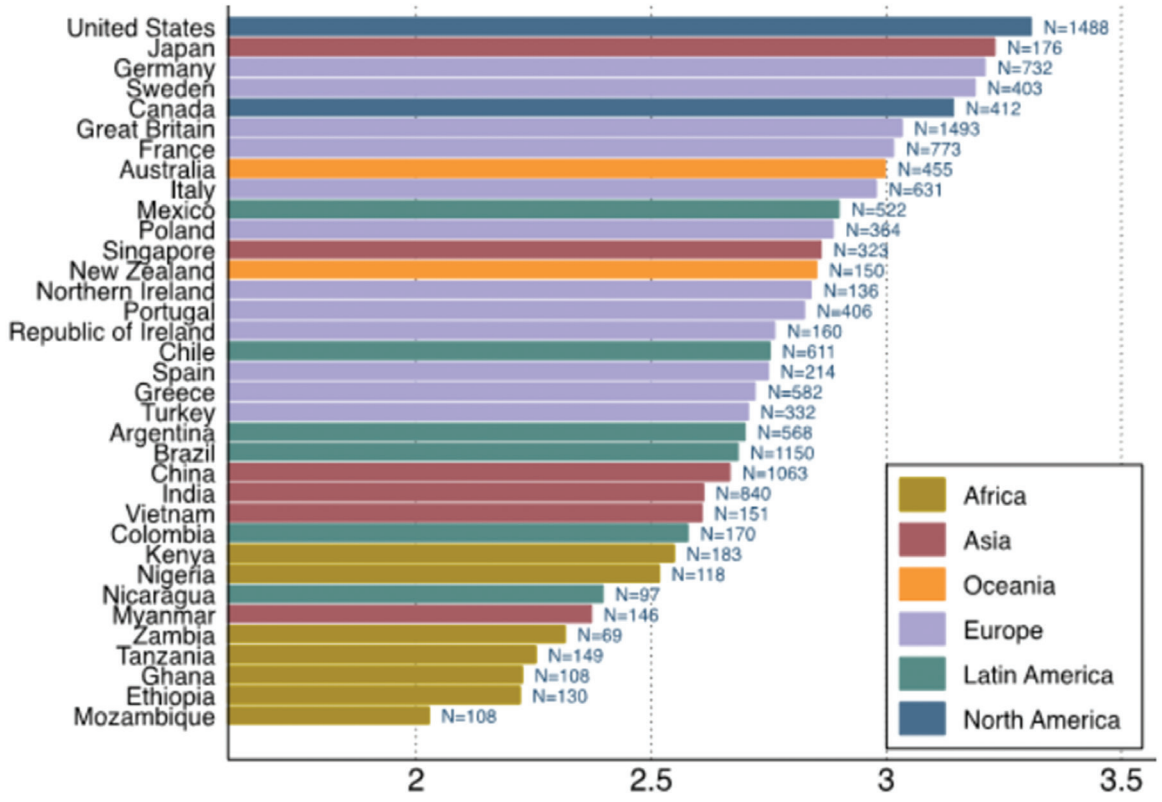
Note: The World Management Survey is based on the pioneering work by Bloom and Reenen (2007).

The management practices have been empirically tested in 35 countries in the World Management Survey by the Centre for Economic Performance at London School of Economics. The latest findings of the World Management Survey for the manufacturing sector in 2014 are shown in Figure 4-14.[16]

There are several consistent findings from the World Management Survey. First, the developed countries have a higher average management practices score than the developing countries. As shown in Figure 4-14, the scores of the top five developed countries are much higher than the scores of the bottom five developing countries. Of the three ASEAN Member States that have participated in the World Management Survey, Singapore ranks ahead of Viet Nam and Myanmar. Second, there is a shorter tail of badly managed enterprises in the developed countries than the developing countries. Third, management practices vary greatly not just between countries but also between enterprises in the same industry in a particular country. Fourth, the prevalence of good management practices is higher in larger enterprises than MSMEs and family-owned and family-managed businesses. Fifth, enterprises with good management practices perform better than others in terms of human capital and firm productivity.

[16] The World Management Survey was first conducted for the manufacturing sector, and has since been extended to the healthcare, education, and retail sectors as well.

<Figure 4-14> Performance of countries on management practices in manufacturing sector



Source: World Management Survey 2014, https://worldmanagementsurvey.org, retrieved on 10 October 2020.

Note: The scoring range is from 1 (worst practice) to 5 (best practice).

The implication that can be drawn from the findings of the World Management Survey is that the Member States can raise their human capital productivity by improving management practices in enterprises. Besides learning from other countries, good practices in the large local enterprises, as well as the better SMEs, can be promoted widely to develop high-performance workplaces. Some of the management practices, as well as the recent developments shaping the future of work and the workplace, may seem remotely applicable to the many MSMEs, especially the micro ones with less than ten workers, in the Member States. Nevertheless, they are applicable to all enterprises to varying degrees; and they should be leveraged to improve the utilization of human capital at the workplace.

Besides continuing with the traditional policies to boost the supply of skills and improve their deployment, the Member States should give equal attention to the utilization of human capital. Policymakers at the national and local levels should articulate good utilization of human capital as a strategic policy priority, and devise programs and incentives to encourage enterprises to develop management practices that make better

use of their workers. It is important that the management practices be promoted as a bundle of high-performance work practices, and that a strong business case is put forward by linking the practices to better individual and organizational performance. Besides programs for individual enterprises, there can also be programs that are sector-based to catalyze change at the sector level.

The most successful changes in management practices in enterprises are often industry-led, particularly by employer groups or chambers of commerce working together with the unions or other workers' organizations. The reason is that being close to the ground, they have the credibility, experience and networks in promoting management practices in enterprises of all sizes; and in securing buy-in and commitment from enterprises to upgrade their practices. They should therefore be roped in to systematically embed good management practices and improve human capital utilization beyond just a few large enterprises to cover entire industries. In view of the large number of MSMEs in the Member States, special attention should be given to them using customized assistance programs that take into account the management practices that are most critical in these enterprises, as well as the ease of reaching out to them widely.

4.2.4.2.4. Strategic Thrust 4: Foster inclusive engagement and shared prosperity

Of the four proximate determinants of human capital productivity, gainsharing (short for productivity gainsharing) is usually the one that receives the least attention among policymakers and enterprises. This is despite the fact that gainsharing is at the core of a people-centered approach to productivity, and it is the factor that will sustain commitment to the continuous generation of wealth. Strategic Thrust 4 is therefore directed at fostering inclusive engagement and shared prosperity, the two critical aspects of gainsharing.

Productivity gainsharing is similar to another scheme known as profit sharing. A common characteristic of both schemes is that the pay or wealth of employees is tied to the performance of their workplace, whether at the level of the work group or the enterprise.[17] However, there are also significant differences between productivity gainsharing and profit sharing, as shown in Table 4-10.

[17] Two other plans that share this same characteristic are employee ownership and stock option plans, albeit these are less common and found mostly in the larger enterprises. Together, all these plans are sometimes known as "shared capitalism".

<Table 4-10> Comparison between productivity gainsharing and profit sharing

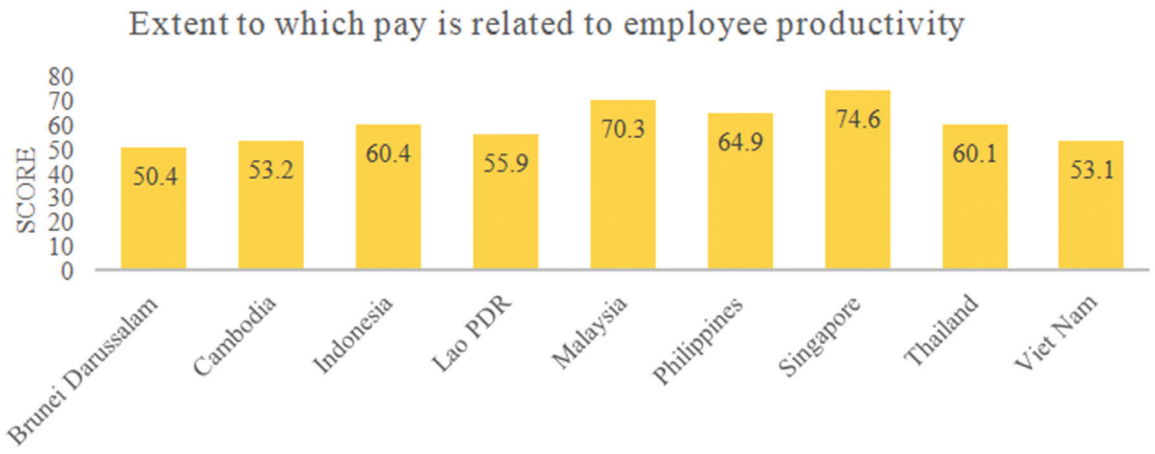
Subject	Productivity gainsharing	Profit sharing
Aim	Drive productivity improvement and overall performance of enterprise.	Drive financial success of the enterprise.
Basis for incentive payout	Payout is based on productivity-related measures. It is given out only when productivity has improved from a historical standard or target. Hence, employees may still receive a payout even if the enterprise does not make a profit.	Payout is based on financial measures of profitability. It is given out only when the enterprise makes a profit.
Source of payout	Payout is funded from past savings or current revenue.	Payout is funded from the current profit made.
Design of scheme	Employees are involved in designing the scheme.	There is limited or no involvement of employees in the design of the scheme.
Impact on performance of employees	There is positive impact since many aspects of productivity are within the employees' control. Employees will view gainsharing as a pay-for-performance scheme.	There is limited impact since profitability is affected by many factors beyond the employees' control. Employees may view profit sharing as an employee benefit.

Sources: 1. International Labour Organization (1997), "Productivity Motivation and Gainsharing" in *Productivity and Quality Management: A Modular Programme*, Geneva.
2. Kruse, D., Freeman, R. and Blasi, J., eds. (2010), *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*, National Bureau of Economic Research, University of Chicago Press, Chicago.

A key distinction is that profit sharing has a limited impact on employees' performance since profit is affected by many factors outside the employees' control; whereas productivity gainsharing motivates employees to improve productivity performance, which is more within their control. What makes productivity gainsharing attractive is, therefore, the fact that when employees have a stake in the performance of the enterprise, they will create better outcomes than if they were just "paid hands". Productivity gainsharing is thus preferred to profit sharing in the context of human capital productivity.

Figure 4-15 gives an indication of the prevalence of gainsharing in enterprises in ASEAN. Gainsharing is most prevalent in Singapore and Malaysia, followed by the Philippines. In contrast, the extent of gainsharing in Brunei Darussalam, Cambodia, Lao PDR, and Viet Nam is relatively low. Significantly, the Philippines has included "to promote productivity-improvement and gainsharing measures" in its Wage Rationalization Act, and this is implemented by the National Wages and Productivity Commission. Singapore and Malaysia promote a broader productivity-linked wage system, while Indonesia is in the process of developing tools to assist enterprises in implementing gainsharing schemes (see Annex).

<Figure 4-15> Prevalence of gainsharing in enterprises in ASEAN



Source: World Economic Forum (2019), *The Global Competitiveness Report 2019*, Geneva.

Notes:
1. The score range is 0 – 100 (optimal).
2. The pay-employee productivity linkage is one form of gainsharing and is taken to be a proxy for gainsharing practices in enterprises.
3. Myanmar is not covered in the report.

One reason for the low attention given to gainsharing is the lack of understanding of what exactly it is, what its benefits are, and whether it is applicable to all enterprises. Another reason is the traditional focus on the wealth-creating factors, viz. quality, deployment, and utilization of human capital, rather than the wealth-distribution factor. Nevertheless, with the increasing push for inclusive growth, emphasizing inclusive engagement and shared prosperity, gainsharing should receive more attention and ought to be an integral part of the management practices in an enterprise.

Studies have found that although gainsharing schemes originated in the manufacturing sector, they are also applicable to service sector enterprises and are increasingly being applied there. In addition, they are applicable to enterprises of all sizes, with appropriate modifications made for the smaller enterprises.[18] Table 4-11 summarizes the main characteristics of a good-practice gainsharing scheme.

[18] An extensive study on the wide applicability of gainsharing and other "shared capitalism" schemes across different industries and types of jobs is given in Kruse, D., Freeman, R. and Blasi, J., eds. (2010), *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*, National Bureau of Economic Research, University of Chicago Press, Chicago.

<Table 4-11> Characteristics of a good-practice gainsharing scheme

Subject	Characteristics
Objective of gainsharing	• Improved productivity, organizational performance, and quality of worklife through inclusive engagement and shared prosperity.
Objective of gainsharing	Organizational benefits • Improved performance (including higher productivity and quality, reduced costs, and improved safety). • Stronger employee attachment and loyalty to organization, and greater motivation and commitment to improve performance. • Greater employee involvement in the improvement process, including participation in employee involvement committees or workplace teams that involve employees in different types of workplace decision-making and problem-solving. • Improved communication and cooperation among employees, between interdependent functional units, and between labour and management. • Less absenteeism, turnover and tardiness of employees. Employee benefits • Better pay and more equitable sharing of wealth created, mitigating rising income inequality. • Improved employee well-being and quality of worklife arising from inclusive engagement and shared prosperity. • Greater job satisfaction because of sense of being able to contribute and make a positive difference to the organization through more involvement, participation, and decision-making in work. • More informal and formal training opportunities. • Work facilitated as a result of improved communication, cooperation and teamwork. • Improved relationship with management. • Greater job security and stable employment as a result of better organizational performance.
Types of gainsharing scheme	• Packaged plans * Scanlon – aims to increase sales revenue-labour cost ratio. * Rucker – aims to improve value added-labour cost ratio. * Improshare – aims to improve employee productivity based on physical measures of productivity. • Customized plans * Enterprise-specific plan customized to meet needs of the organization
Critical features of gainsharing scheme	• Use of an easy-to-understand formula that tracks variables that employees have control over and that directly affect productivity performance at different levels of the organization. • Use of a formula that is considered to be fair and equitable in terms of sharing of benefits. • Regular evaluation of the scheme (at least annually). • Employee involvement during design, implementation, and evaluation of the scheme. • Gainsharing scheme augmenting a base reward system that pays at or above the current market level.
Important complementary factors (subset of high-performance good practices in Table 4-9)	• Commitment from top management to gainsharing. • High-performance work culture and practices. • Trust between management and employees. • Good labour-management relations. • Greater empowerment and responsibility given to employees in their work, coupled with less supervision.

Subject	Characteristics
	• Encouragement of employee involvement and decision-making in work and improvement processes. • Training opportunities given to employees to acquire new skills to improve workplace performance. • Accurate, timely and appropriate information to track productivity and organizational performance and effectiveness of the gainsharing scheme.
Implications of driving forces	
• Inclusive growth – The increasing expectation for inclusive growth should spur the development of gainsharing schemes in enterprises, exhibiting the characteristics of both inclusive engagement and shared prosperity. These schemes should be an integral part of the management practices of the organization. • Demographic shift – The increase in the number of more highly-educated younger workers with different work expectations should also spur the development of gainsharing schemes in enterprises. The gainsharing scheme implemented in any enterprise should be customized to meet the needs of a diverse workforce and to take into account the varied forms of employment relationships.	

Sources:
1. International Labour Organization (2005), *Tools for the High Road to Productivity and Competitiveness*, Geneva.
2. International Labour Organization (1997), "Productivity Motivation and Gainsharing" in *Productivity and Quality Management: A Modular Programme*, Geneva.
3. Kruse, D., Freeman, R. and Blasi, J., eds. (2010), *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*, National Bureau of Economic Research, University of Chicago Press, Chicago.
4. Based on the experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization.

From the characteristics shown in Table 4-11, it is evident that gainsharing is more than just about shared prosperity; it is also about inclusive engagement, giving employees meaning in work, placing trust in them, and tapping their creativity and talent. Furthermore, the types of gainsharing schemes are wide-ranging although they all rest on the basic principle of linking pay to productivity performance. Regardless of the exact form of the scheme, its positive effects are contingent on complementary good human resource management policies and workplace practices, including employee engagement and involvement, as well as presence of good labour-management relations.

The Member States should launch publicity and education programs to foster inclusive engagement and shared prosperity through gainsharing. Productivity-linked pay or wages should be promoted in general. More specifically, there should be programs to create understanding of gainsharing, and training courses to train enterprises on how they can implement gainsharing schemes. This can be done by the productivity drivers together with the business and professional associations, private institutions, trade unions, and media. The characteristics of a good-practice gainsharing scheme shown in Table 4-11 can serve as a guide on what to focus on. Besides general promotional messages on the features and benefits of gainsharing, there should be customized programs for the various segments of enterprises. In particular, the programs should be simplified for

MSMEs. They should also take into account the changing profile of the workforce and the changing nature of work. What is more important than the technicalities of the gainsharing scheme is the philosophy that gainsharing is about inclusive engagement and shared prosperity.

4.2.4.2.5. Strategic Thrust 5: Develop robust labour market policies to sustain human capital productivity

Labour market policies serve as enablers that support the four proximate determinants of human capital productivity. The quality of the policies can either facilitate or hinder the progress and achievement of measures directed at the proximate determinants.

Broadly, labour market policies fall under two categories. The first category comprises policies that influence the flexibility of the market, that is, the willingness and ability of human capital to respond to changes in market conditions. Labour market flexibility is an important aspect of how labour markets function to adjust supply to demand. A flexible labour market allows employers to make changes because of supply and demand issues, the economic cycle, and other market conditions. The second category comprises policies that offer some form of social protection for those in the labour force, including periods of joblessness or job search. A good balance between labour market flexibility and social protection is achieved when the human capital input can easily and quickly adjust to changes in demand and, at the same time, there is a reasonable level of protection for workers. This balance is aligned with the desire for inclusive growth.

Labour market flexibility depends mainly on three factors, viz. labour market regulations, wages and industrial relations, and active labour market policies.[19] Labour market regulations include all policies that modify the terms and conditions of employment and the employment relationship. Wages and industrial relations include policies that impinge on wages directly, or that affect the way that bargaining on wages and working conditions is conducted by the various stakeholders. Active labour market policies include policies that provide labour market integration measures to those looking for jobs, usually the unemployed, but also the underemployed and even the employed who are looking for better jobs.

Table 4-12 shows how the Member States perform on labour market flexibility. Overall, Singapore has by far the highest degree of labour flexibility among the Member States. It scores well on all the individual dimensions except ease of hiring foreign labour. Malaysia and Brunei Darussalam fall in a category below Singapore. In general, the two Member

[19] This classification is based on International Labour Organization (2018), *Labour Market Inventory. ASEAN 2010-2015: Labour Market Policy in an Age of Increasing Economic Integration*, Geneva.

States score well on the individual dimensions, except redundancy costs for Malaysia, and hiring and firing practices and ease of hiring foreign labour for Brunei Darussalam. The remaining Member States are bunched together at the lower end.

<Table 4-12> Labour market flexibility in ASEAN

Member State	Labour market flexibility score 0 – 100 (best)								
	Overall	Labour market regulations					Wages and industrial relations		Active labour market policies
		Redundancy costs	Hiring and firing practices	Workers' rights	Ease of hiring foreign labour	Internal labour mobility	Cooperation in labour-employer relations	Flexibility of wage determination	
Brunei Darussalam	64.1	100.0	49.1	72.6	35.0	N.A.	63.8	78.2	50.1
Cambodia	54.6	68.1	50.7	59.0	56.5	55.3	55.8	57.2	34.0
Indonesia	51.4	0.0	58.3	64.0	56.8	61.2	58.0	63.4	49.6
Lao PDR	52.1	37.3	44.6	62.0	49.2	59.8	61.0	66.1	36.8
Malaysia	68.3	58.5	66.7	73.0	63.0	74.8	72.6	73.3	64.7
The Philippines	59.8	51.3	50.3	62.0	51.7	73.7	72.6	69.9	46.9
Singapore	79.8	100.0	77.0	89.0	47.6	N.A.	85.3	83.9	75.5
Thailand	53.7	33.3	55.7	62.0	52.5	58.3	64.9	56.4	46.3
Viet Nam	56.5	57.1	54.6	64.0	52.1	67.0	55.6	65.3	36.0

Source: World Economic Forum (2019), *Global Competitiveness Report 2019*, Geneva.

Notes:
1. N.A. = not applicable.
2. Internal labour mobility refers to the movement of people from one part of the country to another for professional reasons. This indicator does not apply to economies identified as city-states.
3. Myanmar is not included in the assessment.

As regards social protection, its importance is underlined by the adoption of the ASEAN Declaration on Strengthening Social Protection in 2013. The Declaration reflects a growing consensus in the region that the establishment of nationally defined social protection floors is fundamental to efforts to reducing poverty and vulnerability while also promoting inclusive and sustainable growth.

Social protection for the working population, that is, the workforce, is part of the set of national policies and programs designed to reduce poverty and vulnerability throughout the life cycle. The protection covers a number of areas, viz. maternity, sickness, employment injury, and unemployment, and can take various forms. Table 4-13 shows the current situation in ASEAN.

<Table 4-13> Social protection of workforce in ASEAN

Existence of a statutory programme				
Member State	Maternity	Sickness	Employment injury	Unemployment
Brunei Darussalam	Employer liability	Employer liability	Employer liability	None
Cambodia	Social insurance	Social insurance	Social insurance	
Indonesia	Employer liability	Employer liability	Social insurance	
Lao PDR	Social insurance	Social insurance	Social insurance	Social insurance
Malaysia	Employer liability	Employer liability	Social insurance	Social insurance
Myanmar	Social insurance	Social insurance	Social insurance	Social insurance
Philippines	Social insurance	Social insurance	Social insurance	
Singapore	Employer liability	Employer liability	Employer liability	None
Thailand	Social insurance	Social insurance	Employer liability	Social insurance
Viet Nam	Social insurance	Social insurance	Employer liability	Social insurance

Statutory and implemented

In the labour law but not anchored in legislation

Sources: 1. International Labour Organization, *World Social Protection Database*, https://www.social-protection.org/gimi/WSPDB.action?id=15, retrieved on 8 Oct 2020 (for all Member States except Cambodia).

2. International Labour Organization (2017), *World Social Protection Report 2017 – 2019*, Geneva (for Cambodia).

Note: The four areas of social protection for the working population are based on International Labour Organization (2015), *The State of Social Protection in ASEAN at the Dawn of Integration*, Geneva.

Maternity, sickness, and employment injury are covered by some form of social protection in all the Member States. The exception is unemployment, which is covered by social protection only in Lao PDR, Malaysia, Myanmar, Thailand, and Viet Nam. In all the cases where there is social protection, the programs are either employer-liability based or in the form of social insurance. Nevertheless, the overall picture given in Table 4-13 masks the fact that the breadth and depth of the provisions of the programs vary between the Member States; and that the programs do not cover the large numbers of workers outside formal employment and certain other categories of workers such as those on short-term contracts and those working in micro enterprises. The effective coverage rates are even lower without government-enforced compliance and for voluntary schemes.

Table 4-14 provides a summary of the key aspects of labour market policies and the supporting good-practice operational strategies.

<Table 4-14> Key aspects of labour market policies and good-practice operational strategies

Aspects	Good-practice operational strategies
Labour regulations	• Develop a national employment policy that is inclusive and guarantees equality of opportunity and treatment in the labour market for everyone. • Develop a mechanism to monitor labour market developments. • Improve the regulatory framework and labour laws continually (including regulations governing employment relationships for new forms of work) to ensure smooth functioning of the labour market in a changing world of work, while offering social protection to the working population. • Strengthen capacity for enforcement of labour laws and ensuring compliance.
Wages and industrial relations	• Strengthen the institutional and legal framework governing wages, industrial relations, and social dialogue (i.e. ongoing negotiation, consultation, and exchange of information between the three groups of government, employers, and workers' organizations based on the principle of tripartism). • Promote negotiation of wages and working conditions through collective bargaining in organized workplaces, and through bipartite labour-management cooperation bodies in enterprises without recognized trade unions or in informal workplaces. • Promote wage policies and systems that facilitate employees' active contribution to organizational performance and equitable sharing of the resulting gains (e.g. productivity-wage linkage). • Shift industrial relations from confrontation to cooperation at the enterprise, industrial and national levels by increasing the scope for workplace cooperation, promoting collective bargaining, strengthening labour dispute settlement mechanisms, and enhancing social dialogue at different levels and in different forms.
Active labour market policies	• Match jobseekers with vacancies through direct job-search assistance or information provision. • Upgrade skills of jobseekers to enhance their employability. • Provide incentives to individuals to take up certain jobs, and to employers to hire certain categories of workers. • Provide incentives for entrepreneurship and creation of sustainable and innovative enterprises. • Create jobs directly either in the form of public works programs or the provision of incentives for businesses to create and/or maintain jobs. • Develop a labour market information system to inform the design, implementation, monitoring and evaluation of policies; and to reduce transaction costs of the labour market by providing pertinent information to all the labour market agents.
Social protection	• Entrench social protection as part of a flexicurity model, i.e. combination of a very flexible employment relationship with a good coverage of the social security system. • Expand social protection to cover all workers, including migrant workers and those outside formal employment. • Foster a safe and healthy workplace environment and ensure compliance with occupational safety and health standards through strengthened labour inspection systems.
Implications of driving forces	
All the driving forces have a direct bearing on labour market policies. Technological advancement, economic restructuring and globalization of production have resulted in vast changes in the nature of work, work arrangements and employment relationships. This has been exacerbated by demographic shift and inclusive growth. Labour market policies will have to respond fast enough to ensure that the regulatory framework remains relevant. The challenge is to address newly emerging work patterns and employment relationships through more flexible employment regulations to sustain labour market flexibility, while protecting the rights of workers and offering them social protection in compliance with internationally recognized core labour standards.	

Source: Compiled from various sources and based on the experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization

4.2.4.3. Culture

Culture, the third lever of the human capital productivity management framework in Figure 4-8, constitutes the largest invisible part of the iceberg. It comprises the paradigm of deeply embedded, subconscious shared values, as well as beliefs, about human capital productivity in the country.

The many programs introduced under the five strategic thrusts cannot be sustained unless they are backed by a strong culture that is favorable to the pursuit of human capital productivity. In the absence of such a culture, the importance of the programs will not be internalized, and hence early gains are soon dissipated as the various institutions and target groups revert to their old work ways. What is needed is the building of a culture that will drive continuous improvement in human capital productivity and provide a strong support for the visible part of the iceberg. The productivity culture will influence the priority that policymakers and institutions give to human capital productivity, the management practices implemented in enterprises, and the work ethic and actions of individuals.

Compared with the first two components of the human capital productivity management framework, this third component is far more complex because of deeply entrenched cultural values in the Member States. This explains variations in the Member States regarding the way people conduct their lives and behave on the job; and the different managerial decision-making processes, leadership styles, and human resource management practices in enterprises.[20]

An indication of the distinctive worldviews resulting from cultural differences is given by the World Values Survey, a global research project that explores people's values and beliefs and how they change over time. The latest findings for ASEAN are given in Table 4-15. There are wide variations in the Member States regarding views on work and the important qualities for children to learn at home. Lack of trust among people is most evident in Indonesia and the Philippines, while differentiation in gender roles stands out starkly in Indonesia and Myanmar.

[20] Many studies have shown that corporate management cultures are shaped by national cultures. See, for example, Khan, M. A. and Panarina, E. (2017), "The Role of National Cultures in Shaping the Corporate Management Cultures: A Four Countries Theoretical Analysis, *Journal of Eastern European and Central Asian Research*, Vol. 4, No. 1.

<Table 4-15> Values with implications for work behavior in ASEAN Member States

% of respondents who strongly agree or agree

Member State	Work	Important qualities for children to learn at home						Trust and confidence		Gender roles		
	Work should be given less importance in our lives	Independence	Hard work	Feeling of responsibility	Imagination	Determination and perseverance	Tolerance and respect for other people	Most people can be trusted	Confidence in the government	A university education is more important for a boy than a girl	When jobs are scarce, men should have more right to a job than women	Men make better business executives than women
Indonesia	44.5	54.4	40.6	73.9	7.3	22.9	45.1	4.6	78.8	47.6	75.5	62.7
Malaysia	29.9	55.1	32.9	74.9	9.3	23.5	69.0	19.6	50.1	36.1	47.8	44.3
Myanmar	19.0	37.1	45.7	47.1	41.4	43.4	50.7	15.1	80.1	52.5	81.6	69.4
The Philippines	60.6	53.8	61.8	63.7	10.3	17.9	56.2	5.3	81.6	43.9	69.1	43.3
Singapore	38.4	72.1	60.8	69.7	18.8	44.3	54.1	37.3	79.8	26.1	64.4	39.0
Thailand	20.0	43.3	69.2	68.4	24.0	46.2	51.8	28.9	51.0	31.0	30.3	38.8
Viet Nam	34.8	41.6	51.7	64.6	26.2	45.1	46.3	27.7	92.9	27.7	52.0	41.5

Source: World Values Survey Association, World Values Survey, http://www.worldvaluessurvey.org/WVSDocumentationWV7.jsp, retrieved on 5 October 2020.

Notes:
1. Data for Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam are from World Values Survey Wave 7 (2017-2020). Data for Singapore are from World Values Survey Wave 6 (2010-2014).
2. Brunei Darussalam, Cambodia, and Lao PDR are not covered in the World Values Survey.

The diversity of cultures is widely recognized in ASEAN. Examples of recent statements recognizing the diversity are the 2011 Declaration on ASEAN Unity in Cultural Diversity: Towards Strengthening ASEAN Community and the ASEAN Leaders' Statement on the ASEAN Cultural Year 2019. Appreciation of and respect for the diversity of cultures is also strongly emphasized. This comes across clearly in the overarching objective of the ASEAN Strategic Plan for Culture 2016-2025, which is "to deepen an ASEAN mindset and facilitate intercultural dialogue among the peoples of ASEAN through the engagement of various stakeholders in raising awareness on, and appreciation for, the histories, cultures, arts, traditions and values of the ASEAN region".

Hence, it is unrealistic for a common productivity culture to be forged in ASEAN. Nevertheless, it is possible to outline a common framework of values that can be

considered in promoting a productivity culture in the ASEAN context. This is in the spirit of the assertion in the 2011 Declaration of "the principle of respect for the different cultures, languages, and religions of the peoples of ASEAN, while emphasizing their common values in the spirit of unity in diversity". It is also aligned with ASEAN's recent effort to explicitly define the ASEAN identity, including designation of 2020 as the Year of ASEAN Identity; and adoption of the Narrative of ASEAN Identity, reflecting a process of social construct defined by a balanced combination of "constructed values" and "inherited values" that will strengthen the ASEAN Community, during the 37th ASEAN Summit in November 2020 in Viet Nam.

Table 4-16 provides the common framework of values that can be considered in promoting a productivity culture in the context of ASEAN and the changing world of work. The values are categorized according to six dimensions of value, each of which exhibits a continuum where one aspect of the value lies on one extreme and the other aspect lies on the other extreme.

<Table 4-16> Values that can be considered in promoting a productivity culture in ASEAN

Six dimensions of value				Values underpinning productivity culture
Dimension		Extremes		
		One extreme	Other extreme	
1. Power distance	Tolerance for inequality and power differences.	• Concentration of power. • Hierarchy and bureaucracy. • Respect for rank and authority.	• Distribution of power. • Flat organization structure and decentralized decision-making. • Egalitarianism.	• Trust and mutual respect. • Empowerment with responsibility. • Communication and consultation, coupled with firm decision-making.
2. Individualism vs. collectivism	Relative importance of individual vs group orientation.	• People's self-image defined in terms of "I". • Individual responsibility. • Personal achievement.	• People's self-image defined in terms of "we". • Group responsibility. • Group harmony.	• Individual discipline and responsibility. • Teamwork and collabouration. • Respect for diversity.
3. Values associated with gender roles (masculinity vs. femininity)	Tendencies towards reinforcing traditional values associated with gender roles.	• Distinct gender roles. • Task orientation. • Competition. • Achievement. • Assertiveness. • Survival of the fittest.	• Overlapping of gender roles. • People orientation. • Cooperation and consensus. • Relationships. • Modesty. • Nurturing and caring for the weak.	• Inclusiveness and equal opportunities for all. • Proactiveness. • Drive for excellence. • Relationships. • Ethical behavior. • Centrality of people.

Six dimensions of value				Values underpinning productivity culture
Dimension		Extremes		
		One extreme	Other extreme	
4. Uncertainty avoidance	Tolerance for unexpected, surprising, and unknown situations.	• Predictability • Structure • Rules and regulations. • Risk aversion.	• Ambiguity. • Flexibility. • Experimentation, creativity and innovation. • Calculated risk taking.	• Openness and adaptability to change. • Agility in seizing opportunities. • Resilience to adversity. • Continuous improvement and innovation. • Acceptance of failure as part of learning. • Lifelong learning.
5. Time orientation	Orientation towards time.	• Time viewed as linear (with definitive beginning and end) and scarce, and hence should be managed. • Importance of milestones, deadlines and getting things done on time. • Long-term orientation, focusing on the future. • Futuristic, embracing change.	• Time viewed as cyclical and endless, and infinite, and hence need not be managed. • Importance of doing things at own pace within a block of time and maintaining harmony. • Short-term orientation, focusing on the present and past. • Traditional, maintaining traditions and norms.	• Understanding, tolerance, and patience regarding time management by others. • Future orientation and future-readiness, coupled with short-term actions. • Respect for history, cultural values and traditions.
6. Indulgence vs. restraint	Extent to which people control their desires and impulses related to enjoying life and having fun.	• Free gratification of human desires related to enjoying life and having fun. • Freedom of speech and expression. • Informality and tolerance for deviant behaviors. • Optimism. • Worklife balance.	• Suppression of gratification of human desires related to enjoying life and having fun through strict social norms. • Controlled and rigid behavior. • Conformity and intolerance of unorthodox behaviors. • Pessimism. • Work before leisure.	• Creativity and expression of ideas. • Optimism. • Worklife balance.

Sources: 1. Adapted from Hofstede, G., Hosfstede, G.J. and Minkov, M. (2010). *Cultures and Organizations: Software of the Mind*, McGraw-Hill, New York (for six dimensions of value).

2. Based on synthesis from various sources, including ASEAN Statements and Declarations; principles stated in Article 2 of the ASEAN Charter; findings from the World Values Survey for ASEAN; experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization; experiences of Japan and Singapore in promoting the human aspect of productivity; and literature on culture and productivity (for values underpinning productivity culture).

Note: The six-dimensions value model is generally regarded as the most comprehensive framework for the study of national and organizational cultures and values.

The importance placed on the specific values in Table 4-16 will vary from one Member State to another depending on their national cultures and other considerations. What is important is for each Member State to tailor the set of values to meet its own needs. Currently, only Thailand has stated its desired value system explicitly (see Annex).

Once the desired values of the productivity culture have been determined, the next step is to promote them. The aim is to inculcate the values and encourage activities to be taken to raise productivity. Besides building up the culture, the activities will facilitate the implementation of various programs under the five thrusts. Broadly, the promotional activities can be implemented under the auspices of a national Productivity Movement led by the productivity drivers. The specific activities that can be undertaken are wide-ranging. Table 4-17 summarizes the activities that can be undertaken at various levels.

<Table 4-17> Promotion activities to build a productivity culture

Level	Activities
National	a. Launch annual productivity campaign, with top-level political leadership, to signal high priority given to productivity and to create awareness of productivity. b. Partner national business and professional associations, trade unions and appropriate private institutions to implement productivity activities (e.g. conferences, seminars, workshops, and training). c. Partner the media to publicize productivity messages and activities. d. Launch excellence awards to recognize and publicize exemplary individuals and enterprises.
Local government	a. Launch campaign in conjunction with national campaign. b. Partner business and professional associations, trade unions and appropriate private institutions at local level to implement productivity activities. c. Launch excellence awards to recognize and publicize exemplary individuals and enterprises.
Enterprises	a. Introduce productivity promotion program at the workplace (with activities such as monthly Productivity Day, in-house promotional and publicity materials, training and workshops, competitions, displays and exhibitions, work improvement teams, suggestion scheme, and recognition of exemplary workers). b. Launch labour-management committees to discuss and work together on productivity matters. c. Promote productivity and the desired values as part of enterprise development programs.
Education and skills development institutions	a. Introduce productivity modules appropriately in the curricula of the education and TVET institutions. b. Offer productivity management courses to train individuals from enterprises to be productivity managers.
Civil service	a. Launch civil service-wide productivity program, led by head of civil service.
Implications of driving forces	
• Demographic shift – The promotion program will have to be customized to meet the varied needs of a diverse population with changing expectations about work.	

Level	Activities
	• Inclusive growth – With the emphasis on inclusive engagement, a concerted effort should be made for the promotion program to reach out to those who are employed but underutilized and those who are at the fringe of economic activities. • Technology – Internet-based technologies can be used to reach out widely to all segments of the population in all parts of the country.

Sources: 1. International Labour Organization (2005), *Tools for the High Road to Productivity and Competitiveness*, Geneva.

2. Based on experience of Dr Woon Kin Chung in formulating national productivity master plans under the auspices of the Asian Productivity Organization, as well as experiences of Japan and Singapore in promoting the human aspect of productivity.

To successfully implement the activities and achieve positive outcomes, all the institutions in Table 4-4 will have to work in concert and ensure that the activities at the various levels are well-coordinated and aligned. Depending on their country-specific considerations, each Member State will have to determine the scale and form of productivity promotion, as well as the exact range and types of activities to launch.

4.3. Collective Role of ASEAN

The proposed holistic approach to the management of human capital productivity can serve as the framework for ASEAN and the Member States to have a common collective vision, goals, and strategy to maximize the potential of the region's human capital. This will complement other ongoing efforts to strengthen the ASEAN Community.

Ultimately, it is the individual Member States that will have to launch and implement specific policies and programs according to their own contexts and needs, using the framework as a guide. To do so effectively, they will have to formulate a national strategy with top-level political leadership and designated productivity drivers; build institutional capabilities; integrate all the disparate programs for specific aspects of human capital productivity; assign clear responsibilities and accountabilities to different agencies; and monitor and evaluate the progress of implementation of the policies and programs.

ASEAN can play a role in guiding the Member States on their national strategy and policies on human capital productivity, and introduce programs that are of common interest to all of them. This is particularly critical in view of the disruptions brought about by the fast-changing driving forces impacting human capital productivity, which may make it challenging for individual Member States to respond and adapt fast enough on their own. Much of what can be done

at the ASEAN level parallels the efforts that have already been made in many other areas, resulting in high-level Declarations, blueprints, policy statements, documents and guides, action plans, and specific programs.

In addition to organizing seminars, workshops and training courses, ASEAN can serve as an aggregator of evolving intelligence on the driving forces impacting human capital productivity and good-practice policies and programs that can be considered by the Member States. Besides sourcing for the information worldwide, it can specifically collect statistics and good practices on human capital productivity in the Member States and publish them online for easy access. As the information on all these areas are scattered and what is available to the individual Member States may not be up to date, the aggregator role of ASEAN will provide the intelligence to help policymakers make well-informed decisions on devising their own policies and programs.

ASEAN can facilitate cooperation and cross-border learning among the Member States in various forms. These include establishing regional networks and exchanges to promote benchmarking and sharing of knowledge, expertise, and good practices. While there may be general agreement on the broad principles that are important for human capital productivity, there are likely to be wide disparities in their application and outcomes. Hence, exchanges of experiences and viewpoints are useful to avoid the same mistakes, overcome obstacles and achieve good outcomes. ASEAN can also facilitate collaborations to undertake joint projects of mutual interest. Common regional standards of human capital productivity can be established and recognized across the Member States. A good example of an initiative that has been undertaken is the ASEAN Qualifications Reference Framework, which provides a common reference that enables comparisons of education qualifications and mutual recognition of skills across the Member States. Such an initiative prompts the relevant institutions in the Member States to upgrade and align their skills development, assessment and certification systems with the common regional standards. The result is an improvement in the quality and governance of the various systems. This can also apply to the other aspects of human capital productivity.

Over the years, ASEAN has benefited from various partnerships with, as well as assistance from, regional and international organizations such as the Asian Development Bank (ADB), ILO, and OECD. This has resulted in a substantial number of plans, research publications, analytical and policy documents, and projects and programs. Similarly, ASEAN can strengthen collabourations with such organizations specifically in the area of human capital productivity. The

Asian Productivity Organization (APO) in particular can be a valuable partner in view of its nearly 60 years of promoting productivity in the Asian region. Besides institutional capacity building, APO can assist ASEAN to promote and implement specific programs to boost human capital productivity in the Member States.

5

Feasibility of Developing an ASEAN Labor Productivity Index

5.1. Rationale for Developing a Regional Labor Productivity Index for ASEAN

This section proposes a labor productivity index that evaluates the performance of ASEAN Member States in the promotion of labor productivity. The analyses in the previous chapters indicate that labor productivity is affected by diverse factors. To understand the labor productivity gap among the countries, it is necessary to evaluate the contribution of individual factors to labor productivity. Therefore, the ASEAN labor productivity index has the following objectives. First, the index is intended to measure the contribution of individual input variables in the promotion of labor productivity. Second, the performances of individual variables can be simplified by constructing a composite index for a cross-country comparison and the index evaluates productivity-enhancing general capacities of ASEAN Member States.

There are several composite indices that measure the performance of economies in various aspects. Such indices include the Global Competitiveness Index (GCI) by the World Economic Forum, the Human Development Index (HDI) by the United Nations, and the global innovation index (GII). The ASEAN labor productivity index is differentiated from existing composite indices in that it is designed to measure excellence in labor productivity enhancement. Its structure and the way of construction are also distinguished from the previous indices. In particular, construct the productivity indices of individual input variables and then aggregate the indices to a single measure of performance. The examples of other related indices are summarized in Table 5-1.

<Table 5-1> Examples of composite indices

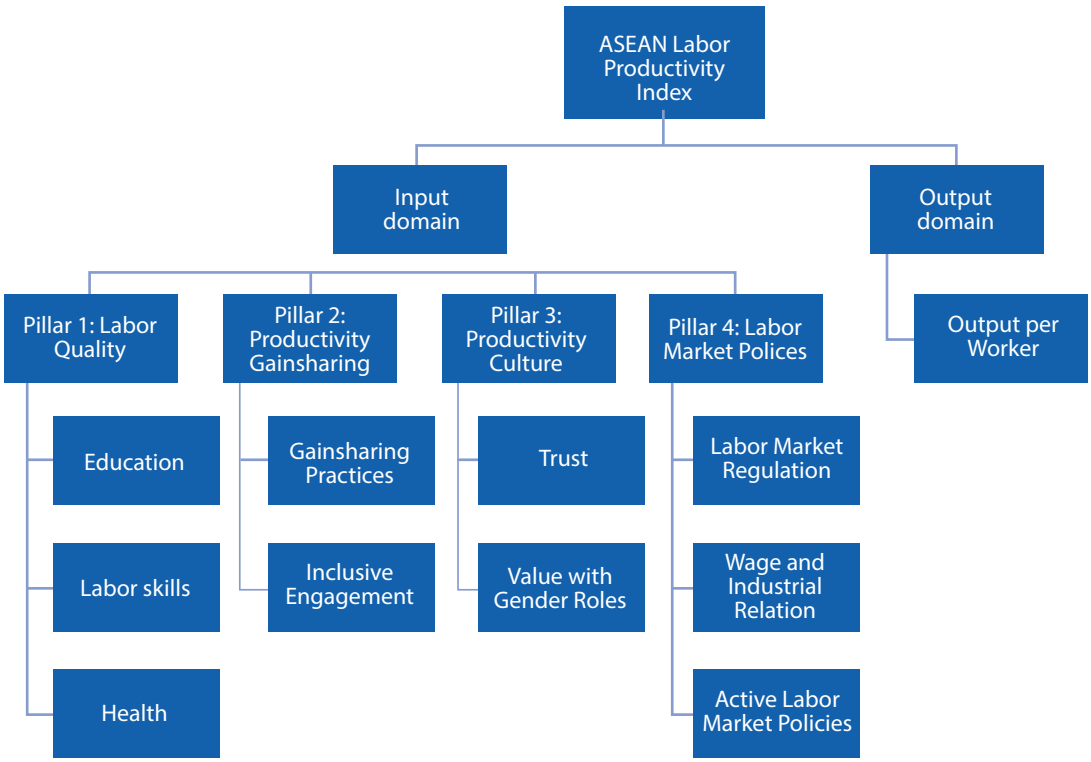
Index	Description, variables, methodology, ASEAN coverage and source
Global Competitiveness Index (GCI)	**Description:** GCI measures the drivers of productivity (institutions, policies, and factors that determine the level of productivity of an economy) for 141 countries. **Variables:** 12 pillars (institutions, infrastructure, macroeconomic environment, health and primary education, Higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, market size, business sophistication, Innovation). **Methodology:** 12 pillars sorted into 3 sub-indices. Weight assigned on each pillar depends on each country's stage of development. An arithmetic mean is used to aggregate individual indicators within categories. **ASEAN coverage:** Brunei Darusssalam, Cambodia, Indonesia, Lao PDR, Malaysia, Thailand, the Philippines, Thailand, Singapore, and Viet Nam. **Source:** World Economic Forum
Global Innovation Index (GII)	**Description:** GII measures multi-dimensional facets of innovation that improve productivity for 141 countries. **Variables:** 5 input pillars (institutions, human capital and research, infrastructure, market sophistication, business sophistication) and 2 output pillars (knowledge and technology outputs, creative outputs).

Index	Description, variables, methodology, ASEAN coverage and source
Global Competitiveness Index (GCI)	**Methodology:** 12 pillars sorted into 3 sub-indices. Weight assigned on each pillar depends on each country's stage of development. An arithmetic mean is used to aggregate individual indicators within categories. **ASEAN coverage:** Brunei Darusssalam, Cambodia, Indonesia, Lao PDR, Malaysia, Thailand, the Philippines, Thailand, Singapore, and Viet Nam. **Source:** World Economic Forum
Global Talent Competitiveness Index (GTCI)	**Description:** GTCI measures the ability to compete for talent for 118 countries. **Variables:** 4 input pillars (enable, attract, grow, retain) and 2 output pillars (labor and vocational skills, Sustainable knowledge skills) **Methodology:** Simple arithmetic average of the scores registered on each of the six pillars. **ASEAN coverage:** Brunei Darusssalam, Cambodia, Indonesia, Lao PDR, Malaysia, Thailand, the Philippines, Thailand, Singapore, and Viet Nam. **Source:** INSEAD
Human Development Index (HDI)	**Description:** HDI measures human development outcomes (long and healthy life, knowledge, and a decent standard of living) which should affect the productivity of 188 countries. **Variables:** 4 indicators (life expectancy at birth, expected years of schooling, mean years of schooling, gross national income per capita). **Methodology:** Average achievement in human development. **ASEAN coverage:** all ASEAN Member States **Source:** United Nations Development Programme
Global Manufacturing Competitiveness Index (GMCI)	**Description:** GMCI measures the overall manufacturing competitiveness for 40 countries. **Variables:** 3 survey sections (business confidence and current environment, manufacturing competitiveness, Demographics). **Methodology:** Average normalized weighted responses. 10 (Low) to 100 (High). **ASEAN coverage:** Indonesia, Malaysia, Thailand, Singapore, and Viet Nam **Source:** Deloitte
Energy Productivity and Economic Prosperity Index (EPEPI)	**Description:** EPEPI measures economic output per unit of energy consumed for 131 countries. **Variables:** 6 sub-indicators (energy productivity of households, improvement in household energy productivity, service-sector energy productivity, service-sector energy productivity growth, resource productivity in industry, improvement in resource productivity for industry). **Methodology:** Energy productivity is calculated as GDP per unit of energy consumed (in billions of euros per exajoule). **ASEAN coverage:** Brunei Darusssalam, Cambodia, Indonesia, Malaysia, Thailand, the Philippines, Thailand, Singapore, and Viet Nam. **Source:** ECOFYS
Network Readiness Index (NRI)	**Description:** NRI measures the performance in leveraging information and communications technologies to boost competitiveness, innovation and well-being for 139 economies. **Variables:** 4 main sub-indices (environment, readiness, usage, impact), 10 pillars (political and regulatory environment, business and innovation environment, infrastructure, affordability, skills, individual usage, business usage, government usage, economic impacts, social impacts), and 53 individual indicators. **Methodology:** Scores of each indicator are normalized into a scale ranging from 1 (Low) to 7 (High). Then, a simple average is used to combine components. **ASEAN coverage:** Cambodia, Indonesia, Malaysia, Thailand, the Philippines, Thailand, Singapore, and Viet Nam. **Source:** World Economic Forum

5.2. Structure of the ASEAN Labor Productivity Index

The ASEAN productivity index has one overall performance indicator at the top and five low-level indicators at the base (see Figure 5-1). The overall indicator has two domains that define the level of performance: input and output. Input is divided into four pillars – labor quality, productivity gainsharing, productivity culture, and labor market policies – and 10 low-level variables – education, labor skills health, gainsharing practices, inclusive engagement, trust, value with gender roles, labor market regulation, wage and industrial relation, and active labor market policies. Output consists of labor productivity. Overall, the ASEAN labor productivity index consists of 11 variables, as described in more detail in Figure 5-1.

<Figure 5-1> Framework of the ASEAN Labor Productivity Index



5.2.1. Pillar 1: Labor Quality

Three input variables are used in the labor quality index: education, labor skills, and health. Human capital theory (Becker 1964) posits that education develops skills that make workers more productive. The education variable is measured as mean years of schooling. Skills are defined as the ability to apply knowledge and use how to complete

tasks and solve problems. Labor skills are evaluated by the extent of staff training, the quality of vocational training, digital skills of among active population. Health is an important form of human capital. It can enhance workers' productivity by increasing their physical capacities as well as their mental capacities. Health is proxied by life expectancy at birth.

5.2.2. Pillar 2: Productivity Gainsharing

Productivity gainsharing is a comprehensive performance policy that aligns pay and other incentive to performance. It is about improving productivity and attracting and retaining high performers as well as creating a working environment that encourages worker participation(Rondeau, 2007). Productivity gainsharing motivates employees to improve productivity because employees have a stake in the performance of the businesses. Two input variables are used in productivity gainsharing: gainsharing practices in enterprise and inclusive engagement. Gainsharing practices variable is measured by the prevalence of pay-employee productivity linkage scheme in ASEAN. Engaging more worker will give a boost to a human capital productivity because people are more motivated to give their best when they are engaged in productivity activities. Inclusive engagement can be considered as a strategy of productivity sharing at the macro level. Inclusive engagement is measured by labor force participation rate.

5.2.3. Pillar 3: Productivity Culture

Productivity requires not only the skilled and motivated participation of individuals but also an efficient coordination of their linked activities through mutual trust and regard. Productivity culture was defined as deeply embedded, subconscious share values, as well as beliefs about human capital productivity in the country in chapter IV. Without a strong productivity culture, continuous improvement in human capital productivity will not be possible. Two variables are used in the productivity culture index: trust and value with gender roles. Coleman(188) argued that trust is a factor in creating human capital. Trust relies on cumulative experiences of mutual interactions and it can be seen as enabling asset which can improve the return to human capital. Social trust and confidence on government are used a proxy for trust. Higher gender equality translates into a bigger pool of talent to recruit from and it enables firms to make better use of available labor resources and increases firm productivity(Bertay et al., 2020). Inclusiveness and equal opportunity for all creates productivity enhancing culture. Values with gender roles are provided by World Value Survey.

5.2.4. Pillar 4: Labor Market Policies

Labor market policies can have sizable effects on human capital productivity by recreating incentives for workers to invest in training, facilitating reallocation of resources to their most productive uses and generating or maintaining high-quality job matches (Bassanini and Venn, 2008). Flexible labor market allows workers to shift from declining firms and enable companies and the economy as a whole to respond to external shocks(. Mortensen and Pissarides 1994). Flexibility works best when complemented by some form of social portion, because worker who benefit from social protection are more patient in job searches and tend to look for more productive and higher-wage jobs.

In the construction of labor market polices index, three variables are considered: labor market regulation, wage and industrial relations, and active labor market policies. Labor market regulations bear an impact on human capital productivity through the direct effects of the allocation of resources and the indirect effects of capital relocation. To promote human capital productivity, it is required to improve the regulatory framework and labor laws to ensure smooth functioning of the labor market while offering social protection to workers (Table 4-14). Labor market regulations are proxied by redundancy cost, hiring and firing practices, workers' rights, and ease of hiring foreign labor. The promotion of wage policies that facilitate employee's active contribution to firm performance and equitable sharing of the resulting gain , and the shifting of industrial relations from confrontation to cooperation are important factors in enhancing human capital productivity. The second variable in this pillar, wage and industrial relations, are measured by cooperation in labor-employer relations and flexibility of wage determination. Active labor market policies aim to keep workers employed, bring them into employment, increased their productivity and earnings, and improve the functioning of labor markets(Brown eat Knoettl, 2012). In particular, active labor market policies provide incentives for human capital enhancement through on-the-job or classroom training, contributing to the improvement of human capital productivity.

Constructing the ASEAN labor productivity index takes two stages. First, we measure the individual performance indices for the 12 variables using data envelopment analysis (DEA). Then, we calculate sub-indices for the economic input, globalization, market regulation, and institutional quality indices. The weights are calculated by factor analysis. For the extraction of factor loadings, the principal components factor approach is applied. Then, the weights for each index are calculated as the normalized squared factor loadings. The ASEAN labor productivity index can be constructed as the weighted average of sub-indices.

6

Conclusion and Policy Recommendations

This report analyzed the trend of labor productivity of ASEAN and explored the contribution of human capital on labor productivity. It was found that labor productivity growth in ASEAN was in large part attributable to the growth of capital per worker, i.e., capital deepening, and the role of human capital has been limited in the promotion of labor productivity growth when human capital can potentially have a greater influence on labor productivity growth than other determinants. There remains a large gap in the growth of human capital across ASEAN Member States and there is a significant difference among the Member States in the productivity of human capital for labor productivity improvement. Therefore, individual Member States who lag behind in human capital accumulation need to strengthen policy efforts for catch-up and ASEAN can purse polices to facilitate cooperation and learning among the Member States to narrow down the human capital productivity.

To promote human capital development, this report proposes a holistic framework to management of human capital productivity. This framework comprises three levers: institutions, strategy, and culture. Institutions refer to the various types of organizations involved in managing human capital productivity. Strategy encompasses the strategic thrusts and supporting programs to boost productivity. Culture covers the shared values that support all the efforts undertaken. There are many institutions that are directly or indirectly involved in improving human capital productivity. The first category of institutions comprises the planning and executing bodies, which are typically government-related bodies. The second category of institutions comprises of the partners with which the planning and executing bodies work to implement their programs. These institutions are vital to the successful implementation of human capital productivity management. For the individual Member States, there may be variations of the categories and types of institutions, as well as their roles and effectiveness. Nevertheless, there should be one or more productivity drivers, a network of key institutions, to be identified and there should be an engagement plan to involve the various planning and executing bodies and partners.

An overarching strategy for human capital productivity is critical. A strategy provides clarity on the directions and actions to be taken to achieve the desired vision and goals. Such clarity is important because it ensures alignment among the many institutions and the target groups. This report proposes five strategic thrusts to improve human capital productivity. First, it is important to develop skills of human capital continuously to keep abreast of the changing world of work to increase the quality of human capital. To uplift the quality of human capital, the wide range of operational strategies can be carried out for the factors of human capital quality. First factor is the quality of the general education and technical and vocational education and training (TVET) institutions. The second factor is the enrollment capacity of the institutions as it affects the potential

supply of people who can acquire higher education and skills. The third factor is the educational content of the institutions. The degree of its alignment with economic priorities determines whether the graduates are able to meet the skill requirements of the economy. The fourth factor is educational delivery by the institutions. This affects the effectiveness and reach of what is being taught. The fifth factor is skill development in enterprises. This builds upon and complements learning in the institutions. The sixth factor is lifelong learning. This is the underpinning culture that sustains continuous improvement to the quality of human capital.

Steering the deployment of human capital in the economy is important because it determines whether scarce resources are put to optimal use. The process of deployment includes identifying the priority industries and their skill requirements, influencing skill development to equip sufficient people with the relevant skills, and steering employment towards there industries to meet the skill requirements.

Maximizing efficiency and effectiveness of human capital at work is as important as its optimal deployment. This has very much to do with improving the management practices of human capital in enterprises as the practices determine the work environment in which jobs and specific tasks are performed. Management practices have not only a direct impact on the utilization of human capital at the workplace and they also determine the extent to which the driving forces are leveraged to improve human capital productivity.

Fostering inclusive engagement and shared prosperity is crucial in the promotion of human capital productivity. Inclusive engagement and shared prosperity are the two critical aspects of gainsharing which will sustain commitment to the continuous generation of wealth. When employees have a stake in the performance of the enterprise, they will create better outcomes than if they were just paid hands. Productivity gainsharing is preferred to profit sharing in the context of human capital productivity.

Labor market polices serve as enablers that support the determinants of human capital productivity. Labor market flexibility is an important aspect of how labor markets function to adjust supply to demand. It is required to implement policies that offer social protection for those in the labor force. A good balance between labor market flexibility and social protection is achieved when the human capital input can easily and quickly adjust to changes in demand and when there is a reasonable level of protection for workers. This balance is the condition to develop robust labor market policies to sustain human capital productivity.

Culture comprises the paradigm of deeply embedded, subconscious shared values, as well as beliefs, about human capital productivity in the country. The programs for productivity enhancement cannot be sustained unless they are backed by a strong

culture that is favorable to the pursuit of human capital productivity. What is needed is the building of a culture that will drive continuous improvement in human capital productivity. The productivity culture will influence the priority that policymakers and institutions give to human capital productivity, the management practices implemented in enterprises, and the work ethic and actions of individuals.

The proposed holistic approach to the management of human capital productivity can serve as the framework for ASEAN and the Member States to have a common collective vision, goals, and strategy to maximize the potential of the region's human capital. Ultimately, it is the individual Member States that will have to launch and implement specific policies and programs according to their own contexts and needs. The Member States will have to formulate a national strategy with top-level political leadership and designated productivity drivers, and build institutional capabilities, and integrate all the disparate programs for specific aspects of human capital productivity, and monitor and evaluate the progress of implementation of the policies and programs. The policy framework suggested in this report can be served as a guidance.

This report explores the feasibility of developing an ASEAN labor productivity index that measures the labor productivity enhancing capacity of ASEAN Member States. The index is also designed to evaluate the effectiveness of policy measures proposed in this report. The index comprises four pillars: labor quality, productivity gainsharing, productivity culture, and labor market policies. The index is intended to measure the contribution of individual input variables in the promotion of labor productivity. Second, the performances of individual variables can be simplified by constructing a composite index for a cross-country comparison.

References

Aggrey, N., L. Eliab, and S. Joseph (2010), " Human Capital and Labor Productivity in East African Manufacturing Firms," *Current Research of Economic Theory* 2(2): 48-54.

Adalet McGowan, M.and D. Andrews (2015), "Labor Market Mismatch and Labor Productivity: Evidence from PIAA Data," OECD Economics Department Working Paper, No.1209.

Arellano, M. and Bover, O.(1995), "Another Look at the Instrumental Variable Estimation of Error Component Models," *Journal of Econometrics*, 68(1), July, pp.29-51

ASEAN-Japan Centre (2019), *Global Value Chains in ASEAN – A Regional Perspective*, Tokyo.

ASEAN Secretariat (2003), *ASEAN Statistical Yearbook 2003*, Jakarta.

ASEAN Secretariat (2019), *ASEAN Key Figures 2019*, Jakarta.

ASEAN Secretariat (2019), *ASEAN Statistical Yearbook 2019*, Jakarta.

Banks, G. (2015), *Institutions to Promote Pro-Productivity Policies: Logic and Lessons*, OECD Productivity Working Papers 2015-01, OECD Publishing, Paris.

Barrell, R., Mason, G., & O'Mahony, M. (2000), Productivity, Innovation and Economic Performance. Cambridge University Press.

Barro, Robert J. and Jong-Wha Lee (2013), "A new data set of educational attainment in the world, 1950-2010" *Journal of Development Economics* 104: 184–198.

Barro, R.J., and X.Sala-i-Martin (1995), Economic Growth, McGraw-Hill, New York

Bassanini Andrea & Danielle Venn (2008). "The Impact of Labour Market Policies on Productivity in OECD Countries," International Productivity Monitor, Centre for the Study of Living Standards, vol. 17, 3-15..

Becker, G.S., (1964), *Human Capital, A Theoretical and Empirical Analysis with Special Reference to Education*, The University of Chicago Press, Chicago.

Blondal, S., and Pilat, D. (1997), "The economic benefits of regulatory reform", *OECD Economic Studies*, 28(1), 7-48.

Bloom, N., and Reenen, J.V. (2007), "Measuring and Explaining Management Practices Across Firms and Countries", November, *Quarterly Journal of Economics*.

Blundell, R. and Bond, S.(1998), "Initial conditions and Moment Restrictions in dynamic panel models," *Journal of econometrics*, 87(1), pp.115-143

Bertay, A.C., L.Dordevic, and C. Severv (2020), "Gender Inequality and Economic Growth: Evidence from Industry-Level Data," IMF Working Paper WP/20/119, IMF.

Brown, Alessio J.G. and Johannes Koettl (2012), "Active Labor Market Programs: How, Why, When, and to What Extent are they Effective?," Knowledge Brief, Vo, 58, The World Bank.

Cisco (2018), *Technology and the Future of ASEAN Jobs*, Singapore.

Corves, F., 1996, *The Impact of Human Capital on Labour Productivity om Manufacturing Sectors of the European Union*. Maastricht: University of Limburg.

Disney, Richard (1996), *Can we afford to grow older? A Perspective on the economics of aging*, MIT Press, Cambride:Mass.

Economic Research Institute for ASEAN and East Asia (2014), *ASEAN SME Policy Index 2014*, Jakarta.

Finegold, D. and Soskice, D. (1988), "The Failure of Training in Britain: Analysis and Prescription", *Oxford Review of Economic Policy* 4(3), pp. 21–53.

Harvard University, *The Atlas of Economic Complexity*, https://atlas.cid.harvard.edu, accessed 9 October 2020.

Hall, R.E.(1988), "The Relation between Price and Marginal Cost in U.S. Industry," *Journal of Political Economy*, 96, pp.921-47

Hall, R. E., and Jones, C. I. (1999), "Why do some countries produce so much more output per worker than others?." *The Quarterly Journal of Economics*, 114(1), 83-116.

Holcombe, R. G., and Boudreaux, C. J. (2015), "Regulation and corruption," *Public Choice*, 164(1-2), 75-85.

Hofstede, G., Hosfstede, G.J. and Minkov, M. (2010), *Cultures and Organizations: Software of the Mind*, McGraw-Hill, New York.

International Labour Organization, *Employment by Occupation*, https://www.ilo.org/ilostat-files/Documents/description_OCU_EN.pdf.

International Labour Organization, *World Social Protection Database*, https://www.social-protection.org/gimi/WSPDB.action?id=15, accessed 8 Oct 2020.

International Labour Organization (1997), "Productivity Motivation and Gainsharing" in *Productivity and Quality Management: A Modular Programme*, Geneva.

International Labour Organization (2005), *Tools for the High Road to Productivity and Competitiveness*, Geneva.

International Labour Organization (2015), *The State of Social Protection in ASEAN at the Dawn of Integration*, Geneva.

International Labour Organization (2016), *ASEAN in Transformation: The Future of Jobs at Risk of Automation*, Geneva.

International Labour Organization (2017), *World Social Protection Report 2017 – 2019*, Geneva.

International Labour Organization (2018), *Labour Market Inventory. ASEAN 2010-2015: Labour Market Policy in an Age of Increasing Economic Integration*, Geneva.

International Labour Organization (2019), *Preparing for the Future of Work: National Policy Responses in ASEAN* + 6, Geneva.

Kaufmann, D., Kraay, A., and Mastruzzi, M. (2010), "The Worldwide governance indicators: A summary of methodology, data and analytical issues," World Bank Policy Research Working Paper No. 5430.

Khan, M. A. and Panarina, E. (2017), "The Role of National Cultures in Shaping the Corporate Management Cultures: A Four Countries Theoretical Analysis, *Journal of Eastern European and Central Asian Research*, Vol. 4, No. 1.

Kim, D., Lee, D., & Jeong, K. Y. (2018). A New Approach to Measuring a Multidimensional Productivity Index: An Application for 60 Selected Countries. *Global Economic Review*. 47(3). 270-288.

Kruse, D., Freeman, R. and Blasi, J., eds. (2010), *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-Based Stock Options*, National Bureau of Economic Research, University of Chicago Press, Chicago.

Lucas, R.E.(1988), "On the Mechanics of Economic Development," *Journal of Monetary Economics* 22 (1):3-42

Mankiw, N., D. Romer, and D. Weil(1992), " A Contribution to the Empirics of Economic Growth," *The Quarterly Journal of Economics* 107 (2): 407-437

Mauro, P. (1995), " Corruption and growth," *The Quarterly Journal of Economics*, 110(3), 681-712.

McGuinness, S., Pouliakas, K. and Redmond, P. (2017), *How Useful is the Concept of Skills Mismatch?*, International Labour Organization, Geneva.

Mincer, J. (1974), Schooling, Experience, and Earnings, New York: *National Bureau of Economic Research*.

Mortensen, Dale T. and Christopher A. Pissarides (1994), "Job Creation and Job Destruction in the Theory of Unemployment," *The Review of Economic Studies*, 61(3), 397-415.

North, D. (1990). Institutions, Institutional Change and Economic Performance. Cambridge: Cambridge University Press.

OECD, *Better Use of Skills in the Workplace: Why It Matters for Productivity and Local Jobs*, 2017.

OECD, https://www.oecd.org/trade/topics/global-value-chains-and-trade/, accessed 1 October 2020.

OECD, *OECD Policy Responses to Coronavirus (COVID-19)*, http://www.oecd.org/coronavirus/policy-responses/covid-19-and-global-value-chains-policy-options-to-build-more-resilient-production-networks-04934ef4/, 3 June 2020.

OECD, Human Capital Investment, Paris 1998

Paquet, A., and B. Robidoux (2001), "Issues on the Measurement of the Solow Residual and the Testing of Its Exogeneity: Evidence for Canada," *Journal of Monetary Economics*, 47, 595-612.

Ra, S., Chin, B. and Liu, A. (2015), *Challenges and Opportunities for Skills Development in Asia: Changing Supply, Demand, and Mismatches*, Asian Development Bank, Manila

Rondeau, K.V.(2007), The adoption of high involvement work practice in Canadian nursing homes, *Leadership in Health Services*, 20(1), 16-26.

Rukumnuaykit, P. and r. Pholphirul (2016), "Human Capital Linkages to Labour Productivity: Implications for Thai Manufacturing," *Journal of Education and Work*, 29 (8), 922-955

Psacharopoulos, George (1994), "Returns to investment in education: A global update" *World Development* 22(9), 1325–1343.

Tanzi, V., and Davoodi, H. (1997), "Corruption, public investment and growth," IMF Working Paper No.WP/97/139.

United Nations ESCAP (2019), *Disability At A Glance 2019*, Bangkok.

United Nations Industrial Development Organization (2013), *Industrial Development Report 2013*, Vienna

Woon, K. C. and Loo, Y. L. (2017), *Prime.Pack: Lean Transformation and Competitive Advantage for Sustained Growth*, Singapore.

Woon, K. C. and Loo, Y. L. (2018), *50 Years of Singapore's Productivity Drive*, World Scientific, Singapore.

World Economic Forum (2018), *The Future of Jobs Report 2018*, Geneva.

World Economic Forum (2019), *Global Competitiveness Report 2019*, Geneva.

World Management Survey (2014), https://worldmanagementsurvey.org, accessed 10 October 2020.

World Values Survey Association(2019), *World Values Survey*, http://www.worldvaluessurvey.org/WVSDocumentationWV7.jsp, accessed 5 October 2020.

Annex

How Member States Are Addressing Human Capital Productivity[21]

CAMBODIA

Institutions Responsible for Human Capital Productivity

Ministry of Labour and Vocational Training is the lead government agency responsible for policymaking, employment and skill planning and training, qualification standards, labour productivity measurement, and minimum wage-setting.

National Plan on Human Capital Productivity

The National Employment Policy 2015-2025 (NEP) has the vision of "to improve livelihood and dignity of the people and social harmony by providing them with equal opportunities of decent and productive employment". To achieve the vision, three goals have been set: increase decent and productive employment opportunities; enhance skills and human resource development; and enhance labour market governance.

In addition to National Employment Policy 2015-2025, to achieve a sustained high level of human capital productivity, Cambodia has designed and implemented two other main policies namely: National TVET (NTVET) Policy 2017-2025, and Industrial Development (IDP) Policy 2015-2025.

NTVET Policy 2017-2025 has the vision to improve the livelihood and dignity of people and to enhance Cambodia workforces or human resources with knowledge, competence, skills, working attitudes, professional ethics, high productivity and competitiveness for lifelong employability.

[21] For all the Member States except Myanmar, the inputs were provided by the National Productivity Organizations (NPOs) representing the Member States on the Asian Productivity Organization (APO), with assistance from the APO Secretariat. Where "N.A." is indicated, it means that the inputs were not available. For Myanmar (not an APO member), the inputs were provided by its Ministry of Labour, Immigration and Population, with the assistance of the ASEAN Secretariat. Brunei Darussalam (not an APO member) did not provide inputs.

IDP 2015-2025 is also aimed at enhancing human resources development to ensure strong and dynamic industrial development through the provision of specialized skills training to address the skills shortage in priority sectors by way of increasing training scholarships for engineers and technicians.

Quality of Human Capital

For the goal of "enhance skills and human resource development" in the NEP, there are three objectives: enhance and expand the development of soft skills; improve the quality of education and technical and vocational education and training (TVET), as well as access to it, in compliance with national, international and ASEAN standards; and improve relevance of education and TVET to labour market needs.

One of the four goals of NTVET Policy 2017-2025 is to improve TVET quality to meet national and international market demands. To achieve this goal, the government set out three main objectives related to quality development:

- Continue to develop and implement a Quality Assurance (QA) system based on Cambodia Qualification Framework (CQF).
- Improve trainer's quality and pedagogy, and infrastructure including training and learning resources in responding to current technology development and market demands of labour.
- Establish Technical and Vocational Park (TVP) in industry or economic zones to maximize utilization of equipment and trainers

The Cambodian government also set out in the IDP 2015-2025 to strengthen the quality of education at primary and secondary levels by focusing on strengthening basic knowledge for children and youth in mathematics, sciences, literature and technology.

Deployment of Human Capital

The strategies include: assess the employment needs for both males and females at the sectoral and sub-sectoral levels; identify priority sub-sectors with high employment potential; promote employment in the priority sub-sectors through enterprise development and support SMEs in both urban and rural areas; and encourage domestic investment and foreign direct investment in priority sub-sectors which have high employment potential.

Utilization of Human Capital

Utilization of human capital depends very much on the management practices adopted at the workplace. However, in order to contribute to better utilization of human capital, Cambodia has the National Employment Agency (NEA). NEA has provided free service to match job seekers to the jobs that fit their qualifications and skills.

Gainsharing

Cambodia has linked productivity to the wage system. The Law on Minimum Wage 2018 aims at promoting decent and dignified standard of living, create job opportunities and enhance the productivity of workers. Productivity is one of the seven criteria for setting the minimum wage rate.

Productivity Culture

Productivity is one of the key elements envisioned by NTVET Policy 2017-2025. Besides sharpening the students' hard skills, TVET Institutions under the MLVT also aim to provide their students with the essential soft skills that are highly needed in the labour market for employment. These skills include problem-solving, communication, teamwork, foreign language, 5S (Sort, Set in Order, Shine, Standardize, Sustain), industry activities and structures, basics of work, norm and culture, code of conduct. etc. Moreover, Cambodia annually conducts the productivity campaign under the National Career Fair in order to raise public awareness of labour productivity. Restricted by the COVID-19 pandemic in 2020, the productivity campaign in 2020 was conducted virtually and involved heavy participation by the local business associations and thousands of people especially young labour forces.

INDONESIA

Institutions Responsible for Human Capital Productivity

The Ministry of Manpower is responsible for human capital productivity, with support from other government bodies including Ministry of Trade, Ministry of Industry, Ministry of SMEs and National Development Planning Agency.

The National Productivity Organisation (NPO) of Indonesia (Directorate General of Training and Productivity Development in Ministry of Manpower), is the lead agency. It coordinates the productivity programs of the different government bodies.

National Plan on Human Capital Productivity

"Development of human resources" is a thrust in the national productivity plan.

Quality of Human Capital

The NPO has a training center and many programs to raise the quality of human capital. The Ministry of Manpower recently launched a Productivity Information Service called "SIPRONI" which enables quick identification of the key productivity issues, including quality of human capital, in each sector. Follow-up actions can then be taken appropriately.

Deployment of Human Capital

The NPO facilitates dialogues and actions among stakeholders such as academia, industry, ministries, and government agencies to meet the needs of industries, and to match skills supply with demand.

Utilization of Human Capital

N.A.

Gainsharing

The NPO is in the process of developing tools to assist enterprises to implement gainsharing schemes.

Productivity Culture

Productivity is part of the Indonesian culture. There are no distinct values identified. The productivity culture is promoted through digital and print media, documentary films to create awareness, 5S programs in all sectors, workshops and conferences, and training on productivity for all SMEs.

LAO PDR

Institutions Responsible for Human Capital Productivity

The lead government agencies are Ministry of Education and Sport and Ministry of Labour and Social Welfare. The NPO of Lao PDR (Department of SME Promotion in the Ministry of Industry and Commerce) is also a key agency as it is responsible for national productivity.

National Plan on Human Capital Productivity

The NPO is in the process of formulating the National Productivity Master Plan, which includes human resource development for productivity.

Quality of Human Capital

N.A.

Deployment of Human Capital

N.A.

Utilization of Human Capital

N.A.

Gainsharing

N.A.

Productivity Culture

There is no specific program to promote a productivity culture. Awareness of productivity is currently low. It is promoted through the implementation of programs in the 5-year Plan for SME Development, APO programs and, in the near future, programs under the National Productivity Master Plan.

MALAYSIA

Institutions Responsible for Human Capital Productivity

The Ministry of Human Resources and its agencies oversee human resources. The Prime Minister's Department sets policies at the macro level. The Ministry of International Trade and Industry oversees industries and companies, with a specific agency, Malaysia Productivity Corporation, in charge of the productivity of companies and workers. The work among the agencies is coordinated through the National Productivity Council.

National Plan on Human Capital Productivity

"Building workforce of the future" is one of the strategic thrusts in the Malaysia Productivity Blueprint.

Quality of Human Capital

The public sector institutions collaborate with the private sector through a public-private partnership called Productivity Nexus, with the private sector taking the lead, to upgrade the quality of human capital.

Deployment of Human Capital

The Productivity Nexus and dialogues between ministries/agencies, universities and industries facilitate matching of skills supply and demand.

Utilization of Human Capital

The productivity-linked wage system, linking wages to the productivity performance of employees and the company, is promoted to facilitate good utilization of human capital.

Gainsharing

The productivity-linked wage system is promoted. It benefits both employees and employers by making wages more flexible and competitive. In good times, employees can look forward to higher bonuses and better incentives. In more challenging times, companies are able to manage costs and stay viable, by adjusting wages quickly without having to resort to retrenchment.

Productivity Culture

Productivity is part of life and culture. There are no distinct values identified. The productivity culture is promoted through integrated communication strategies such as out-of-home advertising, activation (face-to-face programs), collaborations/networking, branding/positioning, printed media and digital media.

MYANMAR

Institutions Responsible for Human Capital Productivity

The lead agency is the National Skills Standards Authority (NSSA), set up by the Union Cabinet and Ministry of Labour, Immigration and Population. Other relevant agencies are Ministry of Education and Ministry of Planning, Finance and Industry.

NASSA regulates workforce skills qualification and skills development of the workforce, and provides quality assurance of non-formal TVET education and training programs to develop the quality of the workforce. As a regulatory body, stipulated in the Employment and Skills Development Law (enacted in 2013), it has set up Competency Standard Development Committees, a Training Committee, and an Assessment and Certification Committee.

For the development of competency standards, there are 15 Sectoral Committees (for Metal and Engineering Industry Sector, Construction Industry Sector, Woodworking Sector, Agriculture Industry Sector, Livestock and Fishery Industry Sector, Transport Industry Sector, Mining Industry Sector, Health Industry Sector, Social Welfare Industry Sector, Manufacturing Industry Sector, Commercial Industry Sector, Hotel and Tourism Industry Sector, Oil and Gas Industry Sector, Electrical Engineering Industry Sector, and IT Industry Sector) led by the concerned ministries and the private sector.

The Training Committee, responsible for competency-based training, is chaired by the Department of Technical and Vocational Education and Training under Ministry of Education.

The Assessment and Certification Committee is chaired by the Directorate of Industrial Supervision and Inspection under Ministry of Planning, Finance and Industry.

A Skills Development Fund Committee will be established under NSSA.

National Plan on Human Capital Productivity

"Fostering human capital that will be needed for the emergence of a modern developed economy and improving and expanding vocational education and training" is a key strategy in Myanmar's Sustainable Development Plan (2018-2030).

Quality of Human Capital

The main program to raise the quality of human capital to ensure that they meet the needs (current and future) of the economy is "Workforce Skills Qualification Program,"

including the development of national occupational competency standards program and competency-based assessment and training programs regulated by NSSA.

Formal TVET is provided at upper secondary and post-secondary levels as part of the national education system. However, access to higher-level TVET is limited; and it is difficult for learners on a TVET pathway to move across to an academic pathway. Non-formal TVET programs are offered by 13 different line ministries and private providers. There are no articulated learning pathways for these non-formal programs. A law on TVET is being enacted to accelerate human capital development.

Deployment of Human Capital

N.A.

Utilization of Human Capital

The Employment and Skills Development Law was established in 2013. This law regulates in-service training and skills assessment for those in employment and pre-service training for those seeking employment. The Law is being amended to become a new law that includes facilitation of good utilization of human capital to promote employment opportunities and wages for NSSA certificate holders.

Gainsharing

N.A.

Productivity Culture

N.A.

THE PHILIPPINES

Institutions Responsible for Human Capital Productivity

The Department of Labour and Employment (DOLE) is the primary agency with the mandate of developing human capital. The Philippine Regulatory Commission, under its supervision, conducts examinations and issues professional certification to ensure high quality standards for various areas of expertise and professions. The Department of Education oversees policies and plans in formal and non-formal basic education; supervises all elementary and secondary education institutions; and provides an integrated system of basic education relevant to the goals of national development. The Commission on Higher Education monitors the delivery of quality and relevant higher education programs. The Technical Education and Skills Development Authority (TESDA), under the Department of Trade and Industry (DTI), formulates manpower and skills plans, sets skills standards and tests, coordinates and monitors manpower policies and programs, and provides policy directions and guidelines for resource allocation to the TVET institutions in both the public and private sectors.

The National Competitiveness Council serves as the platform for discussion and planning of initiatives to enhance the country's competitiveness. DTI leads the public-private sector, business-government alliance in the Council.

National Plan on Human Capital Productivity

A chapter in the Philippine Development Plan 2017-2022 is titled "Accelerating Human Capital Development". There is also the National Technical Education and Skills Development Plan 2018-2022.

Quality of Human Capital

The education sector is given the task of providing accessible and quality education to all. For higher education and continuing professional education, the plan is to provide access to relevant technical-vocational programs that are certified to internationally-accepted standards; expand access to higher education; enhance community-based training; and integrate more relevant competency-based programs to be future-ready.

Deployment of Human Capital

Actions taken to match skills supply and demand include involvement of the industries in identifying skills requirements and developing skills standards; conduct of a Skills Needs Anticipation-Workplace Skills Survey and Satisfaction Survey to determine the

skills gaps in relation to current and future skills requirements; and release of labour market intelligence reports. TESDA has the World Café of Opportunities (WCO) through Job Linkaging and Networking Services (JoLiNS). This is a strategy to link the TVET graduates/alumni to employment opportunities both in wage and self-employment.

Utilization of Human Capital

N.A.

Gainsharing

The Wage Rationalization Act (RA 6727) declares "the policy of the State to rationalize the fixing of minimum wages and to promote productivity-improvement and gain-sharing measures to ensure a decent standard of living for the workers and their families". Pursuant to this Act, the National Wages and Productivity Commission (NWPC) implements a wage policy through a two-tiered wage system. Tier 1 is the mandatory regional minimum wage, while Tier 2 is the voluntary productivity or performance-based incentive scheme to link wage and productivity. As part of its Productivity Toolbox, NWPC provides assistance to MSMEs in identifying performance indicators and metrics, target-setting, measuring saving/gains and estimating incentives to enable workers and enterprises to develop and adopt performance or productivity-based incentive schemes.

Productivity Culture

TESDA runs programs that reinforce a productivity culture. This can be seen in the development of competencies which equip the TVET graduates not only with the hard skills they need, but also with the essential skills that employers look for in potential employees. These include complex problem-solving, critical thinking, creativity, people management, emotional intelligence, judgement, and decision making, service orientation, and cognitive flexibility.

SINGAPORE

Institutions Responsible for Human Capital Productivity

A multi-ministry/agency effort is taken, with all relevant stakeholders working closely together to collectively improve human capital productivity.

Workforce Singapore (WSG), a statutory board under the Ministry of Manpower, oversees the transformation of the workforce in conjunction with industry transformation. It promotes the development, competitiveness, inclusiveness, and employability of all levels of the workforce. It also helps businesses to create quality jobs, develop a manpower pipeline to support industry growth, and match the right people to the right jobs. SkillsFuture Singapore (SSG), a statutory board under the Ministry of Education, drives and coordinates the implementation of the national SkillsFuture movement, promotes a culture and holistic system of lifelong learning through the pursuit of skills mastery, and strengthens the ecosystem of quality education and training in Singapore. Enterprise Singapore (ESG), a statutory board under the Ministry of Trade and Industry, champions enterprise development, which includes building workforce capabilities. Its programmes and grants help enterprises to uplift productivity through various programmes such as digitalization, technology and automation.

The directions taken by the various agencies are guided by the tripartite Future Economy Council (FEC). The FEC drives the growth and transformation of Singapore's economy for the future.

National Plan on Human Capital Productivity

Under the oversight of the FEC, Industry Transformation Maps (ITMs) are developed to drive the transformation and growth of the economy for the future. The ITMs are driven by Ministry of Trade and Industry (MTI), together with relevant stakeholders including other government agencies and tripartite partners. To date, ITMs have been developed for 23 industries which cover more than 80% of the economy. The ITMs put in place a framework for partnership and the integration of skills development, productivity improvement, innovation and internationalisation. This helps to align jobs and skills development efforts with economic transformation and growth priorities.

Under the ITMs, SSG, WSG, and the relevant sector agencies (e.g. Building and Construction Authority of Singapore for the built environment), together with industry associations, training providers, organisations and unions, have developed Skills Frameworks for more than 30 sectors. Effort is underway to develop such Framework for more sectors.

The National Productivity Fund (NPF) has been put in place to support productivity and continuing education projects at both the national and sectoral levels. The use of NPF monies is administered by the Productivity Fund Administration Board which also evaluates and reviews proposals to tap NPF grants. NPF supports the work of the FEC by providing funding to implement the ITMs.

Quality of Human Capital

Taking reference from the Skills Framework, the Singapore Workforce Skills Qualifications (WSQ) provides a national credential system that trains, develops, assesses and certifies skills and competencies of the workforce. It supports the SkillsFuture movement to promote recognition of skills and competencies to facilitate progression, mastery and mobility; promote holistic development of the workforce through technical and generic skills and competencies; support economic development by professionalizing skills and competencies to drive industry transformation; and encourage lifelong learning. Training programs developed under the WSQ system are based on skills and competencies validated by employers, unions, and professional bodies. This ensures that existing and emerging skills and competencies that are in demand are used to inform training and development under WSQ.

Deployment of Human Capital

A key thrust of the transformation and growth agenda is to invest in and equip people with deep skills, knowledge and competencies to support the shift to greater value creation.

Pre-Employment Training initiatives include Institutes of Higher Learning (IHLs) equipping individuals with skills and competencies needed at the workplace. e.g., the Polytechnics and Institute of Technical Education have enhanced their internship opportunities to meet specific industry and students' learning needs.

The SkillsFuture movement offers industry-relevant training through short, modular courses in priority emerging areas, such as data analytics and urban solutions, to support the workforce to learn new skills.

The Continuing Education Training (CET) programmes in place help Singaporean workers to keep their skills relevant. e.g., as digitalisation has changed work in Singapore, it is important to equip the workforce with ICT knowledge and skills. To this end, there are programmes to train more skilled ICT professionals and help them remain competitive in the workforce.

WSG administers the Professional Conversion Programme, which comprises career conversion programmes for mid-career PMETs to undergo skills conversion and move into new occupations or sectors that have good prospects and opportunities for progression.

Utilization of Human Capital

Businesses are constantly encouraged to innovate and adopt productivity solutions to be more efficient, and, in the process, upskill workers to take on better jobs. Enterprises are able to tap the following programmes to support their efforts in improving HR capabilities and productivity:

- Enterprise Development Grant (EDG), administered by ESG, helps enterprises to transform by supporting capability development projects such as productivity improvement (e.g. automation, digitalisation) and upgrading of human capital capabilities in areas such as learning & development, performance management and job redesign.
- Productivity Solutions Grant (PSG), overall managed by MTI, supports enterprises that are keen on adopting IT solutions and equipment to enhance business processes. These include HR systems such as HRMS, HR-E-scheduling and HR Shared Services solutions, and Job Redesign to improve human resource management and operational efficiency.

Gainsharing

The Progressive Wage Model, developed by tripartite committees, helps to increase wages of workers through skills upgrading and productivity improvement.

Enterprises tapping the EDG have to make commitments on worker outcomes. The worker outcomes include an increase in wages, in addition to job creation, job redesign and training.

Productivity Culture

There is no specific programme to build a productivity culture. Productivity is driven on a sectoral basis, as mapped out in the ITMs. The key messages promoted to the workforce are: transform, upskill and grow; lifelong learning; and adapt and grow. While not explicit, these messages help to shape the productivity culture.

THAILAND

Institutions Responsible for Human Capital Productivity

The Office of the National Economic and Social Development Council is responsible for the national development plan. An objective of the plan is national productivity enhancement including labour productivity. The Ministry of Labour is responsible for skills development.

National Plan on Human Capital Productivity

"Strengthening and realizing the potential of human capital" is Strategy 1 in the Twelfth National Economic and Social Development Plan (2017-2021).

Quality of Human Capital

Strategy 1 includes developing people of all ages to acquire the skills, knowledge and capability needed for sustaining meaningful lives; developing systematic thinking skills, creativity, and essential working skills among school-age children and adolescents; promoting acquisition of skills and knowledge among the working-age population to enable them to perform their jobs effectively; and developing and improving the capabilities of the young and elderly to increase their opportunities to gain employment.

Deployment of Human Capital

The relevant government agencies formulate their strategic plans and action plans to support the national development plan.

Utilization of Human Capital

N.A.

Gainsharing

N.A.

Productivity Culture

An overall target stated in the Twelfth Plan is "The Thai people should have a good value-system. Thai people should possess discipline, attitudes, and manners according to the norms of society. They should also be receptive to learning, practical, well-informed, responsible, physically and mentally healthy, spiritually refined, self-sufficient and able to represent Thainess".

VIET NAM

Institutions Responsible for Human Capital Productivity

The two main agencies are: the Ministry of Education and Training, a government agency overseeing preschool education, general education, intermediate pedagogical education, college-level pedagogical education, higher education and other educational institutions; and the General Directorate of Vocational Training (DVET), a subordinate agency of Ministry of Labour, Invalids and Social Affairs (MOLISA) assisting the ministry to implement the law on VET (excepting for pedagogy) and managing public services concerned with VET under its authority.

National Plan on Human Capital Productivity

Efforts to improve human capital productivity are embedded in the national programs for improving productivity, under the umbrella of the national Productivity Movement which was launched in 1996 after Viet Nam became a member of the APO.

Quality of Human Capital

The guidelines and policies for Viet Nam to actively participate in the Fourth Industrial Revolution include policies on human resource development. A key policy is to introduce innovations in educational and training content and programs to develop creative thinking and adaptability to the constantly changing technological environment.

MOLISA has specific plans up to the year 2030 to continually innovate and improve the quality of vocational education.

Deployment of Human Capital

High-quality human capital and skilled workers are still very lacking in relation to the need to develop key economic sectors and to participate in the high value-added parts of GVCs. There is no policy on training high-quality human capital to be deployed to different fields and industries according to national priorities.

Utilization of Human Capital

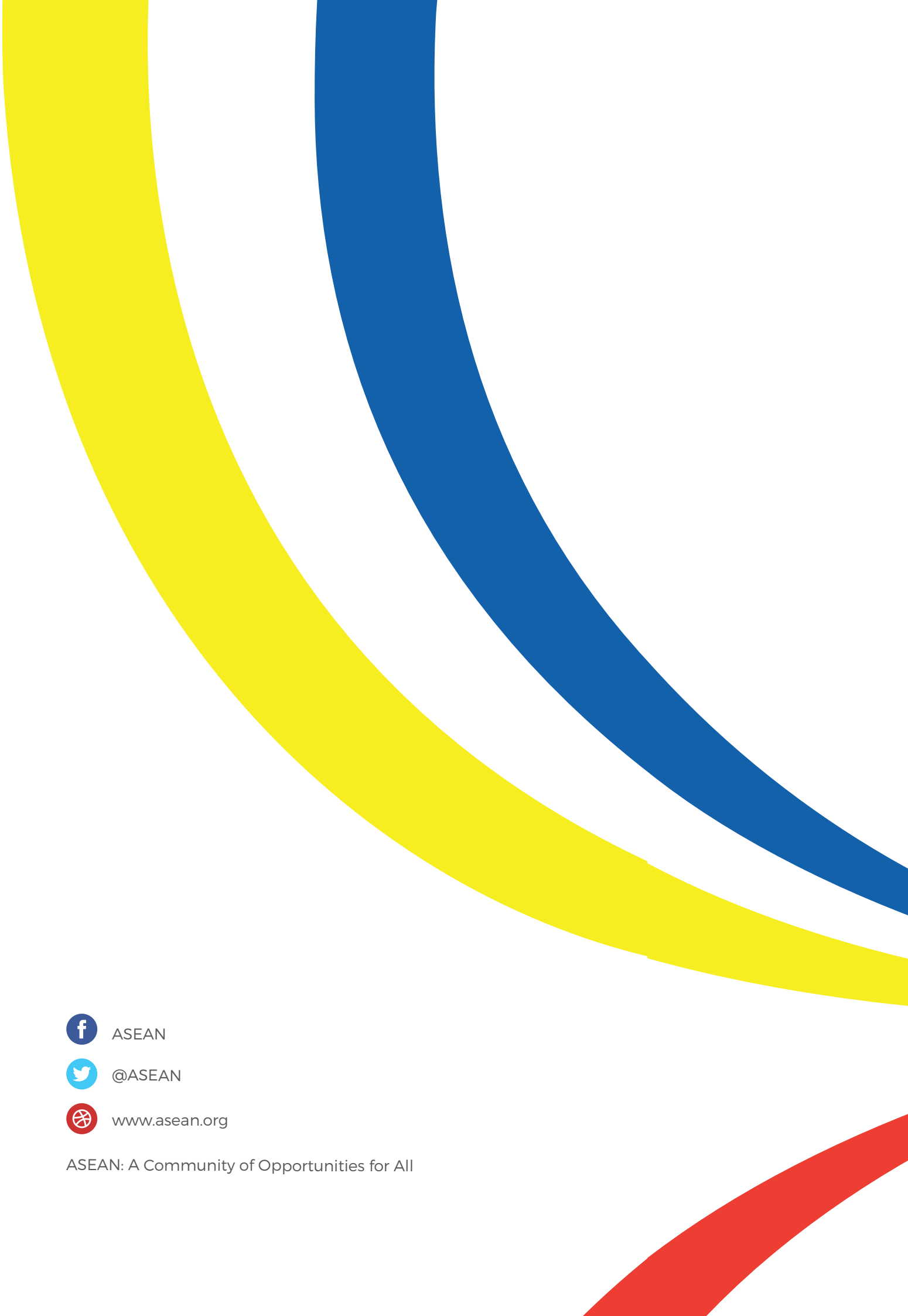
The national programs for enhancing enterprise productivity include improving the human resource management system, with innovative solutions in the workplace to improve labour productivity.

Gainsharing

The importance of sharing benefits from improvement is stressed when productivity programs are introduced. However, the extent to which this is implemented is not clear.

Productivity Culture

There is no specific emphasis on a productivity culture. The importance of productivity is promoted through the national productivity programs. Enterprises are also gradually establishing productivity targets associated with business goals. However, the number of enterprises setting productivity targets is limited.



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