APO Productivity Databook 2022

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Abbreviations

ADB	Asian Development Bank
APO	Asian Productivity Organization
APO21	21 member economies of the Asian Productivity Organization: Bangladesh, Cambodia, Republic of China, Fiji, Hong Kong, India, Indonesia, Islamic Republic of Iran, Japan, the Republic of Korea, the Lao PDR, Malaysia, Mongolia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, Turkey, and Vietnam
ASEAN	Association of Southeast Asian Nations: 10 countries of Brunei, Cambodia, Indonesia, the Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. The ASEAN is separated into two groups in Databook, i.e., the ASEAN6 and CLMV.
ASEAN6	Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand
Asia25	APO21 plus Bhutan, Brunei, China, and Myanmar
Asia31	Asia25 plus GCC countries
B&C	building and construction
CLMV	Cambodia, the Lao PDR, Myanmar, and Vietnam
CPI	consumer price index
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
COE	compensation of employees
DX	digital transformation
ESRI	Economic and Social Research Institute, Cabinet Office of Japan
EU	European Union
EU15	15 member economies of the European Union prior to enlargement: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom
EU27	European Union: the EU15 (excluding the UK) plus Bulgaria, Republic of Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, and Slovenia
FDI	foreign direct investment
FISIM	financial intermediation services indirectly measured
FTAs	free trade agreements
GCC	Gulf Cooperation Council: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE
GDP	gross domestic product
GFCF	gross fixed capital formation
GNI	gross national income
GVCs	global value chains
ICP	International Comparisons Program
ILO	International Labour Organization
IMF	International Monetary Fund
IOT	Input-Output Table
IPP	intellectual property products
ISIC	International Standard Industry Classification of All Economic Activities
IT	information technology
KEO	Keio Economic Observatory, Keio University
LDCs	less developed countries
M&E	machinery and equipment
NPISHs	non-profit institutions serving households
OECD	Organisation for Economic Co-operation and Development
PPP	purchasing power parity
QALI	quality-adjusted labor inputs
QNA	quarterly national accounts
RCEP	Regional Comprehensive Economic Partnership
ROC	Republic of China
R&D	Research and development
SNA	System of National Accounts
SUT	Supply and Use Tables
TFP	total factor productivity
UAE	United Arab Emirates
UN	United Nations
UNSD	United Nations Statistics Division
WTO	World Trade Organization

Foreword

Inflation in developing Asia is increasing, reflecting higher energy and food prices. A sharp deceleration in global economic growth, stronger-than-expected monetary policy tightening in advanced economies, the geopolitical risk and economic consequences of the Russian and Ukraine conflict, and negative pandemic developments, among other global and regional issues, are slowing growth worldwide. Increased trade policy uncertainties and fraying of supply chains, which contribute to geoeconomic fragmentation, are expected to delay economic recovery and exacerbate the effects of the pandemic in the Asia-Pacific.

The 2022 edition of the *APO Productivity Databook* is part of ongoing efforts to support APO member economies in coping with current challenges, including postpandemic revival, and contribute to their sustainable socioeconomic development through enhancing productivity. This 15th edition focuses on the quality of economic growth and productivity with comparisons among APO members at different development stages. It covers Asian economic development from 1970 to 2020, with projections of economic growth and labor productivity improvement through 2030.

The analyses in this edition are based on comprehensive productivity accounts drawn from the APO Productivity Database for 31 Asian economies along with the USA as a reference. In addition to the productivity accounts of each economy, regional productivity accounts for six economic groups, the APO21, Asia25, East Asia, South Asia, CLMV, and ASEAN6, are included for easy comparisons based on 2017 benchmark estimates of purchasing power parity published in April 2020 by the International Comparison Program. The effects of the COVID-19 pandemic on Asia-Pacific economies are analyzed and discussed in detail.

The APO is grateful for the ongoing collaboration with the Keio Economic Observatory research team of Keio University, Tokyo, in researching, analyzing, and compiling the 2022 edition of the databook series. The APO will continue working with national statistics offices in its members to improve data quality. It is hoped that the *2022 APO Productivity Databook* will serve a useful reference on the current and future status of productivity in the region, thus contributing to better policymaking in the APO membership and other economies in an increasingly interconnected world.

Dr. Indra Pradana Singawinata
Secretary-General
Asian Productivity Organization
Tokyo, October 2022

1 Introduction

1.1 Databook 2022

This fifteenth edition of the *APO Productivity Databook* aims to provide a useful reference for the quality of economic growth and productivity, comparable across countries at different development stages in Asia. Productivity gains, which enable an economy to produce more for the same amount of inputs, or to consume less to produce the same amount of outputs, are the only route to sustainable economic growth in the long run. Thus, monitoring and improving national productivity capability are important public policy targets. This edition covers the half-century history of Asian economic development, from 1970 to 2020, with our projections of economic growth and labor productivity improvements through 2030.

Baseline economic growth and productivity indicators are calculated for 31 Asian economies, representing the 21 Asian Productivity Organization member economies (APO21) and the ten non-member economies in Asia. The APO21 consists of Bangladesh, Cambodia, the Republic of China (ROC), Fiji, Hong Kong, India, Indonesia, the Islamic Republic of Iran (Iran), Japan, the Republic of Korea (Korea), the Lao People's Democratic Republic (Lao PDR), Malaysia, Mongolia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, Turkey, and Vietnam. The ten non-member economies in Asia are the Kingdom of Bhutan (Bhutan), Brunei Darussalam (Brunei), the People's Republic of China (China), Myanmar, and the Gulf Cooperation Council (GCC), consisting of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). In addition, Australia, the European Union (EU), France, Italy, Germany, the United Kingdom (UK), and the United States (US) are included as reference economies.

The analyses in the Databook series are based on the comprehensive productivity accounts for Asian countries (APO Productivity Database), which have been developed by a joint research effort between the APO and the Keio Economic Observatory (KEO), Keio University, since 2007. In this edition of the Databook, the productivity accounts are developed for 25 Asian economies (Asia25), consisting of the APO21 plus Bhutan, Brunei, China, and Myanmar, along with the US as a reference economy.

The sources of economic growth in each economy are further decomposed to factor inputs of capital and labor and total factor productivity (TFP). In addition to the productivity account in each economy, the regional growth accounts are developed in the APO Productivity Database 2022 for six economy groups: the APO21, Asia25, East Asia, South Asia, CLMV, and the ASEAN6.[1] In developing the regional productivity accounts, consideration is given to the price differentials among economies on capital and labor inputs, as well as on outputs, by following the framework in Nomura (2018). The level comparison in this edition is based on the 2017 benchmark estimates on the purchasing power parities (PPPs), which was published in April 2020 by the International Comparisons Program (World Bank 2020a).

The productivity measures in the Databook are based mainly on the official national accounts. In Asia25, the System of National Accounts 2008 (2008 SNA) by the United Nations (2009) has been introduced in 18 economies, either partially or fully. Because the varying SNA adaptions among the economies can result in discrepancies between data definitions and coverage, data harmonization is necessary for comparative productivity analyses. The Databook reconciles these national account variations based on the different concepts and definitions. This reconciliation is done by following the 2008 SNA and providing harmonized estimates for better international comparison. Compared to the previous edition of the Databook (APO 2021), some significant revisions are conducted in the official national accounts in some Asian countries. The 2008 SNA was newly introduced in Nepal as of April 2021 and Oman as of November 2021.[2] In addition, the new benchmark-year national accounts were published in Bangladesh and

1: See the Abbreviation for the country list of these country groups. ASEAN is a region of great economic disparity and social, political, and cultural diversity. The Databook separates this region into the relatively low-income CLMV and the rest of ASEAN6.

Mongolia.[3] The Databook tries to construct retrospective estimates back to 1970, based on the concepts of the latest national accounts, using as much auxiliary information as possible.

The aggregate measure of capital service is developed to analyze the overall productivity performance (TFP) and productivity subsets (capital and labor productivities). To consider the quality changes in measuring capital input, 16 types of assets, including land and inventory, are defined.[4] The damages by natural disasters are considered in the capital stock measurement of produced assets from the previous edition of the Databook (APO 2021), as discussed in Section 9.2.4.

In measuring labor input, in 2013 the KEO began developing a comprehensive labor database (the Asia QALI Database) on the number of workers, average hours worked per worker, and hourly wages per hour worked (which are cross-classified by gender, educational attainment, age, and employment status). This data allows for measuring the quality-adjusted labor inputs (QALI) for all economies of Asia25. The Asia QALI Database is used to identify the impact of labor quality changes from the gross measures of TFP and estimate the total labor share with some assumptions. This edition of the Databook follows the Asia QALI Database 2022.[5]

The structure of the Databook is as follows. The recent trends in global and regional economic growth and the summary of findings are presented in Chapter 2. In order to understand the dynamics of the long-term economic growth within Asia, Chapter 3 details countries' diverse development efforts and achievements through cross-country level comparisons of GDP. Decompositions of GDP, which are defined by three approaches in SNA—production by industry, expenditure on final demand, and income to factor inputs—are valuable in understanding the structure and, in turn, the behavior of an economy. Chapter 1 presents the demand side decomposition, analyzing the sources of countries' expenditure growth.

Chapter 5 analyzes the supply side decompositions of economic growth and provides the measurement results on the growth of per-worker and per-hour labor productivities, capital productivity, energy productivity, and TFP in each country and region. As this edition of the Databook includes the estimates in 2020 as the final year, the period averages should be considered with a note of caution. While it is important to understand the negative impact to TFP from the COVID-19 pandemic, it will be necessary to exclude it to understand mid- to long-term productivity trends. Some tables in the Appendix provide estimates that reflect the impacts of the pandemic (e.g., in 2015–2020) and those that do not (in 2015–2019 and 2019–2020).

The different composition of economic activity among countries is one of the main sources of the vast gap in cross-country labor productivity at the aggregate level. The industry structure is presented in Chapter

2: With the introduction of the 2008 SNA, usually conducted with the benchmark revisions, GDP at current prices was revised upwardly by 3.1% in Nepal and 14.7% in Oman in 2018. Vietnam is scheduled to release its national accounts based on the 2008 SNA as of June 2022, but this Databook could not reflect it due to time constraints.

3: Bangladesh Bureau of Statistics (BBS) introduced the 2008 SNA in 2014, and the backward estimates based on the 2008 SNA are available from 1996 (Section 9.1.1). As of November 2021, the BBS published the 2015–16 benchmark-year national accounts. This latest account has a considerable impact on revising upwardly GDP and GFCF by 14.7% and 19.5, respectively, at current prices in 2018, compared to the previous 2005–06 benchmark-year account used in the past Databook.

4: The assets in the Databook are defined by 11 types of fixed assets (including IT and R&D capital), four types of land, and inventory (Section 9.2). In most Asian countries, it is challenging to develop the data on average prices of land at the national level. At KEO, the data for land (for agricultural, industrial, commercial, and residential uses) and inventory has been developed for each Asia25 since 2016 and 2021, respectively. Although there are still issues regarding data quality, the Databook follows it.

5: The reports of the Asia QALI are provided in Nomura and Akashi (2017) for six South Asian countries and Nomura and Shirane (2020) for Vietnam. The detailed information on the Asia QALI is provided in Section 9.3. Based on this data, the labor input in the Databook is decomposed into hours worked and labor quality, or college and non-college labor inputs. The Asia QALI 2022 newly reflected the unpublished estimates based on the microdata for the 1981, 1991, 2001, and 2011 Population Censuses in Hong Kong (Census and Statistics Department, The Government of the Hong Kong Special Administrative Region).

6. In constructing the APO Productivity Database 2022, we have comprehensively examined the problems of time-series connections of industry data in each Asian country. Chapter 7 analyzes the income side of GDP by measuring real income growth and evaluating an improvement or deterioration in the "terms of trade." Chapter 8 provides the country profiles on productivity indicators from 1970 to 2020 and our projections through 2030 for the APO21 economies and five regions: the APO21, Asia25, East Asia, South Asia, and the ASEAN. Finally, Chapter 9 presents the methodological note on the frameworks and assumptions used in this edition of the Databook.

The official national accounts and metadata information used to construct the APO Productivity Database 2022 has been collected by national experts in APO member economies and research members at KEO. These contributors are listed in Section 1.2. At KEO, submitted data are examined, and the long-time productivity accounts are constructed, using detailed information on labor, production, prices, trades, and taxes collected separately. Readers should consider that international comparisons of economic performance are never a precise science. Instead, they are fraught with measurement and data comparability issues. Operating within a reality of data issues, some of the adjustments in the Databook are necessarily conjectural, while others are based on assumptions with scientific rigor. Despite best efforts in harmonizing data, some data uncertainty remains.

This edition effectively reflects the revisions to the official national accounts and other statistical data published through the beginning of June 2022; and the population prospects published in June 2019 by the United Nations (2019). The project was managed by Koji Nomura (Keio University), under the consultancy of Professor W. Erwin Diewert (University of British Columbia), and with coordination by Asaithambi Manickam (APO).

Professor Dale W. Jorgenson (Harvard University) has participated as a consultant since the project's inception in 2007 and has provided many valuable suggestions regarding the measurement framework and results. Regrettably, with his passing on June 8, 2022, the entire economics community lost a giant in the field. Koji Nomura had the good fortune to stay in Professor Jorgenson's laboratory from 2003 to 2005. Since then, Professor Jorgenson has provided us with invaluable guidance. We want to express our sincere gratitude to him and pray for his soul to rest in peace, and his family to mend from their loss.

This edition's text, tables, and figures were authored by Koji Nomura and Fukunari Kimura (Keio University), with support from research assistants; Sho Inaba, Shiori Nakayama, Mansaku Yoshida, Mintsu Takagi, and Tomoko Nagashima. The Databook project appreciates Eunice Ya Ming Lau (formerly of Office for National Statistics, the UK) and Yasuko Asano (former officer of APO) for their contributions to developing the foundation of the Databook series, and Trina Ott for her review of the draft.

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2 Current Trend

While 2020 was definitely a difficult year for all countries in the world with COVID-19, before that, some slowdown in economic growth was observed due to turmoil in the rules-based trading regime with geopolitical tensions. However, the shocks due to COVID-19 starting in 2020 were massive. Most countries' GDP growth rates became negative with some exceptions, particularly in Asia. The economy's trough was deeper in developed countries than in newly developed and developing countries due to the more extensive spread of infection.

At the beginning of the pandemic, people feared another great depression with the weakening of the financial sector, the collapse of asset markets, the burst of unemployment, and the end of globalization. Thankfully, this did not occur due to unprecedented mitigation policies conducted by countries worldwide. Although the prolonged immobility of people forced us to make tough adjustments, global supply chains (GSCs) did not suffer permanent damage. In particular, the sophisticated portion of GSCs international production networks (IPNs) in East Asia presented robustness (less likely to be interrupted) and resilience (likely to be resumed even if being interrupted) (Ando and Hayakawa 2021) as they did in past crises such as the Asian Currency Crisis, the Global Financial Crisis, the East Japan Earthquake, and the Thai flooding (Ando and Kimura 2012). Because the construction and operation of IPNs require substantial sunk costs, firms are willing to keep the link as long as a shock is regarded as temporary. With COVID-19, in addition to the hardship due to negative supply shocks and negative demand shocks, East Asian IPNs enjoyed "positive" demand shocks resulting from a remote working and stay-at-home market which increased demand for products such as personal computers, displays, dish washers, and hand-held electric drills (Ando, Kimura, and Obashi 2021). The tradable sector recovered early while services, particularly tourism, transportation, and face-to-face services, suffered from the long-lasting restriction of people's movements. Additionally, trade-in computer services increased substantially (WTO 2021a). The acceleration of digital transformation was good news for newly developed and developing countries. While narrowing the digital divide, these countries must be aggressive in exploiting opportunities for disruptive innovation and the deployment of digital technology not only in digital services but also in traditional industries, including manufacturing.

In 2021, most countries returned to positive economic growth while they experienced the so-called K-shape recovery where some sectors struggled. Sporadic waves of COVID-19 mutant variants delayed the full opening of people's movements. The heated economy with regained demand in the US led to inflation, and increased energy prices. Then, in February 2022, the Russo-Ukraine War escalated, and the surge in food and energy prices pushed up inflation in many countries. Although the COVID-19 turmoil is not over yet, the world economy has entered a new phase.

This Databook primarily covers the data up to 2020. Based on this, the growth trend will be briefly reviewed. Before the outbreak of COVID-19, the growth performance of Asia was strong, though it showed signs of slowing down due to some challenges. When COVID-19 hit the world in 2020, in Asia 31 and East Asia the average annual growth of GDP at constant market prices dropped from 5.2% and 5.1% in 2010–2015 to 3.1% and 3.3% in 2015–2020, respectively, while the growth in 2019–2020 only was –2.0% and –0.9%. Due to the relatively slow spread of the pandemic, Asian countries were hit less severely than advanced economies in 2020. "Positive" demand shocks due to remote working and stay-at-home activities allowed East Asian countries to quickly recover their exports. In 2021 and 2022, the emergence of mutant variants generated multiple waves of infection in Asian countries at different times and with different intensities. However, the growth rates basically remained positive on an annual basis.

Advanced economies were hit very hard by COVID-19, particularly in the first wave in 2020. In the US, the average annual growth of GDP at constant market prices dropped from 2.1% in 2010–2015 to 1.1% in 2015–2020, with –3.6% in 2019–2020. The European economy also struggled. The average annual growth rate of GDP at constant market prices in EU15 and EU28 fell from 1.0% and 1.0% in 2010–2015

to 0.1% and 0.5% in 2015–2019, with –7.2% and –6.1% in 2019–2020, respectively. The annual growth of GDP at constant market prices in Japan was 1.1% in 2010–2015 and –0.3% in 2015–2020, with –4.7% in 2019–2020, even though the pandemic was relatively well contained in 2020. In 2021, the growth rate returned to positive.

The growth slowdown of the Chinese economy began earlier, but because the containment of COVID-19 in the first wave was strong, China achieved 7.0% in 2010–2015 but 4.5% in 2015–2020 in the average annual growth of GDP at constant market prices, with –0.2% in 2019–2020. The impact of the US-China trade war and a number of structural economic challenges also slowed the growth. However, the economy performed relatively well compared to other countries. The structural issues that slow economic growth appear to continue beyond 2021. Korea lost pace, having 2.7% in 2010–2015 and 2.1% in 2015–2020 with –10.8% in 2019–2020, but a recovery was observed in 2021.

In the long-run, economic growth has been steady in most Asian economies. Latecomers in ASEAN, i.e., Cambodia, Laos, and Myanmar, have continued growing in the past two decades, reaching $1,620, $2,640, and $600 in per capita GDP using the exchange rate in 2020, respectively. To attain rapid and sustained economic growth, they must engage in IPNs (Ando and Kimura 2005) or the second unbundling (Baldwin 2016) more deeply. Vietnam successfully achieved deeper involvement in IPNs and had a $2,800 per capita GDP, using the exchange rate in 2020. However, the ratio of manufacturing value added to GDP was as low as 18.5% in 2020. The development of supporting industry and industrial agglomeration is required to nurture human capital and accelerate innovation. The Philippines and Indonesia are forming efficient industrial agglomeration with $3,340 and $3,960 in per capital GDP, using the exchange rate in 2020. Thailand, Malaysia, and Singapore reached $7,370, $10,300, and $60,700 in per capita GDP, using the exchange rate in 2020, though Thailand and Malaysia struggled in the last step toward high-income countries with the formation of new development strategies. Although the South Asian countries have not fully taken advantage of IPNs, some have been successful in connecting with slow global value chains in labor-intensive industries such as garments and footwear. The per capita GDP using exchange rate in 2020 in Nepal, Pakistan, India, and Bangladesh has $1,200, $1,200, $1,920, and $2,230, respectively.

Overall, newly developed and developing economies in Asia have good potential for continuously showing strong growth performance. COVID-19 brought serious damage to some parts of their society, and the quality upgrading and expansion of the healthcare system became an important political agenda. The usage of digital technology has accelerated during the pandemic, which gives hope to a more aggressive approach to disruptive innovation and digital transformation.

In 2022 and onward, newly developed and developing economies are facing three challenges. First, high prices of food and energy will hit countries that import these products. After COVID-19 and the Russo-Ukrainian War, the bounce-back demand drove up inflation rates, particularly in advanced economies. As for food prices, the possibility of export restrictions by major exporting countries and market speculation may further increase the prices and limit the amount of supply. The 12th Ministerial Conference at the WTO (MC12), held in June 2022, reaffirmed the importance of "not imposing export prohibitions or restrictions in a manner inconsistent with relevant WTO provisions" and asked the members that "any emergency measures introduced to address food security concerns shall minimize trade distortions as far as possible; be temporary, targeted, and transparent; and be notified and implemented in accordance with WTO rules" (WT/MIN(22)/28 WT/L/1139). Energy prices will be in turmoil due to energy trade restrictions between Russia and European countries. Europe must at least temporarily return to fossil fuel usage, which triggers energy price hikes and supply shortages in the rest of the world. Price hikes and supply shortages of food and energy not only worsen the living conditions of the poorer population, but they could also cause political instability in some developing countries.

Secondly, high inflation rates in the US and other economies cause the monetary authority to tighten monetary policy by raising interest rates. Higher interest rates may cause capital outflows, currency depreciation, increasing debt, and worsening macroeconomic fundamentals in newly developed and developing economies. This would also aggravate the shortage of food and energy in these economies. Because the high inflation in advanced economies seems to have the element of cost-push inflation, some analysts point to the possibility of prolonged stagflation. A close watch on macroeconomic stability is required for the developing world.

Third, geopolitical tensions seem to be worsening. The US-China confrontation started in the form of a tariff war during the Trump Administration. However, after that, the scope of confrontation expanded to a high-tech competition between the superpowers with the issues regarding widely defined national security. Furthermore, other elements, including democracy and human rights, have been added, which escalate the supply chain decoupling argument. Recent media focus has been on geopolitical tensions. Meanwhile, the importance of free trade and investment is going unmentioned.

While the world economy is still thriving and active, Lamy and Köhler-Suzuki (2022) identify a large gap that now exists between political arguments and economic reality, and thus emphasize the need to avoid a self-fulfilling prophecy with regard to deglobalization. Indeed, the actual effects of decoupling in supply chains are minimal. The US exports of electric machinery, particularly semiconductors, to China increased in 2020 and 2021. Japan's exports of electric machinery to China are also on the increasing trend. Decoupling has advanced to some extent for specific high-tech and rare earth-related products, but the impact is negligible in the aggregated statistical figures so far.

Some trade and investment controls for the widely defined national security may be inevitable under the current geopolitical tensions. However, we must recognize that the global economy and supply chains are still robust. Policymakers should seek a good balance between politics and the economy. Three remarks can be made as a policy guidelines. One, items and technologies placed under trade/investment controls must be well defined and clearly distinguished from the other parts of the economy. This decoupling of supply chains would avoid a complete "cold war" and perhaps lessen the impact. This is important to reduce uncertainty and avoid shrinkage effects on the private sector. In addition, trade/investment controls should be designed and implemented efficiently.

Two, the rest of the economy, other than items and technologies under control, must be in the rules-based trading regime to keep economic activities vigorous. In this regard, the revival of the WTO dispute settlement mechanism is paramount. Due to the boycott of appointing or reappointing members by the US, the Appellate Body, which is the second tier of the WTO dispute settlement on top of the first round of "Panels," has virtually stopped since 2019. We must take all possible actions to resume full functioning of this group. In addition, mega free trade agreements (FTAs) such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and The Regional Comprehensive Economic Partnership (RCEP) may be utilized as a means of reducing policy risks. Although dispute settlement clauses in many FTAs have not been fully operationalized, free trade-oriented environments should work to maintain the rules-based trading regime.

Three, even "neutral" countries standing between the two superpowers may suffer from some backlashes due to the extra-territorial application of trade/investment controls, trade restrictions for human rights issues, environmental regulations and unilateral measures, and others. The necessity of cybersecurity also increases geopolitical tensions. Newly developed and developing countries must take care of such issues and keep the economy alive for economic development.

A considerable challenge will come in the latter half of this year and into the following year.

Box 1 Impacts of the COVID-19 Pandemic in 2020 and 2021

While COVID-19 has caused a serious tragedy for the entire world, the health damage due to the pandemic has differed widely across countries. The Technical Advisory Group for COVID-19 Mortality Assessment in the World Health Organization (WHO) and the United Nations Department of Economic and Social Affairs (UNDESA) calculated "excess mortality" as the difference between the number of deaths that have occurred and the number that would be expected in the absence of the pandemic, based on data from earlier years, to make a comparison with the confirmed COVID-19 deaths ("14.9 million excess deaths associated with the COVID-19 pandemic in 2020 and 2021," May 5, 2022, WHO). Figure B1.1 presents the confirmed COVID-19 deaths and estimated excess deaths, per million population, as of December 31, 2021, for Asian countries and the reference countries. Countries are sorted based on the estimated excess deaths per million.

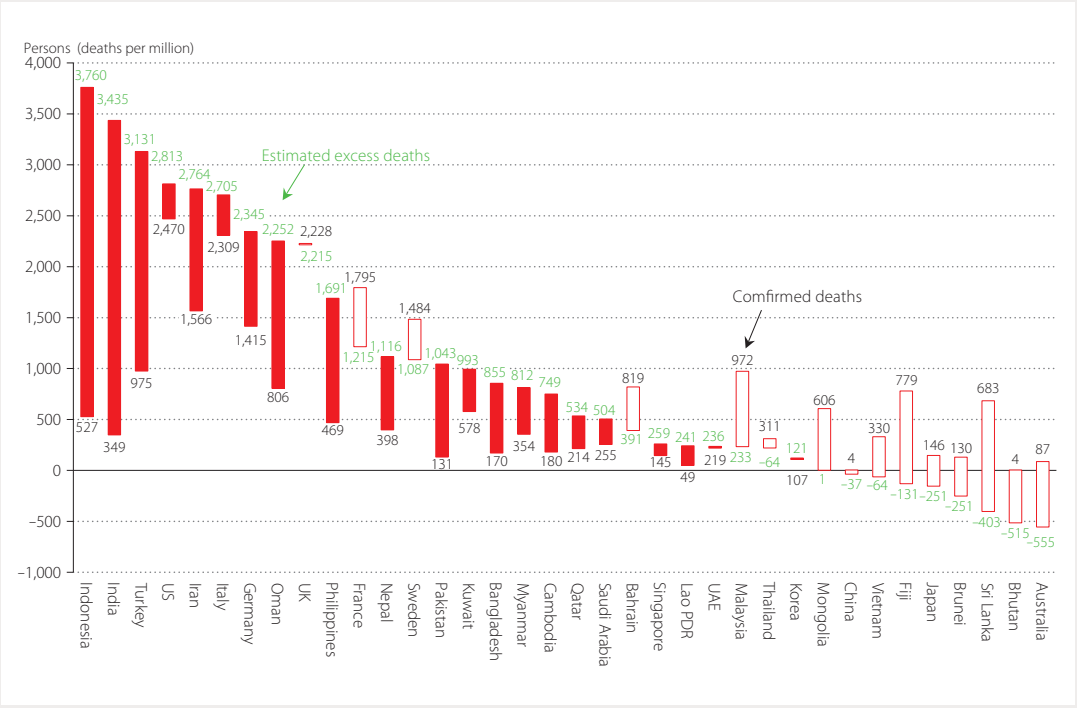

Figure B1.1 Confirmed COVID-19 Deaths and Estimated Excess Deaths

Unit: Persons (ppm: parts per million). Sources: WHO COVID-19 Dashboard and WHO Estimates of Excess Mortality Associated With COVID-19 Pandemic for estimates of COVID-19 deaths; World Bank Open Data for population. Note: Cumulative confirmed deaths and estimated excess deaths as of December 31, 2021.

As for the confirmed COVID-19 deaths, the US is the highest among countries, with 2,470 deaths per million, followed by Italy, the UK, France, Iran, Sweden, and Germany. On the other hand, the estimated excess deaths per million are the highest in Indonesia with 3,760, and India, Turkey, and others follow. Estimated excess deaths may be larger than confirmed COVID-19 deaths if, for example, many COVID-19 deaths are not counted as those due to COVID-19 or insufficient treatments are provided for patients with other diseases or injuries in overburdened health systems. On the other hand, estimated excess deaths can be smaller than confirmed COVID-19 deaths if the restricted human mobility reduces the risks of traffic accidents, occupational injuries, or the infection of other epidemic diseases.

Figure B1.2 presents the GDP growth rates and estimated excess deaths per million, showing changes from 2020 to 2021 for selected countries. While the GDP growth rates turn positive in all the countries in 2021, estimated excess deaths changed from negative to positive in many Asian countries. Most Asian countries were relatively successful in containing the infection in 2020, but the emergence of mutant variants deepened the pandemic in 2021. Some countries such as Indonesia, India, and the Philippines recorded large gaps between

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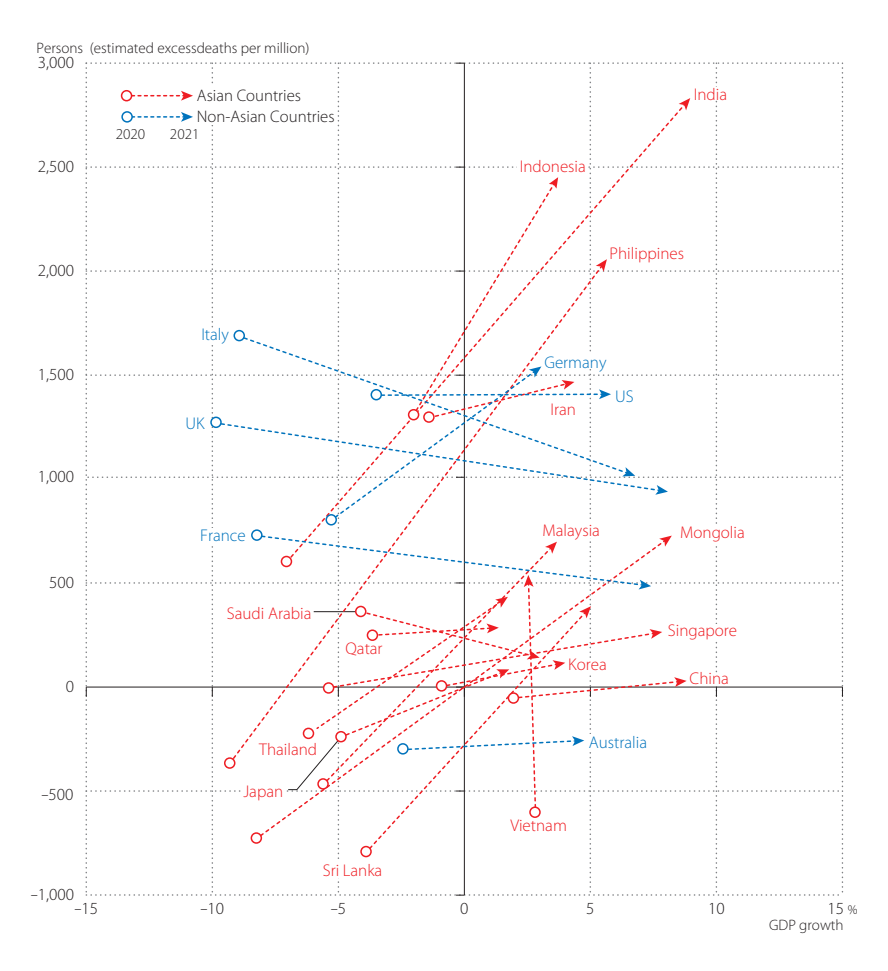

Figure B1.2 COVID-19 Excess Deaths and Economic Growth
——Flow of excess death and GDP growth of Asia countries and Non-Asian countries in 2020 and 2021

Unit: Persons (excess deaths) and year-on-year growth rates. Sources: WHO Estimates of Excess Mortality Associated With COVID-19 Pandemic, World Bank Open Data, OECD.Stat, and official quarterly national accounts in each country.

the estimated excess deaths and confirmed COVID-19 deaths during the year. This probably reflects the under-reporting of COVID-19 deaths and the overburdened hospitals and healthcare facilities. Strengthening the health systems should be the priority for these countries.

The cost of the COVID-19 pandemic consists of two parts: the economic cost and the health cost. Cutler and Summers (2020) estimated the total loss in the US due to COVID-19 as US$16 trillion, equivalent to 90% of annual GDP or US$200,000 per family with four members, half of which is the economic loss and the rest is the health loss by lacking a healthy life. The paper was published in October 2020 and estimated losses assuming that the disease containment would be completed by Autumn 2021. Counting unemployment insurance claims and mitigation policies borne by government debt as a loss, the estimate of economic loss seems realistic. The health loss counts costs of COVID-19-related deaths vis-a-vis "statistical lives" and reduced quality of life due to prognostic symptoms and mental health conditions. Of course, translating health losses into monetary terms would be controversial, but the magnitude of the estimate is still shocking. Policymakers should not neglect the health loss.

3 Overview of Economic Growth

Highlights

- The economic scale of Asia31 was 32.8 trillion US dollars in 2020 in terms of exchange-rate-based GDP, which is 57% greater than the US (Table 9). Japan was the largest economy in Asia until 2008. The following year, China overtook Japan's position to become Asia's largest economy (Figure 3).
- Regarding PPP-based GDP, Asia31 was 2.9 times that of the US in 2020 (Figure 5). In this measure, China has overtaken Japan as the largest Asian economy since 1999 and the US since 2016. In 2009, India surpassed Japan, replacing it as the second-largest economy in Asia. In the same year, the ASEAN also surpassed Japan (Table 10).
- The economic growth rate of Asia31 was 3.1% per year on average from 2015 to 2020 (Figure 6 and Table 11). The growth in China and India accounted for 54% and 15% of this regional growth, respectively (Figure 7).
- Japan was the highest among Asian countries in terms of per capita GDP until Singapore overtook it in 1991. In addition, the ROC and Korea overtook Japan in 2009 and 2018, respectively (Figure 10).
- The average per capita GDP of Asia31 was $13,900 in 2020, which is still 22% of the US level (Table 14). Chinese per capita GDP increased to $17,000 in 2020, 22% greater than the Asia31 average. The regional averages of the ASEAN6, South Asia, and CLMV were $14,500, $6,270, and $6,410, respectively, in 2020 (Figure 11). A huge per capita GDP gap between most Asian countries and the US is predominantly explained by the inferior performance of labor productivity (Figure 14).

From the mid-1980s, the story of the world economy belonged to Asia, featuring its steady rise in economic prominence. Figure 1 compares the growth rates of regional economies in the entire observation period 1970–2020 and our projection period 2020–2030 (as drawn with a dotted line). It is no surprise that the center of gravity in the global economy is gradually shifting towards Asia. In 2020, the Asian economy contributed 47% (43% for Asia25) of world output, compared with the US and the EU27, accounting for 16% and 15%, respectively, as shown in Figure 2. According to our projection for Asia25 and the rest of the world, the Asian share in world output will continue to rise, reaching 51% (47% for Asia25) by 2030.[6] In contrast, the output shares of the US and the EU27 will decrease to 14% and 13%, respectively.

To better understand the dynamics of long-term economic growth within the region, the remainder of this chapter details countries' diverse development efforts and achievements through cross-country level comparisons of GDP and other related performance indicators. To facilitate international level comparison, harmonized GDP for each country is expressed in its equivalent, in a common currency unit, customarily in the US dollar, using a set of conversion rates between the individual national currencies. The choices for conversion rates are the exchange rate and PPP.

3.1 Economy of Asia

Figure 3 presents the time-series level comparison of Japan, China, and the EU15, based on GDP at current market prices using exchange rates relative to the US.[7] The chart covers the entire observation period 1970–2020 and our projection period 2020–2030 (as drawn with a dotted line). A snapshot-level

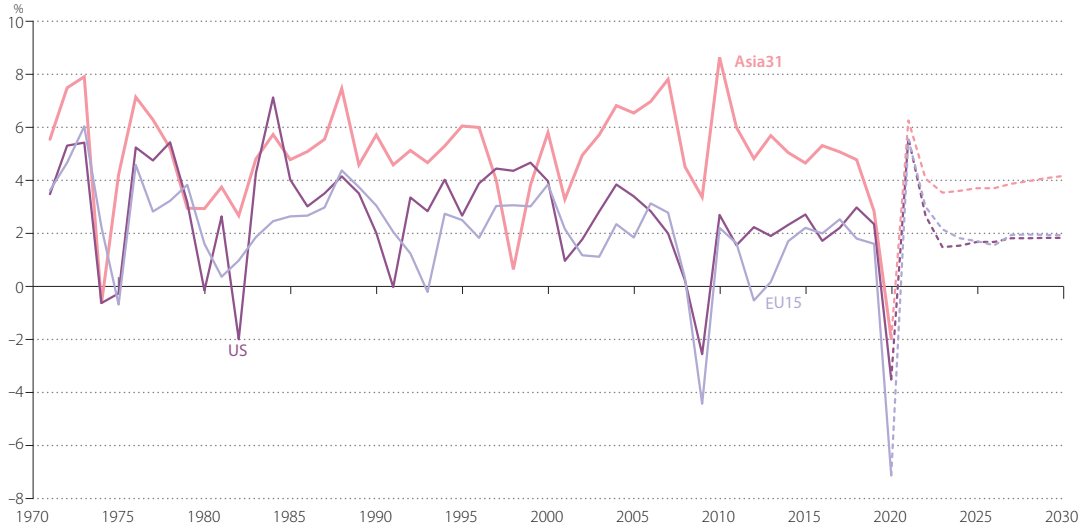

Figure 1 GDP Growth of Asia, the EU, and the US
——GDP growth in 1970–2020 and our projection in 2020–2030

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Our projections are drawn with a dotted line.

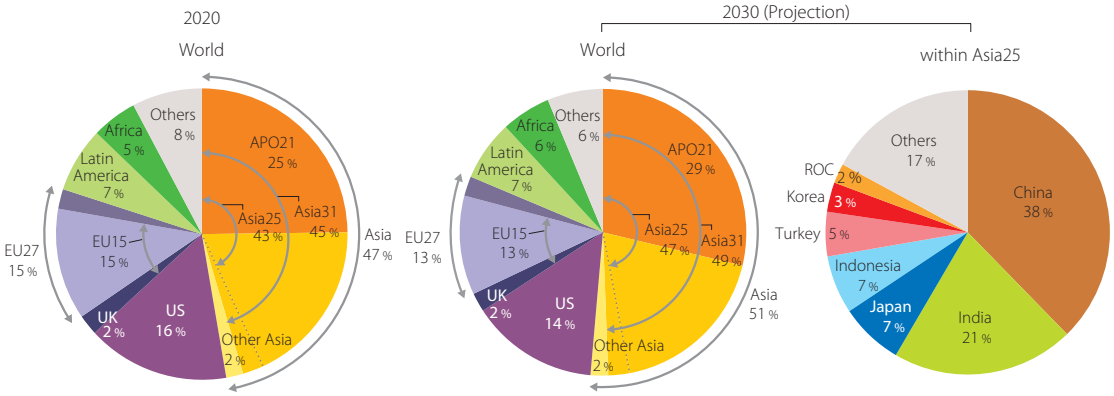

Figure 2 Asia in World GDP in 2020 and Projection for 2030
——Share of GDP using the 2017 PPP

Unit: Percentage (shares in US prices, reference year 2020). Sources: Our estimates for the Asia25 economies, IMF (2022) for the rest of the world, and our projections (Box 8).

comparison of all Asian countries is provided in Table 9 in Appendix 3. By this measure, Asia31 was 57% and 67% greater than the US and the EU15, respectively, in 2020. Japan was the largest economy in Asia until 2008. In the following year, China overtook Japan's position to become the second-largest economy

6: Our projections of economic growth for Asia25 are provided in Box 8. These reflect the economic growth in the first quarter of 2022, where available.

7: The exchange rates used in this *Databook* are the adjusted rates, which are called the Analysis of Main Aggregate (UNSD database) rates in the UN Statistics Division's National Accounts Main Aggregate Database. The AMA rates coincide with the IMF rates (which are mostly the annual average of market, or official exchange rates) except for some periods in countries with official fixed exchange rates and high inflation, when there could be a serious disparity between real GDP growth and growth converted to US dollars based on IMF rates. In such cases, the AMA adjusts the IMF-based rates by multiplying the growth rate of the GDP deflator relative to the US.

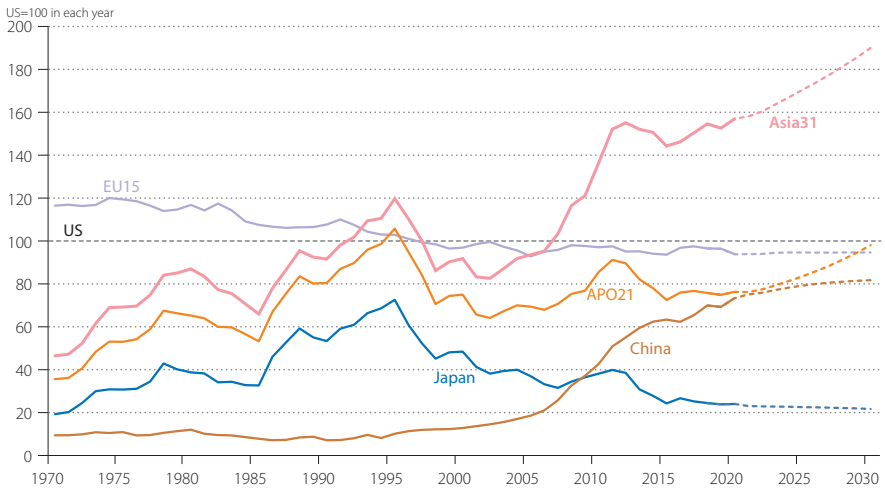

Figure 3 GDP using Exchange Rate of Asia and the EU, Relative to the US
——Index of GDP in 1970–2020 and our projection period 2020–2030, using the exchange rate

Unit: Index (GDP at current market prices in the US=100). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Our projections are drawn with a dotted line (exchange rates are assumed to be unchanged after 2020).

in the world, next to the US.[8] The turn of Japan's fortune came in the early 1990s. After that, stagnation in Japan, combined with vibrant growth in developing Asia, resulted in the rapid erosion of Japan's prominence in the regional economy.

Comparisons based on exchange rates, however, appear arbitrary as movements in exchange rates can be volatile and subject to short-term or substantial fluctuations of speculative capital flows and government intervention. Furthermore, comparisons based on exchange rates typically underestimate the size of a developing economy and, in turn, the perceived welfare of its residents. The scale of economy ranking changes dramatically in Asia when international price differences are considered.[9]

Figure 4 shows the extent to which the exchange rates have failed to reflect countries' price differentials relative to the US, based on the PPP estimates of the 2017 International Comparisons Program (ICP) round, published in April 2020.[10] Except for Australia, exchange rates systematically under-represent the relative purchasing power in 2017 and 2020 for all the countries covered in this report. Thus, the exchange-rate-based GDP considerably underestimates the economic scales in real terms for those countries. By considering the international price differentials, PPP rectifies the trade sector bias, and in turn, the relative size of economies can be more adequately measured.

By correcting international price differentials, Asia31 has been expanding rapidly. Figure 5 presents the level comparisons of real GDP for Asian regions, using PPP as conversion rates, while Table 10 in Appendix 3 presents cross-country comparisons. Based on GDP using constant PPP, the weight of the world

8: The productivity account for China was considerably revised in APO Productivity Database 2022, based on our study with Professor W. Erwin Diewert (University of British Columbia). See Appendix 2 for a brief explanation of our revision.
9: This is because exchange rates embody the trade sector bias (i.e., it is more influenced by the prices of traded than non-traded goods and services) and thus do not necessarily succeed in correcting the price differentials among countries. As developing economies tend to have relatively lower wages and, in turn, lower prices for non-traded goods and services, a unit of the local currency has greater purchasing power in the local economy than reflected in its exchange rate.
10: The cross-country level comparison has to face a larger opportunity to be revised, compared to the cross-country growth comparison. The revision on the PPPs from the ICP 2011 round, which has been used until the Databook 2019, is discussed in Appendix 1.

economy is even more tilted toward Asia in Figure 5 than portrayed by GDP using exchange rates in Figure 3. This reflects that nearly all Asian countries increase relative size after international price differentials have been properly considered. The size of Asia31 was 2.9 times that of the US in 2020, overtaking it in 1975. Figure 5 also shows the rapid expansion of the relative size of the South Asian economy, 78% of which was accounted for by India in 2020. The ASEAN also showed strength in their catch-up effort.

Figure 6 shows regional comparisons of real GDP growth, while Table 11 in Appendix 3 provides the numbers. Since the mid-1990s, the growth rates within Asia have been more pronounced in the CLMV and South Asia. However, the drivers of intraregional growth, reflecting the size of the economies, differ significantly. Figure 7 presents the country's contributions to gross regional products in Asia31. China and

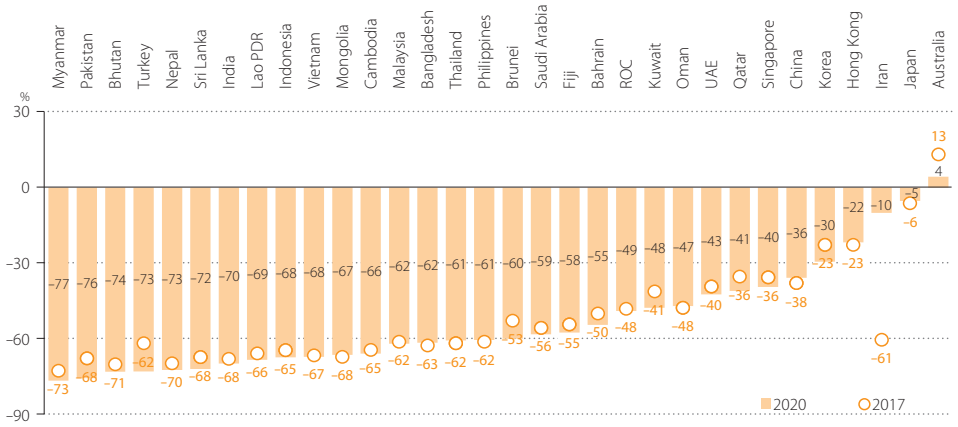

Figure 4 Price Differentials of GDP
——Price Level Index (PLI) for GDP (reference country=US) in 2017 and 2020

Unit: Percentage. Sources: World Bank (2020a) for PPP and United Nations Statistics Division (UNSD) for the AMA rates.
Note: The PLI is the ratio of PPP for GDP to the exchange rate.

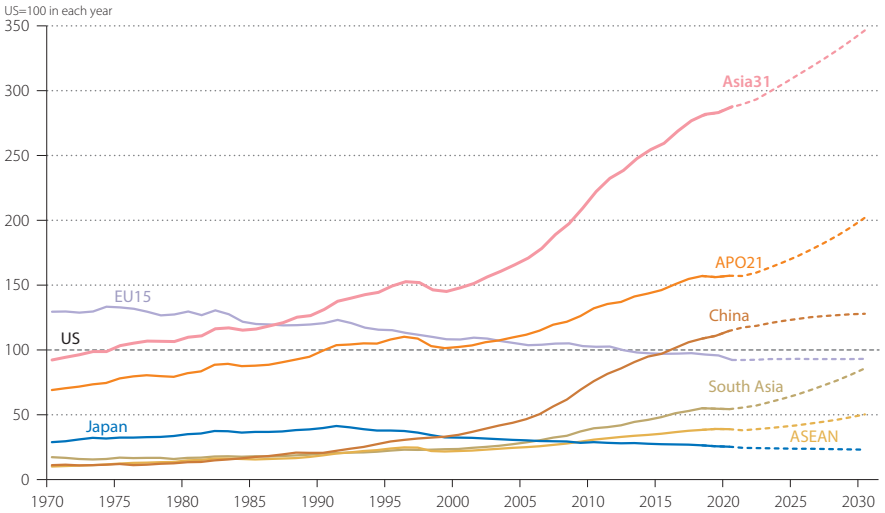

Figure 5 GDP of Asia and the EU, Relative to the US
——Index of GDP in 1970–2020 and our projection period 2020–2030, using the 2017 PPP

Unit: Index (GDP at current market prices in the US=100). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Our projections are drawn with a dotted line.

India have emerged as the driving force, propelling Asia forward since 1990 (Table 10). Growth in China and India accounts for 54% and 15% of the regional growth in 2015–2020. According to our projections discussed in Box 8, these trends are expected to continue through the 2020s. However, China's role in driving Asian economic growth is expected to decline to less than 40%, while the role of the Indian economy is expected to expand significantly to 26%.

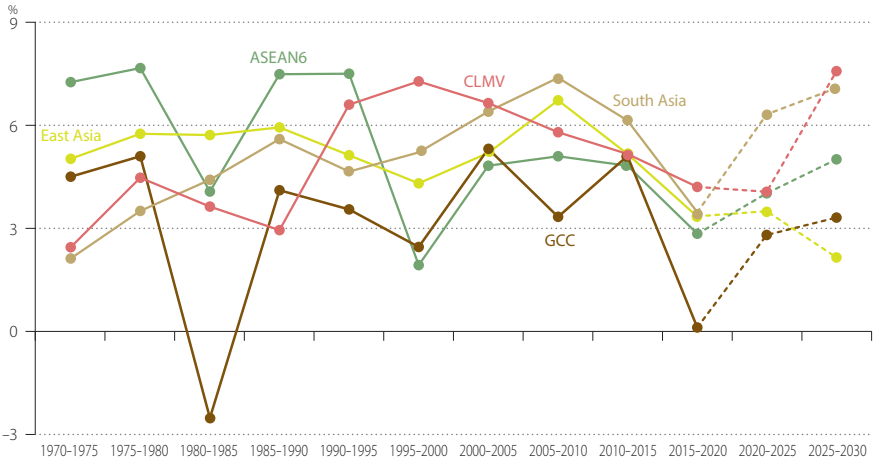

Figure 6 GDP Growth by Region
——GDP growth in 1970–2020 and our projection period 2020–2030, using the 2017 PPP

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Our projections are drawn with a dotted line.

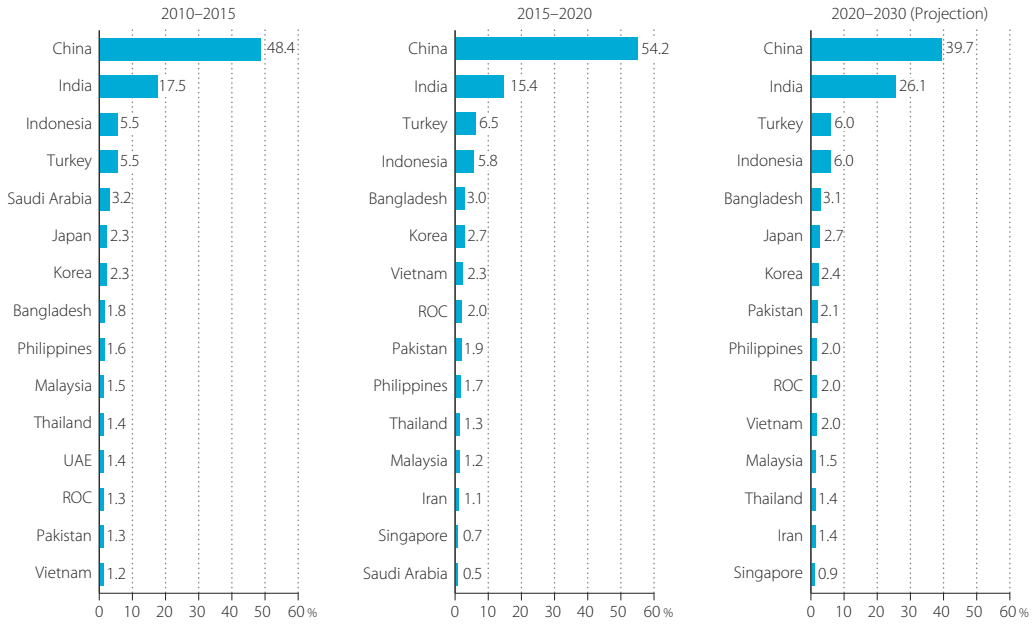

Figure 7 Country Contributions to GDP Growth of Asia
——Contribution share to the growth of gross regional products in 2010–2015, 2015–2020, and 2020–2030

Unit: Percentage point (average annual contributions) (the Asia31 growth=100). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Only the top 15 countries are presented. The average annual growth rate of GDP in Asia31 is 5.2% in 2010–2015, 3.1% in 2015–2020, and 2.0% in our projection period 2020–2030.

3.2 Per Capita GDP

Figure 8 presents the share of the current world population, illustrating that Asia is the most populous region in the world. In 2020, the population of Asia accounted for 59% of the world's population (56% for Asia31). In addition, there is a significant difference in the population among Asian economies, as shown in Table 12 in Appendix 3. The population of seven countries was more than 100 million in 2020, but the populations were less than 10 million in 11 economies of Asia31. Performance comparisons based on the whole-economy GDP in Section 3.1 do not consider the population, which can exaggerate the well-being of countries with large populations. Based on per capita GDP, which adjusts for the differences in population, China and India, two rising giants in the Asian economy, remain substantially less well-off in light of the US standard. Conversely, the Asian Tigers (Hong Kong, Korea, Singapore, and the ROC) thrive.

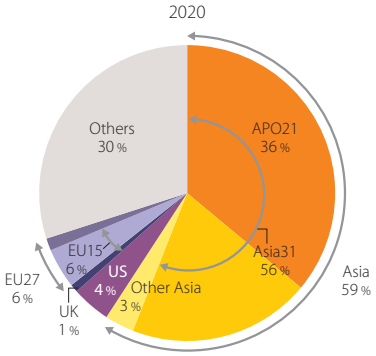

Figure 8 Asia in World Population
——Share of number of populations in 2020

Unit: Percentage. Source: United Nations (2019).
Note: See Box 2 for the future projection of populations.

Figure 9 shows per capita current-price GDP comparisons, using exchange rates as conversion rates, among Japan and the Asian Tigers relative to the US. A snapshot-level comparison is also presented in Table 13 in Appendix 3. It is worth noting that snapshot comparisons can appear arbitrary due to the volatile nature of exchange rates. The views found in Table 13 are considerably revised when focusing on production or real income per capita, using PPP as the conversion rate. Regarding per capita GDP at constant prices using PPP in Figure 10 and Table 14 in Appendix 3, Japan was the highest among Asian countries until Singapore overtook it in 1991.[11] Compared to Figures 9 and 10 highlights the dramatic development efforts of the ROC and Korea, which overtook Japan in 2009 and 2018, respectively. In other words, both countries' current per capita production level has been achieved against inexpensive exchange rates.

The relative performance of China and India, the two most populous countries in the world (1.41 billion and 1.38 billion in 2020, respectively), is diminished in this measure due to their population. Their per capita GDP is 27% and 10% of the US in 2020, respectively, as shown in Figure 11. The income gap between the US and most Asian countries is still sizable (the levels achieved by Asia31 and CLMV were 22% and 10% of the US, respectively),[12] indicating a significant opportunity for a catch-up.[13]

Table 14 in Appendix 3 also presents individual figures for seven oil-rich economies (the six GCC countries and Brunei). At first glance, figures in 1970, and to a lesser extent those in 1990, suggest these economies had remarkably higher per capita GDP than Japan and the US. However, the measurement of GDP as an indicator of production is misleading for these countries, as it erroneously includes proceeds

11: Based on the new benchmark revision in Japan's System of National Accounts by ESRI, Cabinet Office of Japan, published as of the end of 2020, the year when Singapore overtook Japan in terms of per capita GDP was revised from 1987 to 1991. From the ICP 2005 round to the ICP 2011 round, Singapore's GDP level has been revised to expand by 16% (see the right chart of Figure 91 in Appendix 1). Due to the revisions of SNA and PPPs, the catch-up years should be viewed with a range of about 5 years.

12: The informal economy is large in developing countries, and the official GDP may not fully reflect its size. Roubaud and Nghiem (2022) point to a significant underestimation of household business in Vietnam, arguing for a possible underestimation of about 20%, although its inclusion in the official GDP is not clear.

13: Per capita GDP may have underestimated the welfare of people in some economies. In the ROC, Hong Kong, and Japan, for example, GNI is consistently higher than GDP although the fluctuations are within +6%. The Philippines is the exception where the divergence between GNI and GDP has been increasing and has become significant for the past two decades, and GNI was more than 10% higher than GDP in the 2010s (Figure 73 in Section 7.1).

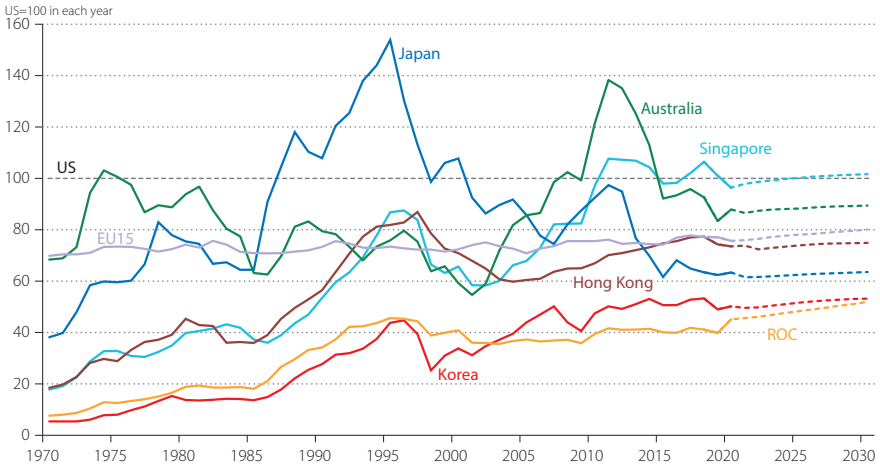

Figure 9 Per Capita GDP using Exchange Rate of Japan and Asian Tigers, Relative to the US

——Index of GDP per person in 1970–2020 and our projection period 2020–2030, using the exchange rate

Unit: Index (per capita GDP at current market prices in the US=100). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Our projections are drawn with a dotted line (exchange rates are assumed to be unchanged after 2020).

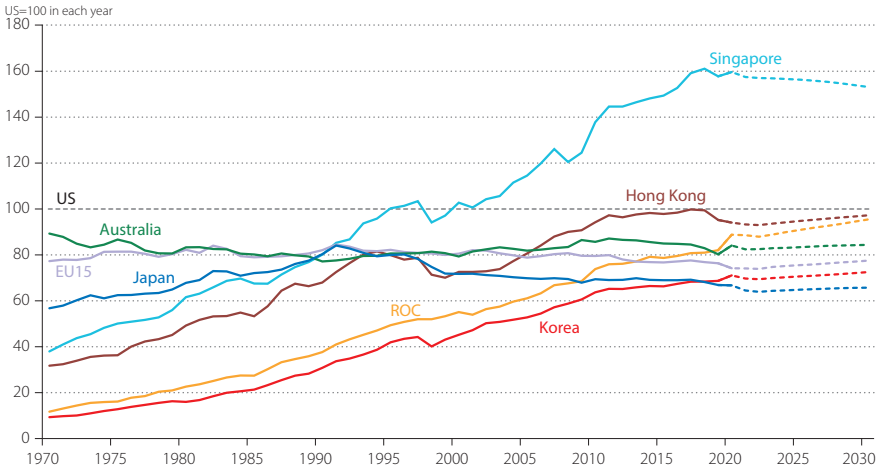

Figure 10 Per Capita GDP of Japan and Asian Tigers, Relative to the US

——Index of GDP per person in 1970–2020 and our projection period 2020–2030, using the 2017 PPP

Unit: Index (per capita GDP at current market prices in the US=100). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Our projections are drawn with a dotted line.

from liquidating a natural resource stock as part of the income flow. In other words, GDP overestimates income from the oil-exporting economies because it does not account for the depletion of their natural resource assets. To give a rough indication of the extent of distortion, Figure 12 provides comparisons of per capita GDP excluding mining sector production (e.g., crude oil and natural gas). The non-mining GDP per person in GCC economies, such as Bahrain, Saudi Arabia, and Kuwait, is almost identical to

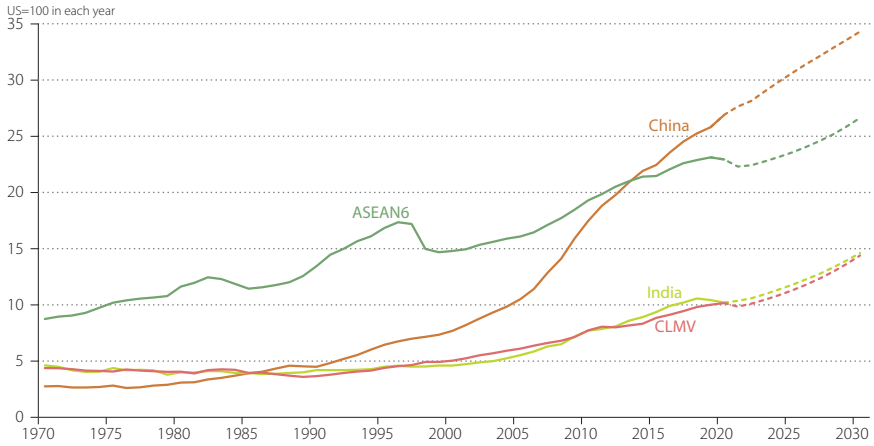

Figure 11 Per Capita GDP of China, India, and the ASEAN, Relative to the US
——Index of GDP per person in 1970–2020 and our projection period 2020–2030, using the 2017 PPP

Unit: Index (per capita GDP at current market prices in the US=100). Sources: Official national accounts in each country (including author adjustments) and our projections (Box 8). Note: Our projections are drawn with a dotted line.

Japan's, although the total GDP per capita is much larger. In Iran and Malaysia, the dependence on the mining sector is more moderate than in GCC in this period.

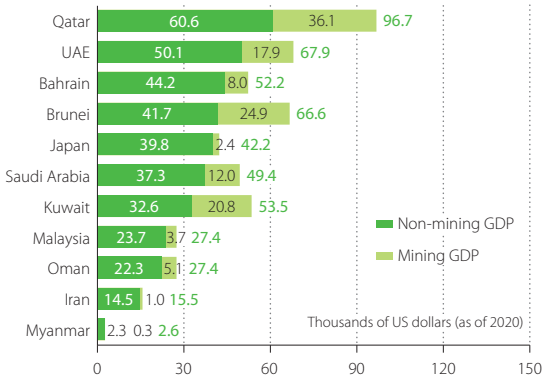

Figure 12 Per Capita Non-Mining GDP of Resource-Rich Countries and Japan
——GDP per person in 2020, using the 2017 PPP, reference year 2020

Unit: Thousands of US dollars (as of 2020). Sources: Official national accounts in each country, including author adjustments.

Catching up with the per capita GDP level of advanced economies is a long-term process that could take several decades. Empirical evidence suggests a negative correlation between per capita GDP level and the speed of catching up, with some exceptions. With the possibility of adopting successful practices and technologies from the more advanced economies, less advanced economies are poised to experience faster growth in per capita GDP, enabling themselves to catch up to average income levels. However, as their income levels approach the more advanced countries, their economic growth rates are expected to decline gradually over time. Figure 13 plots countries' initial per capita GDP levels against their respective average growth rates per year over the last half-century, from 1970 to 2020.

Table 1 summarizes Figure 13 by grouping countries with four levels of per capita income groups. The speed of catch-up with the US is defined as the difference in the average annual growth rate of per capita real GDP between each country and the US. It shows that many Asian countries have closed the gap in per capita real GDP with the US over the last four decades, although some are more successful than others. One can see that the initial economic level does not fully explain the catch-up process. If it did, the table would have been populated diagonally from the bottom left to the top right corner.

Table 1 Country Groups Based on the Initial Economic Level and the Pace of Catching Up

——Level and average annual growth rate of Per Capita GDP at constant market prices, using the 2017 PPP

Per capita GDP level in 1970, relative to the US	Average annual rate of catch-up to the US during 1970–2020					
	(A6) <–1%	(A5) –1% ≤–< 0%	(A4) 0% ≤–< 1%	(A3) 1% ≤–< 2%	(A2) 2% ≤–< 3%	(A1) 3% ≤
(B1) 60% ≤	Brunei, Kuwait, Qatar, Saudi Arabia, UAE	Australia, Bahrain, EU15, France, Germany, Italy, UK				
(B2) 20% ≤–< 60%		Fiji, Iran	Japan, Oman	Turkey	Hong Kong, Singapore	
(B3) 10% ≤–< 20%			Philippines		Malaysia	ROC
(B4) 0% ≤–< 10%			Bangladesh, Cambodia, Lao PDR, Nepal, Pakistan	India, Mongolia, Myanmar, Sri Lanka, Vietnam	Bhutan, Indonesia, Thailand	China, Korea

Sources: Official national accounts in each country, including author adjustments. Note: The annual catch-up rates are based on the difference in per capita GDP growth at constant prices between each country and the US during 1970–2020.

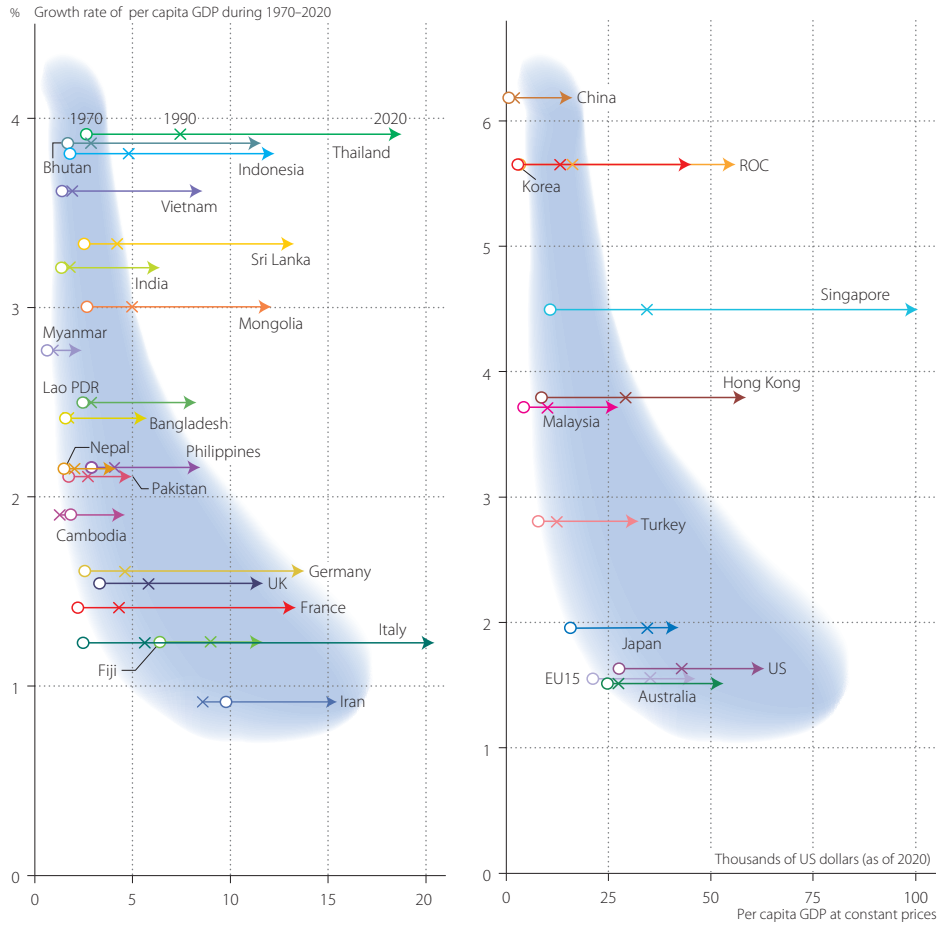

Figure 13 Initial Level and Growth of Per Capita GDP

——Level and growth of GDP in 1970–2020, using the 2017 PPP, reference year 2020

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country, including author adjustments. Note: The level of GDP per capita is based on 1970 as the initial point of the arrow, 1990 as the middle point, and 2020 as the end point of the arrow.

Box 2 Demographic Dividend of Asian Countries

The world's population is estimated at 7.8 billion for 2020, of which Asian countries account for 60%, according to the United Nations (2019). China and India each account for 18.5% and 17.7% of the world's population, respectively. It has been observed that falling fertility rates and rising living standards go hand in hand, although the direction of causality is less certain. The evolution of the demographic structure implies societal dynamics that are not captured by the overall population size or growth. As people's economic behavior, aspirations, and needs vary at different stages of life, changes in a country's age structure can significantly impact its economic growth via supply-side and demand-side impacts (Cooley and Henriksen 2018).

The growth rate of the world's population has slowed from its peak of around 2.0% in the 1970s to today's 1.0% per year. With falling fertility rates, the UN projects the world's population growth rate will decelerate to 0.50% per year by 2050 and further to 0.03% by 2100. Even so, the world population will still increase by one-third from today's 7.6 billion to 9.7 billion in 2050 and a further 12% to 10.9 billion by 2100. These estimates are based on the medium-fertility variant, but with only a slight variation in fertility, particularly in the more populous countries, the total could be higher (10.6 billion by 2050 and 15.6 billion in 2100) or lower (8.9 billion in 2050 and 7.3 billion in 2100). Figure B2.1 depicts this shift in the distribution of the world population with the share from the more developed regions gradually declining from 17% in 2015 to 13% in 2050 and 11% in 2100, compared with 32% in 1950. Conversely, the share of the least developed countries is depicted as rising from today's 13% to a projected 19% in 2050 and 28% in 2100, up from 8% in 1950.

According to the projection, Asia's share will decline from 60% today to 54% in 2050 and 43% in 2100, while Africa's share will rise from today's 16% to 26% and 39%, respectively. Figure B2.2 shows the population size of individual Asian countries compared with the 1970 level and its 2050 projection. This chart shows that China's population is expected to stabilize around the current level. China has socially engineered the change with its one-child policy, which has made its current population 300–400 million lower than it would have been otherwise. In less than two decades, India is projected to overtake China as the most populous country in the world.

Figure B2.3 shows the demographic make-up of countries in 2020 (the population proportions of the under-15 and over-65 age groups, which together make up the dependent population)—ranking the countries by the share of old-age population filters the rich economies to the top end. These economies also have a relatively low share of the young-age group compared to less developed countries. This suggests that demographic transition tends to run parallel with economic progress, although the direction of causation is not certain. As countries

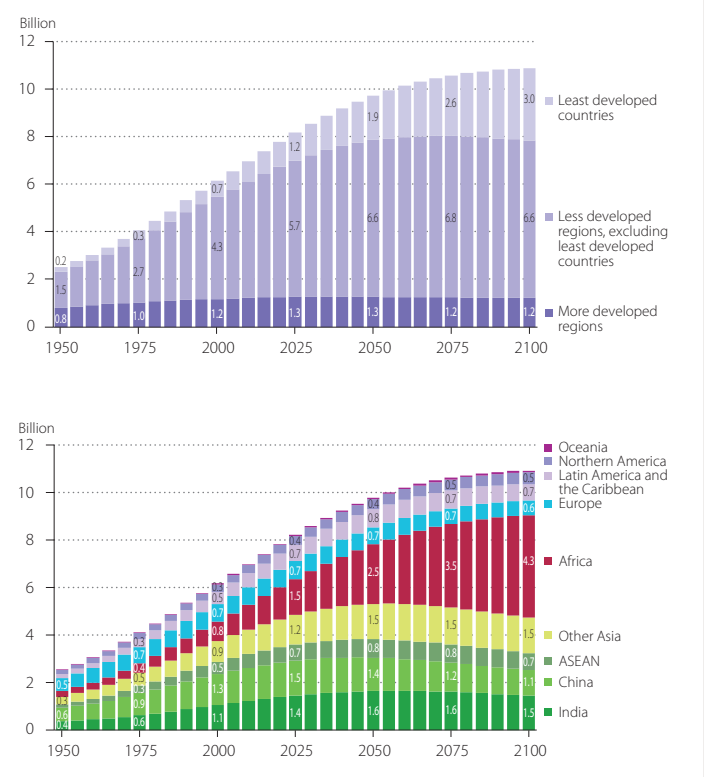

Figure B2.1 Distribution of the World's Population in Different Regions in 1950–2100

Unit: Billions of persons. Source: United Nations (2019).

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move from high to low mortality and fertility rates, the demographic transition produces a "boom" generation that is larger than those immediately before and after it. As this boom generation gradually works through a nation's age structure, it produces a demographic dividend of economic growth as people reach their prime.

Using demographic data since 1950 and UN projections up to 2100, Figures B2.4 and B2.5 track changes in the working population (aged 15-64) to dependent population (aged under 14 and over 65) by country and country group, respectively. The higher the ratio, the more favorable its demography for economic growth. Japan could have capitalized on the demographic dividend in the 1960s when its GDP growth was over 10% per year for ten years. Similarly, China, Hong Kong, Korea, Singapore, and Thailand were poised for the prospect of such a demographic dividend in the 2000s and 2010s, whereas, based on projections, some ASEAN countries, such as Myanmar and Indonesia, will have to wait for such opportunity until the 2020s and 2030s, and South Asian countries (except Sri Lanka) until the late 2030s and 2040s.

The reaping of this dividend, however, is far from automatic. Favorable demography can work wonders to produce a virtuous cycle of wealth creation only if it is combined with appropriate health, labor, financial, human capital, and growth-enhancing economic policies. These complementary factors cannot be taken for granted but need to be cultivated to earn the demographic dividend. As the analysis of the Databook shows, the contribution of labor to economic growth has been smaller than capital and TFP for most countries (Figure 40 in Section 5.3). This means that aging in countries is not as impactful if fairly high growth rates of capital and TFP are maintained. Nevertheless, understanding the demographic

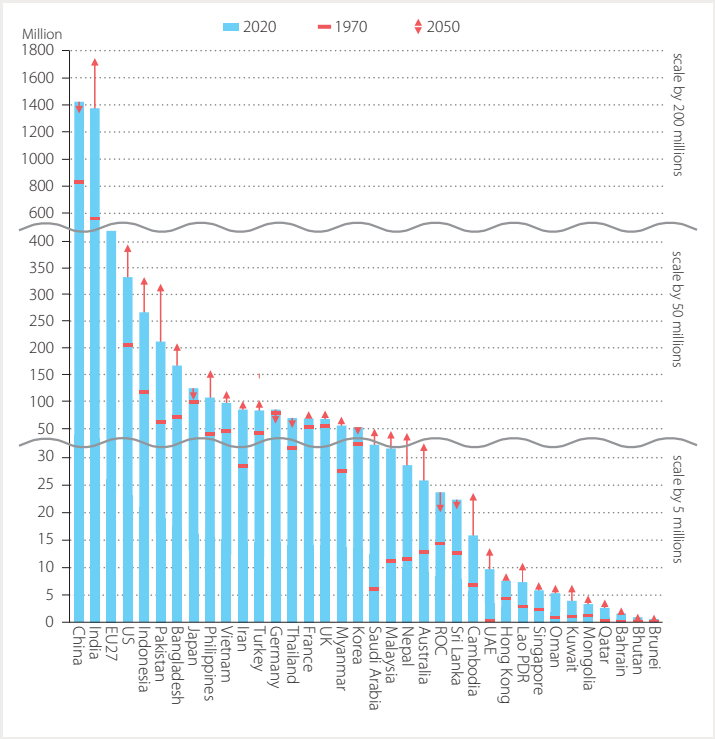

Figure B2.2 Asian Countries' Population Size and Projection in 1970, 2020, and 2050

Unit: Millions of persons. Source: United Nations (2019).

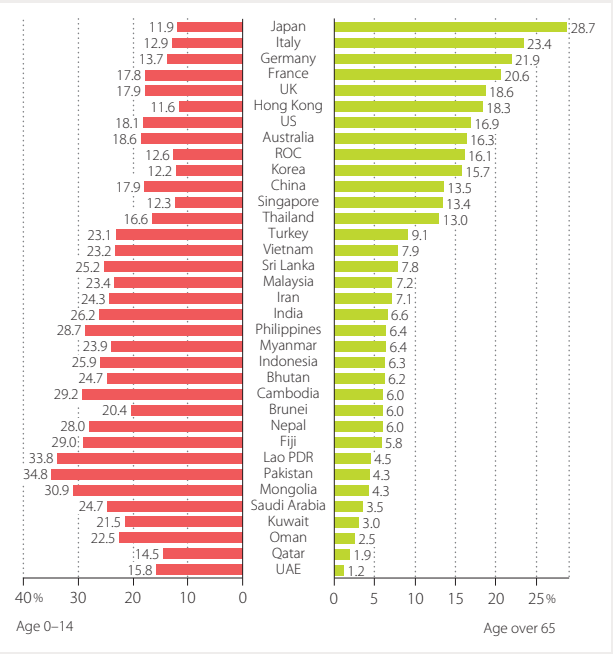

Figure B2.3 Proportion of the Dependent Population in 2020

Unit: Percentage. Sources: Population census and official national accounts in each country.

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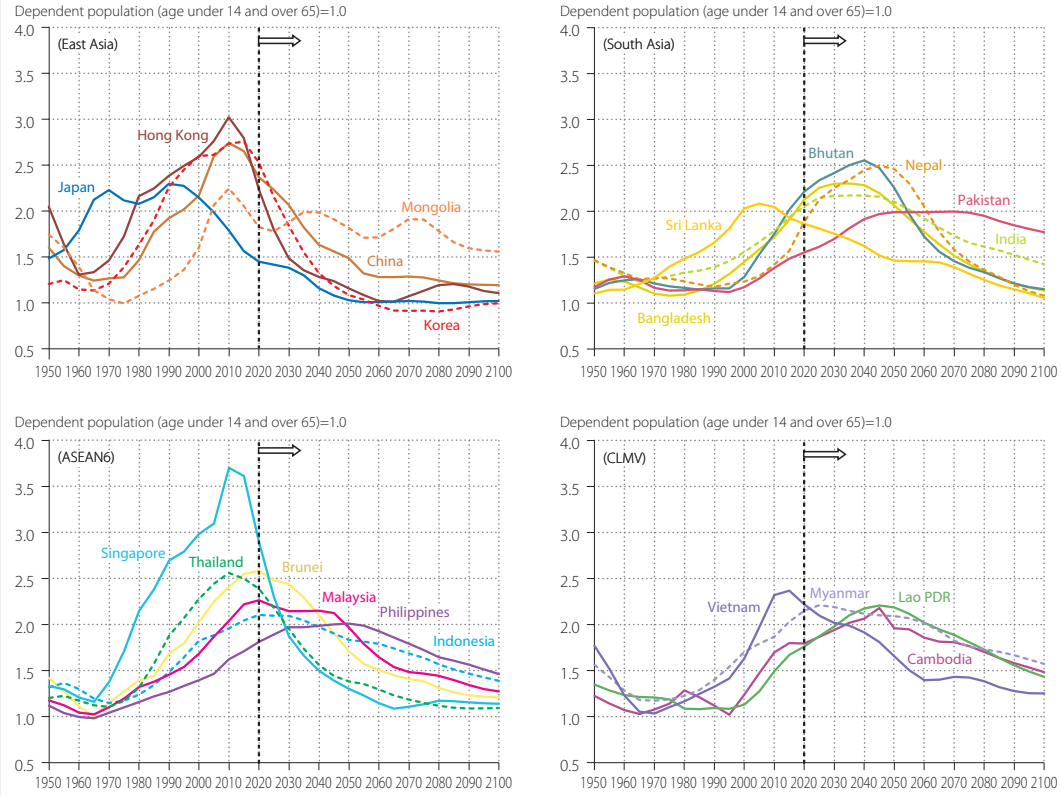


Figure B2.4 Demographic Dividend by Country in 1950–2100

Unit: Index (dependent population=1.0). Source: United Nations (2019).

shift and its implications is highly relevant for economic projections, providing valuable foresight for economic policy-making. In our projection of economic growth by 2030 (Box 8), the changes in demographic structure play an important role in forecasting not only hours worked for the entire economy but also qualitative changes in labor inputs.

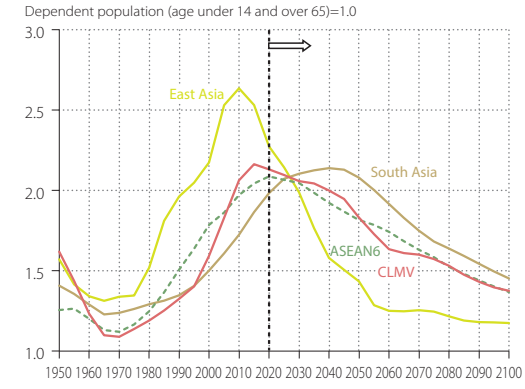


Figure B2.5 Demographic Dividend by Country Group in 1950–2100

Unit: Index (dependent population=1.0). Source: United Nations (2019).

3.3 Sources of Per Capita GDP Gap

To further understand the diverse performance of the Asian group, per capita GDP can be broken into two components: labor productivity (defined as real GDP per worker in this section); and the employment rate (defined as the ratio of workers relative to the population). Figure 14 shows the percentage point differences in per capita GDP decomposed into the contributions by the labor productivity gap and the employment rate gap relative to the US in 2020.[14] Most Asian countries display a huge per capita GDP gap with the US, and their inferior labor productivity performance predominantly explains this. In the Asian region, East Asia and CLMV have higher employment rates than the U.S., which has a modest but positive effect on reducing the gap.

Figure 15 explains a country's per capita GDP growth by its components: labor productivity growth and the change in the employment rate for 2010–2020.[15] About two-thirds of the countries increased the employment rate in this period. In most countries, however, labor productivity improvement as a share of per capita GDP growth has exceeded employment expansion. Thus, the key to closing this gap is to increase labor productivity. In many countries, such as the South Asian countries (except India) and the

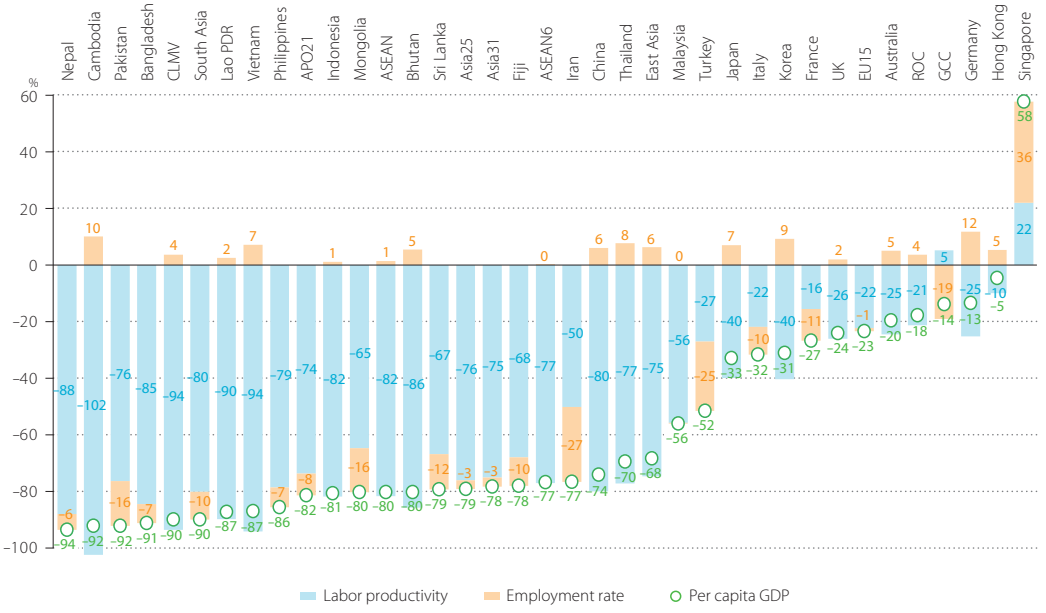


Figure 14 Sources of Per Capita GDP Gap, Relative to the US
——Differentials in per capita GDP in 2020, using the 2017 PPP

Unit: Percentage. Sources: Official national accounts in each country, including author adjustments.

14: The gap of country x's per capita GDP relative to the US is decomposed into the sum of the gap of labor productivity and employment rate with respect to the US, as in:
$\underbrace{\ln\left(GDP_x^t / POP_x^t\right) - \ln\left(GDP_{US}^t / POP_{US}^t\right)}_{\text{Gap of per capita GDP}} = \underbrace{\ln\left(GDP_x^t / EMP_x^t\right) - \ln\left(GDP_{US}^t / EMP_{US}^t\right)}_{\text{Gap of labor productivity}} + \underbrace{\ln\left(EMP_x^t / POP_x^t\right) - \ln\left(EMP_{US}^t / POP_{US}^t\right)}_{\text{Gap of employment rate}}$
where POP_x^t is population of country x in period t and EMP_x^t is the number of employment of country x in period t.

15: Country x's per capita GDP is decomposed into the product of its labor productivity and employment rate, as in:
$\underbrace{\ln\left(GDP_x^t / POP_x^t\right)}_{\text{Per capita GDP}} = \underbrace{\ln\left(GDP_x^t / EMP_x^t\right)}_{\text{Labor productivity}} + \underbrace{\ln\left(EMP_x^t / POP_x^t\right)}_{\text{Employment rate}}$ where POP_x^t is population of country x in period t and EMP_x^t is the number of employment of country x in period t.

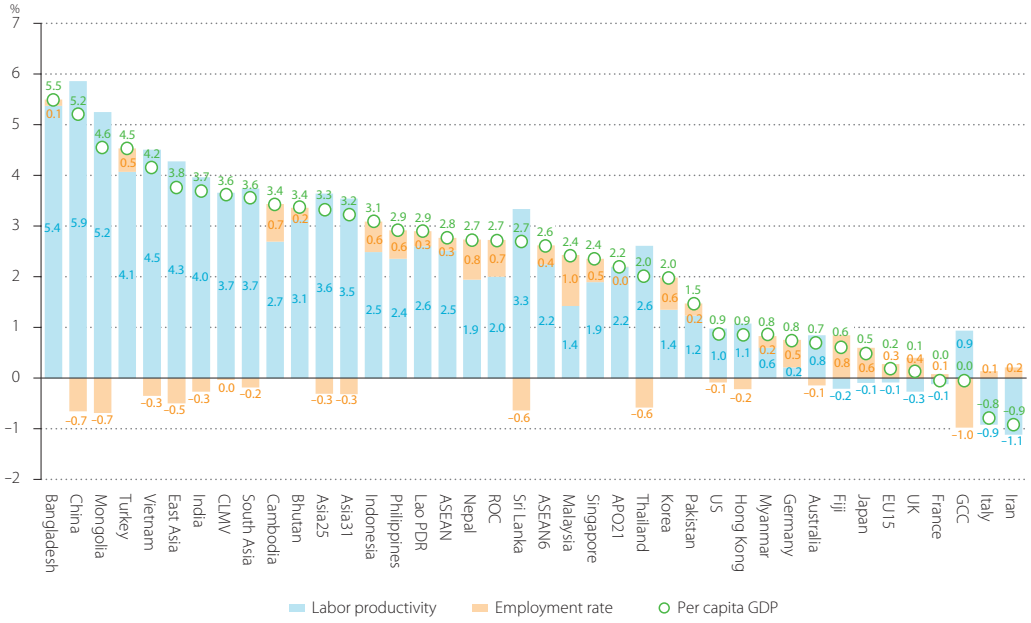


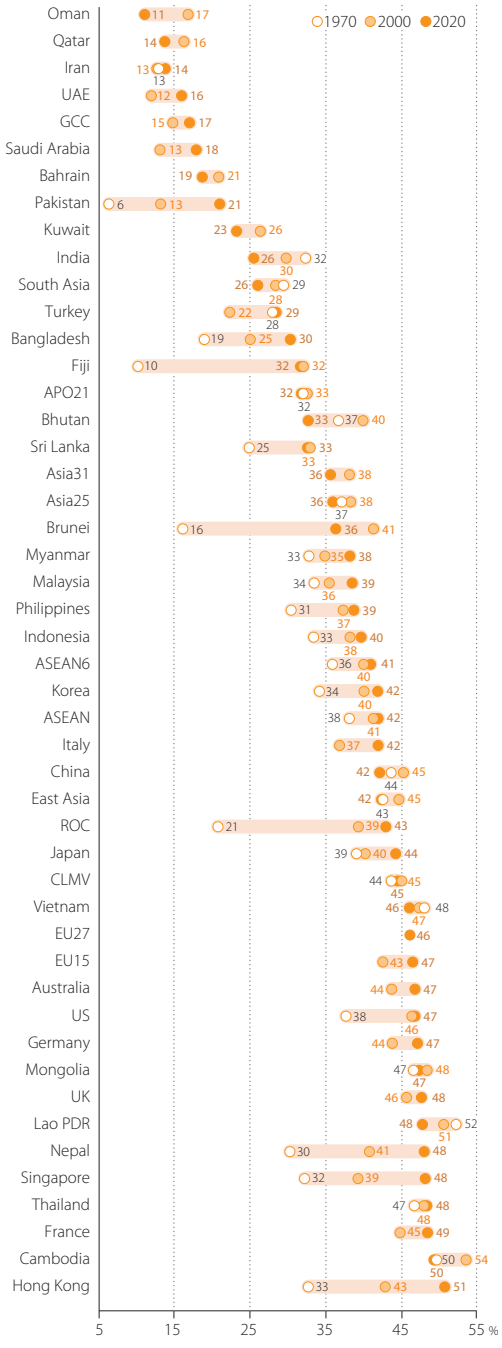
Figure 15 Sources of Per Capita GDP Growth
——Per capita GDP growth in 2010–2020, using the 2017 PPP

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country, including author adjustments.

Asian Tigers, the expansion of the female employment rate has been significant for over a half-century, as shown in Figure 16.

Asian countries still have significant growth potential, as shown in Figure 16. Especially in the Muslim countries of Iran, Pakistan, and Turkey, the employment rate is significantly less than in the US, at 14%, 21%, and 29% in 2020, respectively, further reinforcing the poor economic performances of these countries (Figure 14). With the lowest shares of female workers in total employment, their cultural norms account for why they are among the countries with the lowest employment rates.,

Figure 17 shows cross-country comparisons of employment rates in 1970, 2000, and 2020, based on the labor statistics of each country. Employment consists of employees, own-account workers, and contributing family workers. The fastest catch-up countries in Group–A1 (Table 1), i.e., China, Korea, and the ROC, are countries with the largest surge in employment rates over the past five decades. Some of the countries in Group–A2 (Table 1), such as Singapore and Malaysia, also experienced significant improvements in employment rates. Though there are some exceptions and impacts from COVID-19 in 2020; generally, countries that have not succeeded in closing the gap typically showed limited employment rate growth over the period.



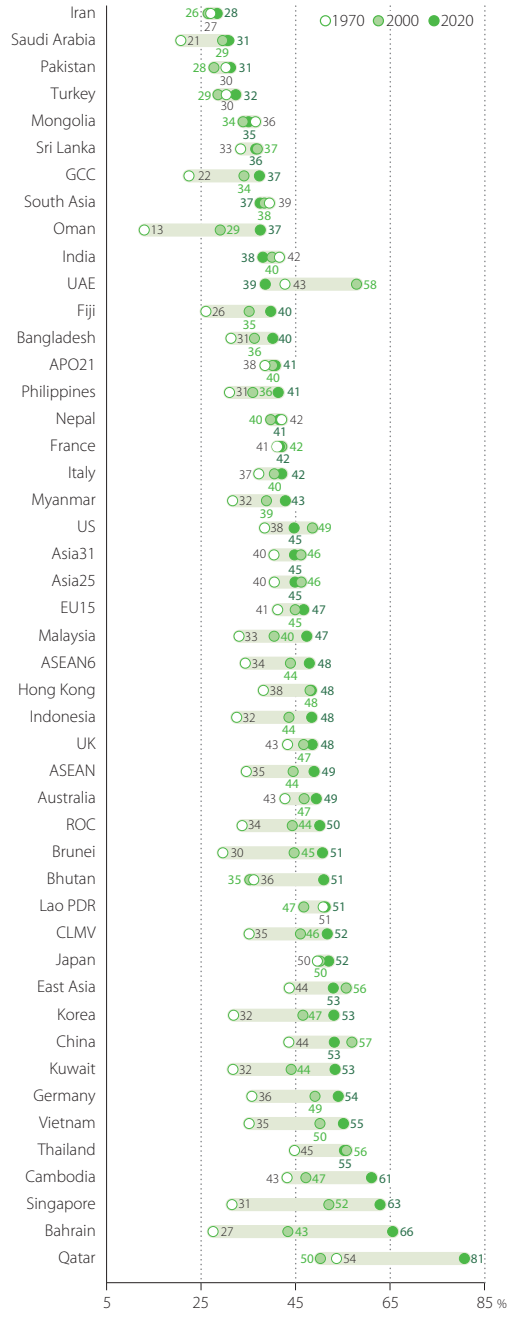


Figure 16 Female Employment Share

——Ratio of female workers to total employment in 1970, 2000, and 2020

Unit: Percentage. Sources: Population census and labor force survey in each country (including author adjustments), ILOSTAT database for GCC countries, Australia, EU15, France, Germany, Italy, and the UK; The EU Labor Force Survey (Eurostat) for the EU27.

Figure 17 Employment Rate

——Ratio of employment to total population in 1970, 2000, and 2020

Unit: Percentage. Sources: Employment and population data by national statistical offices in each country, including author adjustments.

4 Expenditure Growth

Highlights

- In 2020, Asia31 invested 33% of its GDP, well above the 21% of the U.S. and EU15. East Asia has the highest investment ratio (37%) among the Asian regions (Figure 18), driven by China's higher investment share of 43% (Figure 19). Reflecting the investment expansion, the consumption ratio of Asia31 has dropped to 50% of GDP in 2020 from 56% in 2000 (Figure 18 and Table 15).
- As a composition of investment, the expansions of IT and R&D capital are becoming more significant in some Asian countries. In the region, the IT and R&D investment shares for Asia25 are 7.6% and 4.8% in 2020, respectively, compared to 18% and 16% of the US (Figure 25).
- Net export shares in GDP are remarkably high in Singapore and the ROC, at 31.7% and 13.3% in 2020, respectively. In contrast, it peaked at 8.2% in 2007 in China and 12.2% in 2005 in Hong Kong. Since then, they have dropped 2.5% and 1.8% in 2020, respectively (Figure 26).
- The expansion of household consumption is the main engine of demand-side economic growth, contributing 48% of the regional growth of Asia31 from 2010 to 2020. Investment is another engine, contributing 37% of the Asia31 growth (Figure 20).

GDP is defined and measured by three approaches in SNA: production by industry, expenditure on final demand, and income to factor inputs. Demand-side decompositions of GDP are valuable in understanding the quality of economic growth. In this chapter, the economic insights are drawn from analyzing the expenditure side of GDP.

4.1 Final Demands

Figure 18 shows comparisons of final demand shares of nominal GDP among country groups, covering (1) household consumption, including consumption of non-profit institutions serving households (NPISHs), (2) government consumption, (3) investment or, in national accounts terminology, gross fixed capital formation (GFCF) plus changes in inventories, and (4) net exports (exports minus imports).[16] Country groups display distinctive features in their final demand composition, reflecting their development stage and economic makeup.[17]

In economies undergoing rapid transformation, however, the share of household consumption is more volatile and largely trends downward (Figure 18 and Table 15). Within Asia, all regions except GCC display a decline in household consumption ratios from 1970 to 2020. South Asia maintains the highest

16: The country comparisons are presented in Table 15 in Appendix 3. In theory, three approaches to measuring GDP are accounting identities and should yield the same result, but in practice, they differ by statistical discrepancies. Based on our Metadata Survey 2022 on national accounts for APO member economies, Japan is an exceptional country that determines GDP from its expenditure-side measurement (the expenditure-side estimate is based on the commodity flow data, in which the data on production/shipment in detail product classification are used as the controlled totals.). In other countries, GDP is estimated from the production side (value-added in industries). Some countries record statistical discrepancy as the difference in the estimates between production-based GDP and the sum of final expenditures. In the Databook, the statistical discrepancy is mainly attributed to household consumption when data is recorded. Readers should keep in mind that it can have some impact on the share of final demand.

17: Compared to the database used in the previous edition of the Databook (APO 2021), the constant price estimates in this edition reflect the revisions on final demand prices in the APO Productivity Database 2022. This includes the revisions on the final demand prices in Malaysia, Mongolia, Nepal, Turkey, Lao PDR, and GCC countries.

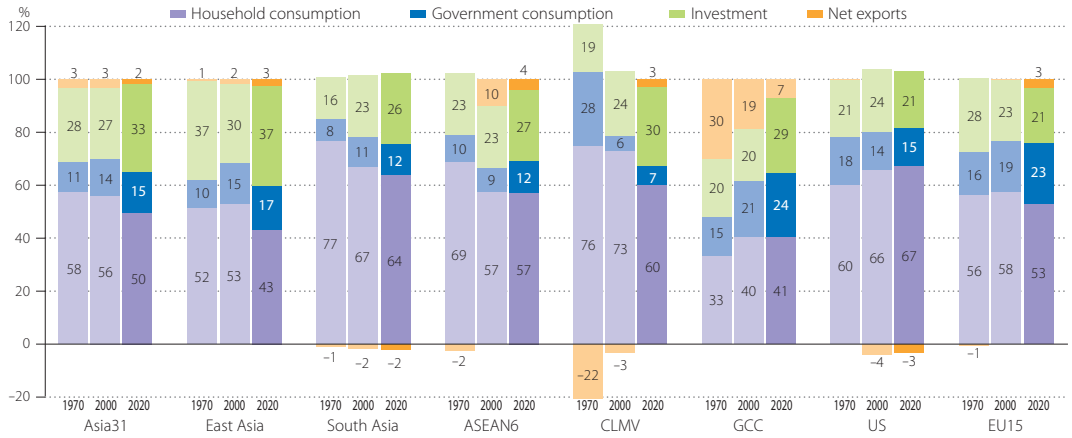


Figure 18 Final Demand Shares by Region
——Shares of final demands to GDP in 1970, 2000, and 2020

Unit: Percentage (current market price share). Sources: Official national accounts in each country, including author adjustments. Note: Final demand shares in the country groups are computed using the PPPs for GDP. Household consumption includes the consumption of NPISHs. The investment includes GFCF plus changes in inventories.

share, although dropped from 77% in 1970 to 64% in 2020. The rapidly decreasing trends are also found in CLMV, from 75% to 60% in the same period. In contrast, the US household consumption share has been climbing.[18] Overall, Asian countries invest significantly more than the US and the EU15 as a share of GDP. In 2020, investment accounted for 21% of final demand in the US and the EU15, compared with 33% for Asia31. East Asia has the highest investment ratio (37% in 2020) among the Asian regions in the entire period of our observation. Compared to other components of final demand, the contribution of net exports to the Asian economy has always been more volatile.

While there are some characteristics of regional averages, there are also large variations among countries. Figure 19 shows the cross-country comparisons of investment share in domestic final demand in 2000, 2010, and 2020. Countries are listed in descending order of GDP per capita, as shown in the reference chart at the left of Figure 19. In the top group, in terms of GDP per capita, investment expansion is remarkable in the GCC countries and Brunei. But a decline in the investment share since 2000 is evident in Singapore and Hong Kong, partly because of the impact of the COVID-19 pandemic. On the other hand, most of the least developed Asian countries, such as Bangladesh, Cambodia, Lao PDR, and Nepal, have steadily increased their investment share. However, investment share remains stagnant, especially in Fiji, Pakistan, and the Philippines, where the current per capita GDP is below $12,000.

While the main driver of economic growth from the demand side is the expansion of household consumption, the impact of investment growth is also evident in Asian countries. Figure 20 shows the decomposition of average annual economic growth by final demand in the 2010s.[19] Of the 4.2% average annual economic growth rate in Asia31 during this period, 2.0 percentage points came from household consumption, but investment was also close at 1.5 percentage points. In East Asia in particular, the contribution from investment expansion has outpaced that from household consumption over the past decade, reflecting a notable contribution in China.

18: It is worth noting that the GDP share of government consumption in the EU15 was higher than the average of Asia31 by 7.3 percentage points in 2020 (Table 15 in Appendix 3). In fact, when it comes to welfare measurement, actual individual consumption, as opposed to household consumption, is preferred because the former takes into account expenditures by NPISHs and government expenditures on individual consumption goods and services (such as education and health) in addition to household consumption.

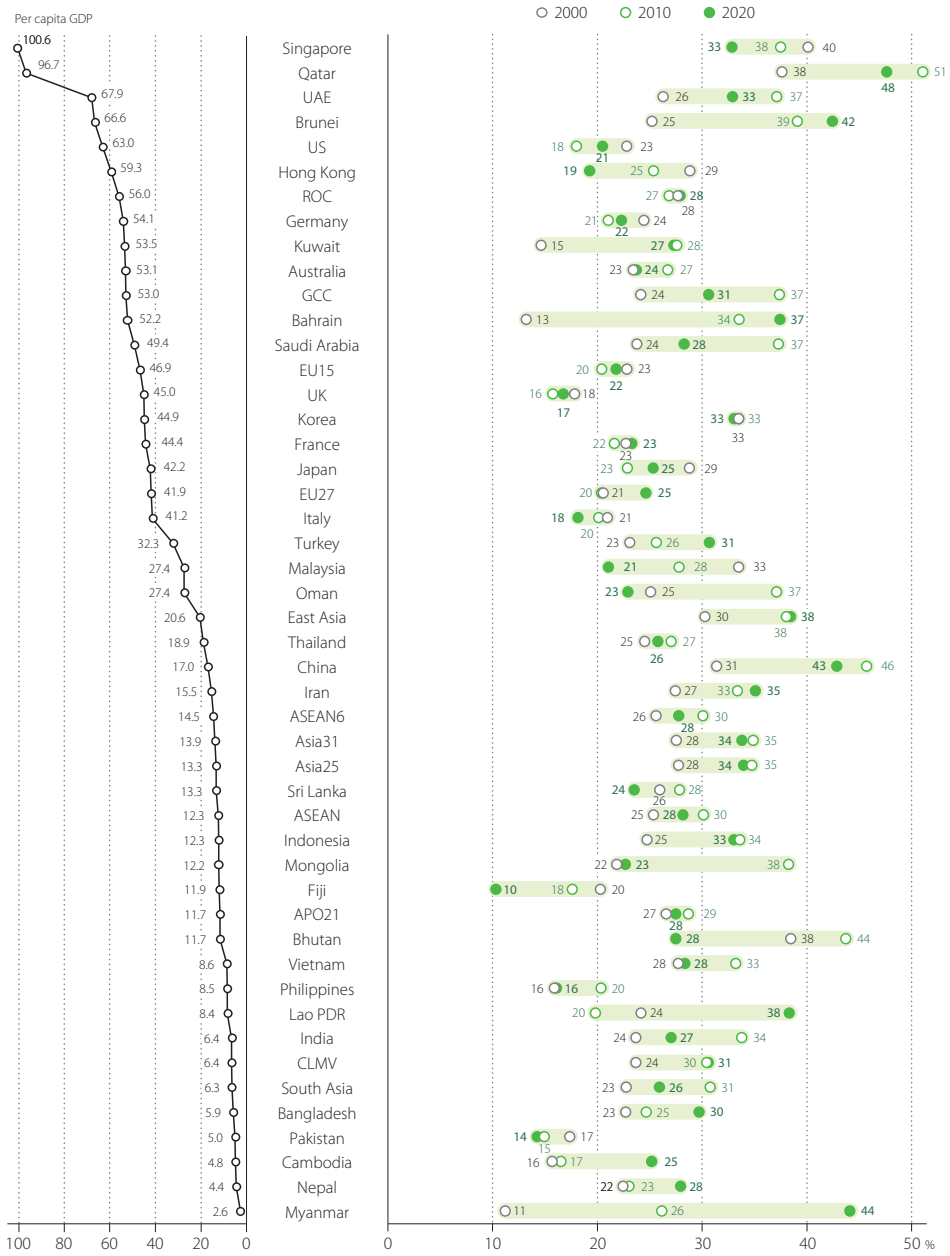


Figure 19 Investment Share by Country
——Share of investment to domestic final demand in 2000, 2010, and 2020

Unit: Percentage (current-price share). Sources: Official national accounts in each country, including author adjustments.
Note: The investment includes GFCF plus changes in inventories. The domestic final demand is the sum of investment and household and government consumption. The reference chart at the left shows per capita GDP at market prices in 2020, using the 2017 PPP, the reference year 2020 (thousands of US dollars).

19: The Törnqvist quantity index is adopted for calculating the growth of real GDP. Using this index, the growth of real GDP into the products of contributions by final demands can be decomposed:
$\underbrace{\ln\left(GDP^{t} / GDP^{t-1}\right)}_{\text{Real GDP growth}} = \underbrace{\sum_i (1/2)\left(s_i^{t} + s_i^{t-1}\right) \ln\left(Q_i^{t} / Q_i^{t-1}\right)}_{\text{Contribution of final demand } i}$ where Q_i^t is quantity of final demand i in period t and s_i^t is expenditure share of final demand i in period t. Thus, the real GDP growth may diverge from the official estimates or those presented in Table 11 in Appendix 3.

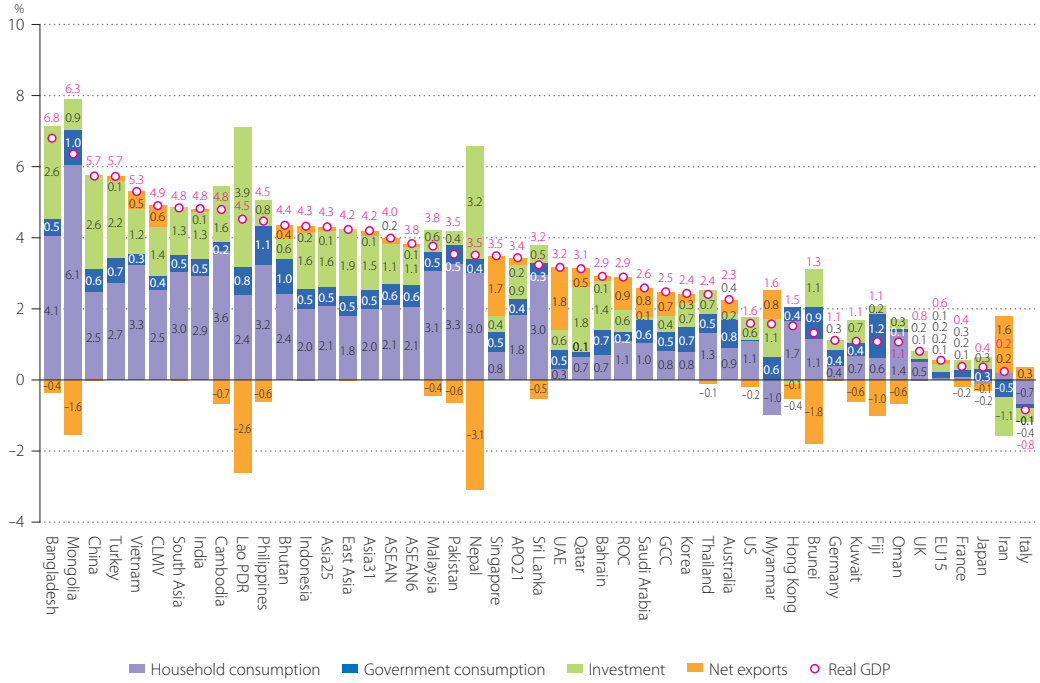


Figure 20 Final Demand Contributions to Economic Growth
——GDP growth and contributions of final demands in 2010–2020

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country, including author adjustments.

4.2 Demand Compositions

This section observes the characteristics of Asian countries concerning the factors that influence final demand decisions and their composition. The difference in demographic structure could partly explain the high consumption rate. Figure 21 shows that countries with a high proportion of the dependent population (aged under 14 and over 65) tend to have a high household consumption share in their domestic final demand. This is reflected by a higher propensity to consume by individuals in the dependent population and their savings-consumption choices. Asian countries where consumption as a share of domestic final demand is high enough to exceed 65% in 2015 are characterized by low-income countries with a dependent population ratio of 35% or more, such as Bangladesh, Cambodia, Nepal, Pakistan, and the Philippines. In these countries, except the Philippines, the declining trend in the dependent population in recent years seems to have affected the declining consumption share, as Figure 21 also shows the change from 2015 to 2020. However, in high-income countries such as Singapore, the ROC, Korea, and Japan, the increase in the dependent population, mainly because of aging, has not increased the consumption share but rather has decreased it.

The decomposition of household consumption reveals a tremendous diversity of consumption patterns among individual countries, partly reflecting their income levels and partly the idiosyncratic characteristics of the society. Figure 22 illustrates the cross-country version of Engel's Law, which states that basic necessities will account for a high proportion of household consumption for a lower per capita income group and vice versa. More specifically, countries where food and non-alcoholic beverages account for a large proportion of consumption tend to have low income, as shown in the reference chart at the left of Figure 22. The other end of the spectrum is occupied by the rich Asian countries, namely, the Asian Tigers

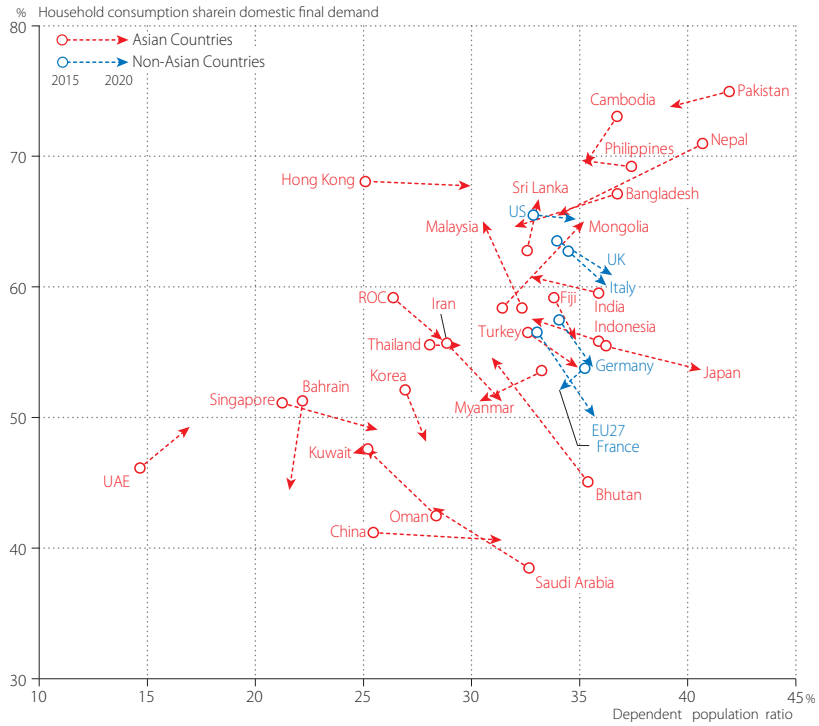


Figure 21 Dependent Population Ratio and Consumption Share
——Dependent population ratio to total population and consumption share in domestic final demand in 2015 and 2020

Unit: Percentage. Sources: Population data by the national statistical office in each country, World Bank (2022), and official national accounts in each country, including author estimates. Note: Dependent population is people aged under 14 and over 65.

and Japan. Besides food and non-alcoholic beverages, housing/utilities and transportation are the other large spending categories. In rich economies, these two categories account for larger shares in household consumption than food and non-alcoholic beverages. Idiosyncratic spending, such as education, in Cambodia, Korea, Mongolia, the Philippines, Singapore, and Vietnam (accounting for 5–6% of household consumption), and health in the US (accounting for 22%), are not reflected in other countries.

The role of foreign direct investment (FDI) in domestic investment differs considerably among Asian countries. Figure 23 shows the FDI inflows as a percentage of GFCF in 2015 and 2020, plus 2019 to present the impact of the COVID-19 pandemic. Especially in developing countries, FDI plays an important role in contributing to local human resource development and technology transfer. In 2020, the FDI inflows were over a 10% share of GFCF in 12 countries of Asia31. In particular, they are outstanding in the two global cities, Hong Kong (201% of GFCF) and Singapore (125%), Cambodia (58%), Mongolia (55%), Fiji (45%), and Vietnam (23%). On the other hand, Japan (0.8%), Iran (0.4%), Bhutan (0.3%), Kuwait (–1.2%), Qatar (–3.8%), and Thailand (–5.0%), the country hardest hit by the pandemic, saw very low FDI inflows in the same year. FDI is unlikely to experience rapid capital outflows in the short term. In May 2022, Sri Lanka defaulted for the first time since its independence in 1948,[20] and its FDI inflow was as low as 2–3% of GFCF during this period, suggesting an increased reliance on indirect investment and failure to increase direct investment.

20: Financial Times, "Sri Lanka becomes first Asia-Pacific country in decades to default on foreign debt", 19 May 2022. On July 5, Prime Minister Ranil Wickremesighe told Parliament that Sri Lanka is "bankrupt."

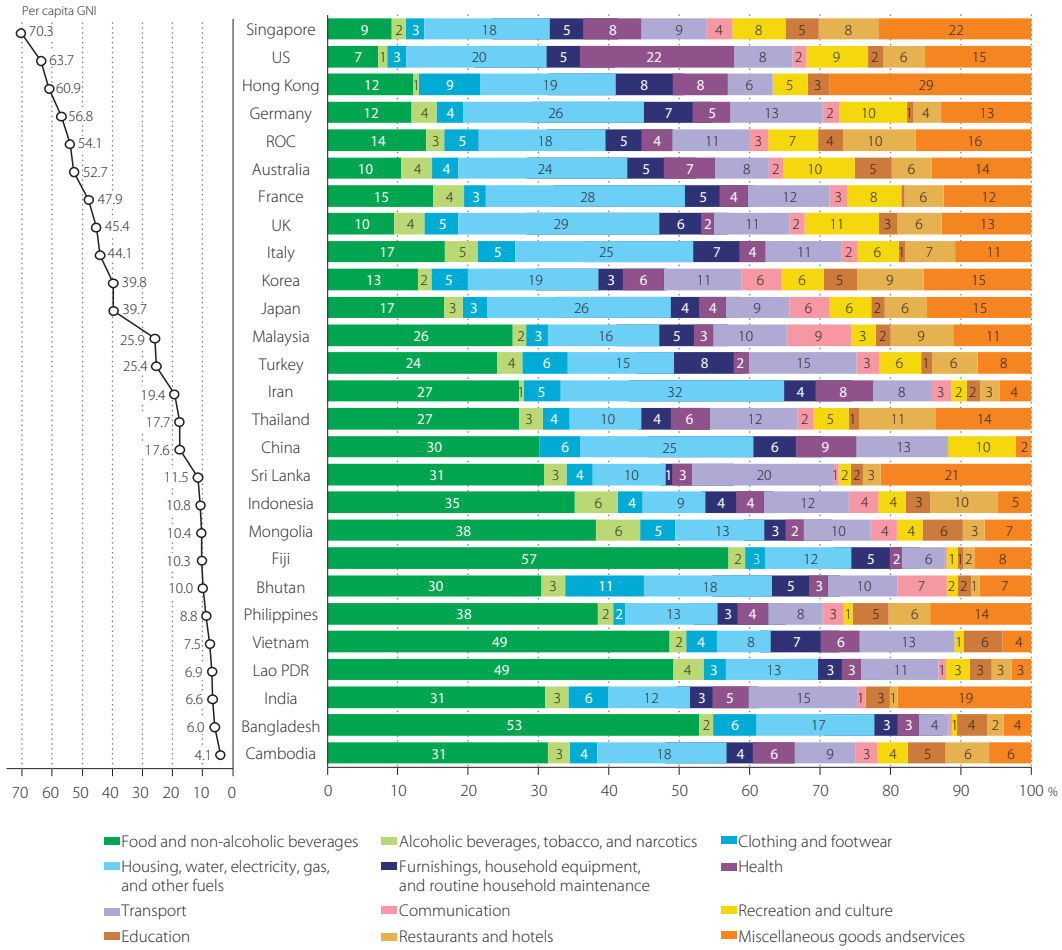


Figure 22 Household Consumption by Purpose
——Share of household consumption by purpose in 2020

Unit: Percentage (current-price share). Sources: Official national accounts in each country. Note: For data of Hong Kong, transportation includes communication; recreation and culture includes hotels; miscellaneous goods and services includes restaurants. For data of China, food and non-alcoholic beverages includes alcoholic beverages, tobacco, and narcotics; transportation includes communication; recreation and culture includes education. For data of Vietnam, transportation includes communication. For Fiji, the Lao PDR, and Vietnam, the observation periods are 2009, 2005, and 2016, respectively. The reference chart at the left shows per capita GNI in 2020, using the 2017 PPP for household consumption, the reference year 2020 (thousands of US dollars).

It is an important policy target for low-income countries to create a business-enabling environment, just as it is important for middle-income countries to improve various business environments. Based on the EIU's (Economist Intelligence Unit, *The Economist*) ranking (covering 82 countries worldwide),[21] Singapore and Hong Kong are in the top 10% of the covered countries. Figure 24 plots the business environment score and the FDI inflows ratio (as the average in 2015–2020) in the countries presented in Figure 23, excluding the countries where the FDI inflows ratio is over 25%. In Iran, Pakistan, Bangladesh, and

21: The EIU's business rankings model examines 10 separate criteria or categories, covering the political environment, the macroeconomic environment, market opportunities, policy towards free enterprise and competition, policy towards foreign investment, foreign trade and exchange controls, taxes, financing, the labor market and infrastructure. Each category contains a number of indicators that are assessed by the EIU for the last five years and the next five years. The number of indicators in each category varies from 5 (foreign trade and exchange regimes) to 16 (infrastructure); and there are 91 indicators in total. Each of the 91 indicators is scored on a scale from 1 (very bad for business) to 5 (very good for business). Bhutan, Brunei, Cambodia, Fiji, Lao PDR, Mongolia, Myanmar, Oman, and Nepal are not covered in EIU.

Sri Lanka, improving the business environment is necessary for attracting FDI. Although Japan is one of the countries with the lowest FDI ratio, as shown in Figure 23, this cannot be explained by a poor business environment, suggesting the presence of other factors such as domestic regulations and high electricity prices.

Figure 25 focuses on investment components, showing the nominal GFCF share of five types of assets for Asia25 economies and regions in 2020.[22] Countries are listed in descending order of the GFCF share in GDP, as shown in the reference chart at the bottom of this figure. For most Asian countries, particularly those where GFCF as a percentage of GDP is greater than 25%, investment is still very much construction-based (i.e., dwellings, non-residential buildings, and other structures). However, the expansion of IT capital and R&D is becoming more significant in some countries like Singapore (42% of the GFCF), exceeding the US (34%), Japan (26%), Korea (25%), ROC (23%), Hong Kong (20%), Malaysia (20%), and Thailand (17%)—even at the current price comparisons.[23]

Some Asian countries experienced drastic changes in the international division of labor (Box 3). Figure 26 plots the long-term trend of net export share in GDP from 1970 to 2020. Net exports, which were previously a significant drag on Singapore and Korea in the 1970s, have improved their position rapidly. The shares of net exports in Singapore and ROC are remarkably high, at 31.7% and 13.3% in 2020, respectively. In contrast, shares of net exports peaked at 8.2% in 2007 in China and 12.2% in 2005 in Hong Kong. Since then, they have declined to about 2% (2.5% and 1.8% in 2020,

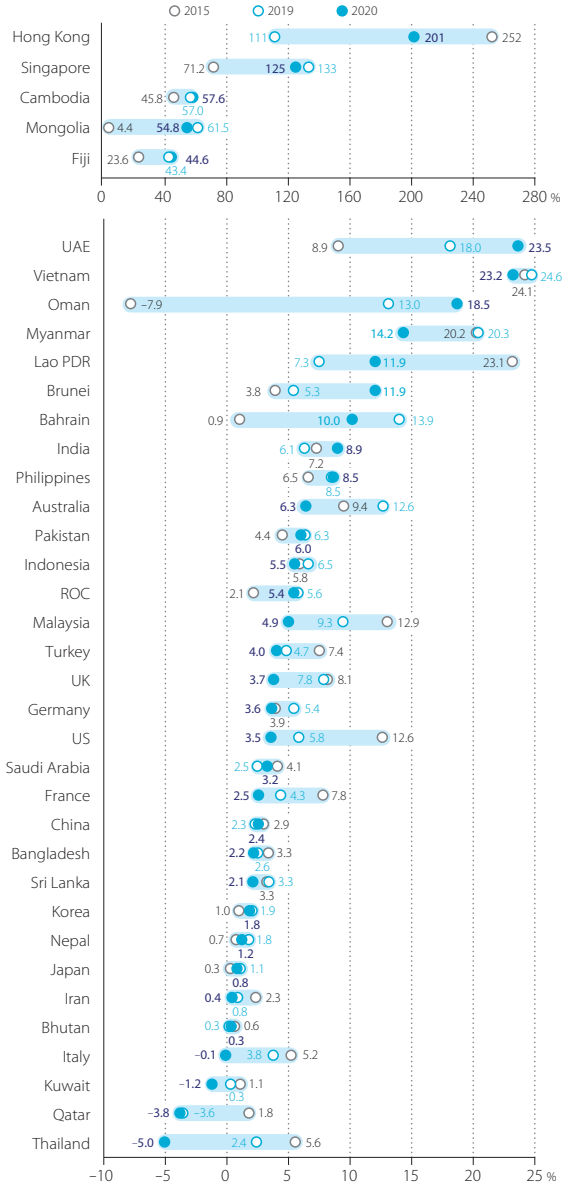


Figure 23 FDI Inflows
——FDI inflows as a percentage of GFCF in 2015, 2019, and 2020

Unit: Percentage. Sources: United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2021*, and APO Productivity Database 2022.

22: The investment data by type of assets includes our own estimates for the countries where data is not available in their official national accounts (Section 9.2). Although our GFCF estimates are constructed based on 11 classifications of assets (Table 4 in Section 9.2.2), they are aggregated into five groups of assets for the purposes of this figure. The IT capital is defined as IT hardware, communications equipment, and computer software.

23: Box 5 discusses the IT (hardware and software) and R&D capital stocks and their implications. This edition of the Databook reflects the revised estimates on IT software investment, developed in APO Productivity Database 2021 (Section 9.1.4).

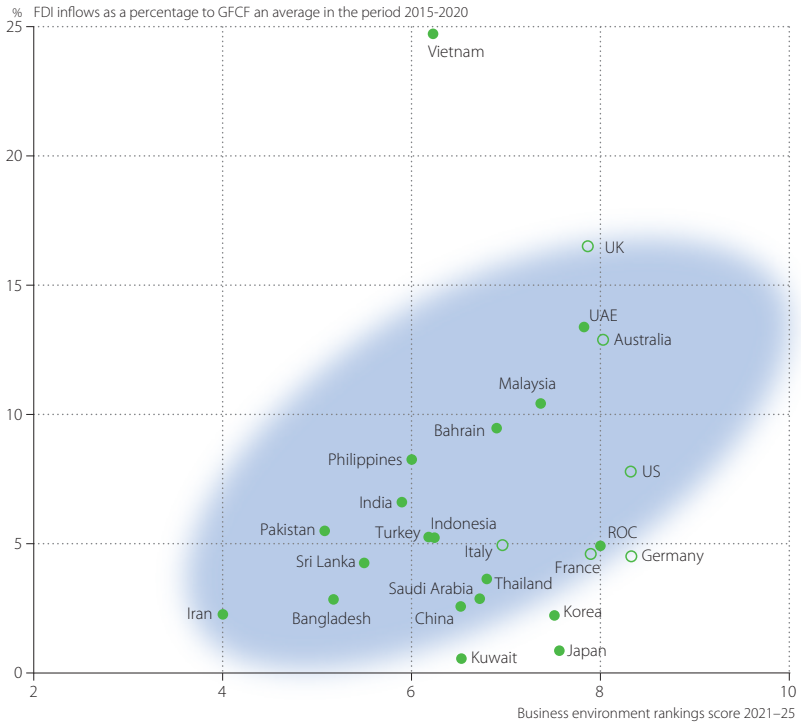


Figure 24 FDI Inflow Ratio and Business Environment
——FDI inflows as a percentage of GFCF in 2015–2020 and business environment score

Unit: Percentage for the vertical axis and score for the horizontal axis. Sources: United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2021*, The Economist, The Economist Intelligence Unit 2020, 2021, and 2022, and APO Productivity Database 2022. Note: The evaluation period is 2022–2026 for Bahrain, Indonesia, Iran, Kuwait, and Singapore.

respectively), much lower than the levels in Germany and Italy as reference countries, as shown in the right chart. Japan had enjoyed a trade surplus for most of the period compared, but its trade balance turned negative amounting to –0.6% in 2011, deepening to –2.6% in 2014, due to the shutdown of its nuclear power plants resulting from the Great East Japan Earthquake in March 2011.

As a composition of net exports, Figure 27 presents the export and import shares in GDP in 2020. In 2020 the shares in Singapore exports were at 182%, and 177% in Hong Kong, reflecting their port function in Asia. This explains why the total values of exports and imports are exceptionally high relative to the size of GDP in these economies.[24] About two-thirds of countries realized a trade surplus in Asia. However, Nepal and Bhutan, whose currencies are tied to the Indian rupee, suffered serious trade deficits of 35% and 17% in 2020, respectively. Compared to the previous edition of the Databook (APO 2021), the impact of the COVID-19 pandemic on tourism has been particularly significant in Fiji, with a deterioration of 7 percentage points to –17%.[25]

24: The 2008 SNA requires that the trade values should be recorded to reflect a change in ownership of goods, rather than accounting for goods moved for processing without incurring actual transactions. Singapore and Hong Kong already introduced the 2008 SNA. However, the revisions from the 1993 SNA on the export and import data were very minor.

25: The impact of the pandemic on Fiji's economic growth was enormous, with the country's GDP growth rate falling to –18.8% from 2019 to 2020, the largest among Asian countries except Myanmar (–26.7%), which was descending into a state of civil war (Table 11 in Appendix 3).

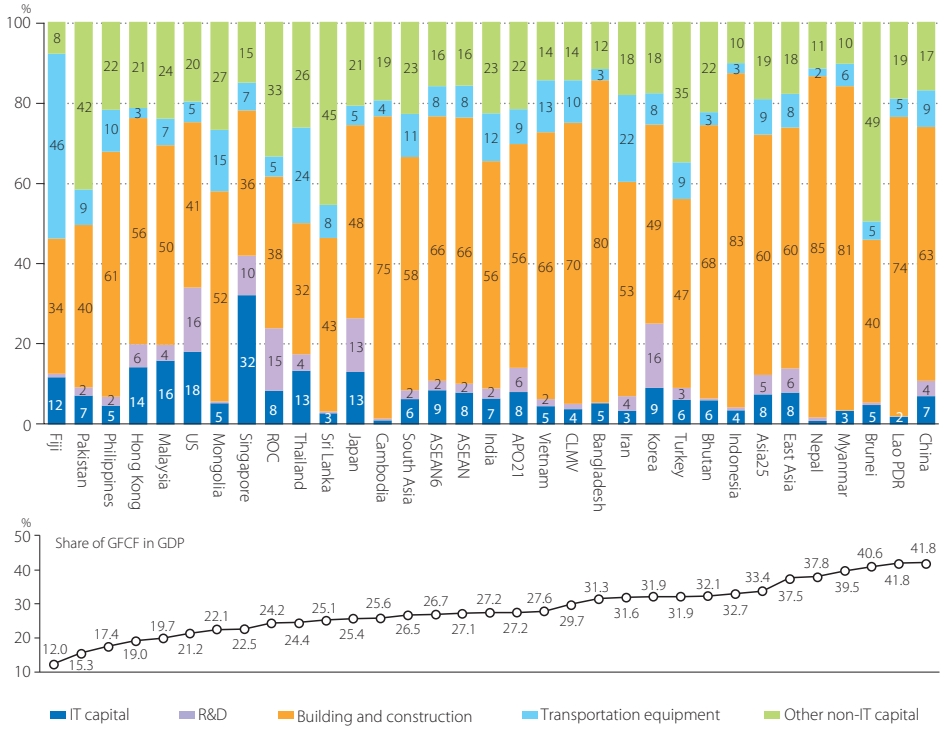


Figure 25 Investment Share by Type of Asset
——Share of GFCF by type of produced assets in 2020

Unit: Percentage. Sources: Official national accounts in each country (including author adjustments) and APO Productivity Database 2022. Note: Numbers in parentheses of the assets correspond to the code of produced assets, defined in Table 4 in Section 9.2.2.

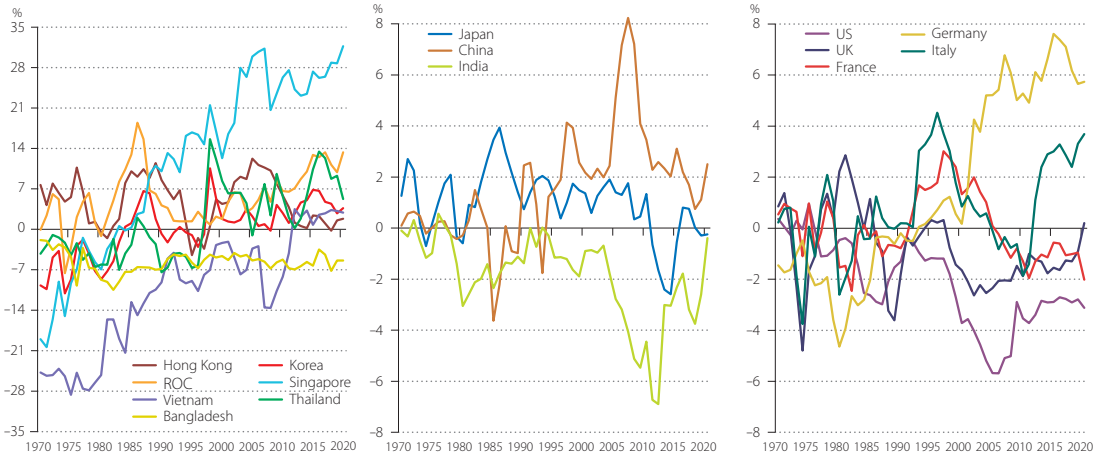


Figure 26 Net Export Shares in GDP of Asian Tigers, China, and Japan
——Shares of net exports to GDP in 1970–2020

Unit: Percentage (current market price share). Sources: Official national accounts in each country, including author adjustments.

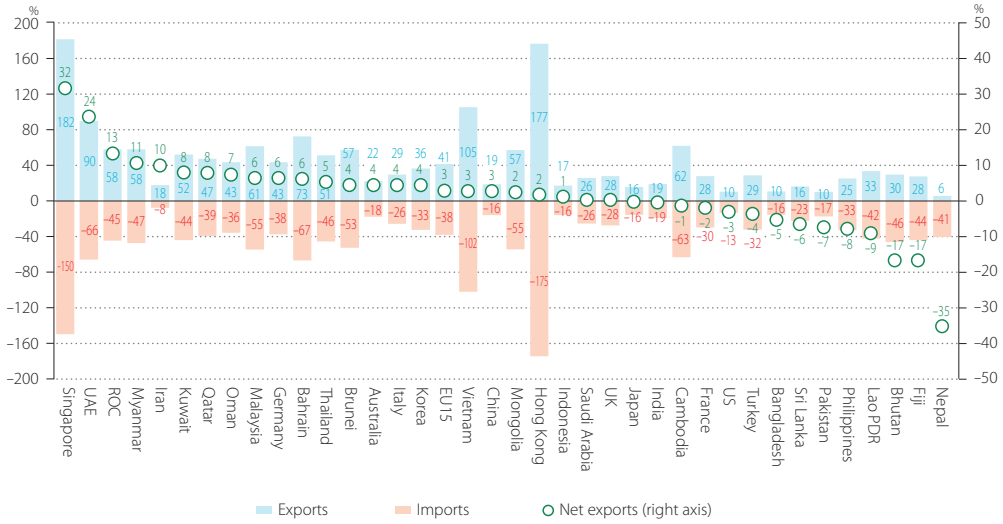


Figure 27 Export and Import Share in GDP
——Share of exports and imports to GDP in 2020

Unit: Percentage (current market price share). Sources: Official national accounts in each country, including author adjustments.

Box 3 Task-wise International Division of Labor

In the late 1980s and early 1990s, some Asian countries experienced revolutionary changes in the pattern of the international division of labor, the task-wise division of labor, or the second unbundling (Ando and Kimura 2005; Baldwin 2016). In the past, the international division of labor was typically industry-wise. Production activities of one industry were mostly completed within a country's territory, and final products were traded. Each country tended to specialize in specific industries, depending on its technological level and factor endowments. A developing country typically imports manufactured goods and exports primary products. Alternatively, it imported machinery and exported garments. In a broad commodity classification, the trade pattern was mostly one-way; an industry's products were traded from one country to another, but not in both directions.

In the late 1980s, the international division of labor moved to a task-wise model rather than industry-wise. A representative industry for this type of division of labor is machinery. A machine typically consists of many parts and components, and its production involves many tasks. Task-wise international division of labor was initiated in the operation of export processing zones and was gradually extended to more sophisticated production "networks."

Figure B3 presents each Asian country's export/import shares occupied by machinery and transport equipment in 1990–1999, 2000–2009, and 2010–2020, including the pandemic year. A striking contrast is observed here between countries that participate in the task-wise international division of labor and those that do not. Japan

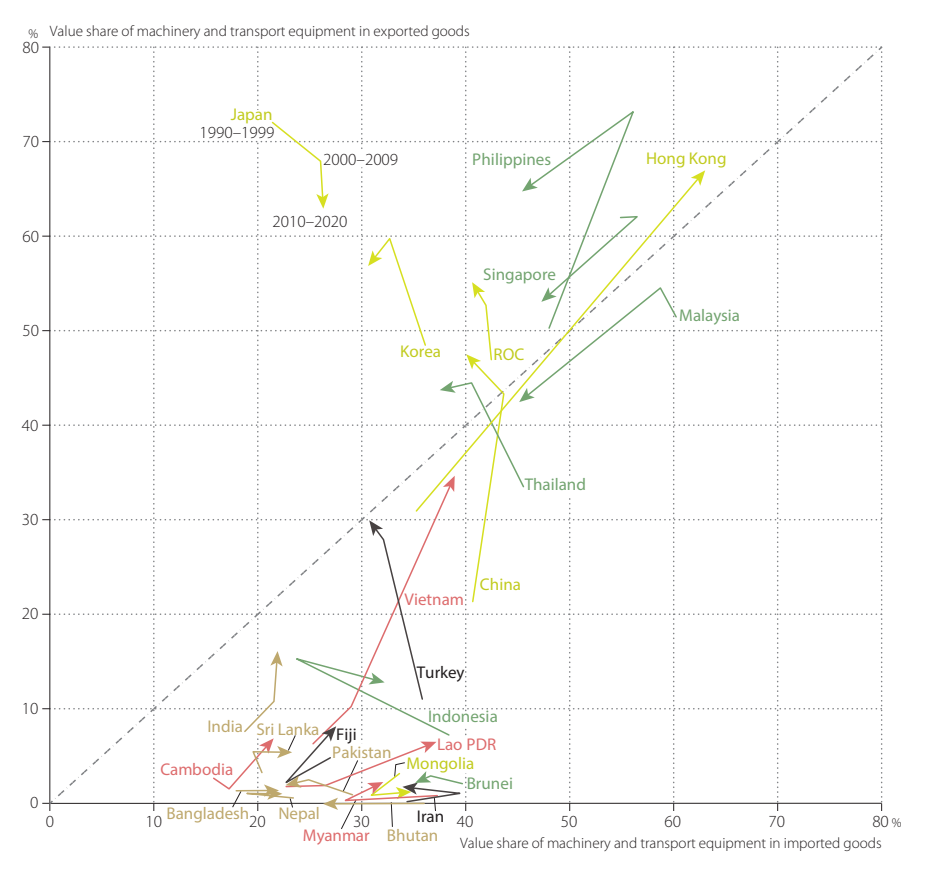


Figure B3 Export and Import Share of Machinery
——Average value share in 1990–1999, 2000–2009, and 2010–2020

Unit: Percentage (current-price share). Source: APO Productivity Database 2022. Note: The arrows are colored by region in green, red, blue, purple, and black for East Asia, South Asia, ASEAN6, CLMV, and other Asia, respectively.

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and Korea are located way above the 45-degree line, which means their export shares are much larger than import shares. However, note that import shares are high, ranging from 20% to 35%. Malaysia, the Philippines, Thailand, ROC, and China are close to the 45-degree line, around 40% to 70%. These countries are actively exporting and importing these products at the same time. Hong Kong and Singapore also show high export/import shares, though some of their trade may be entrepot, adding only logistics services.

This is somewhat of intra-industry trade (IIT) but is different from IIT typically observed in trade between developed countries; the latter is based on horizontal product differentiation like a trade of yellow cars and blue cars. What we observe in Asia is the task-wise international division of labor with which a large portion of trade is occupied by the back-and-forth trade of parts and components at different levels of processing. This type of trade is observed only in limited developing countries: most of the countries in Northeast and Southeast Asia, some Eastern European countries, Mexico, and Costa Rica. Particularly in Asia, many countries get involved in it, and production "networks" are developed. This is the indication of "Factory Asia."

For these Asian countries, export/import shares seemed to decline slightly in the 2010s. Even in the 2010s, parts and components trade grew steadily in these countries, but trade in final products expanded faster (Obashi and Kimura 2018). This means these countries get richer and add their appeal as a market, which is why the proportion of "network trade" out of total trade declined.

Other developing countries worldwide are still in the realm of the industry-wise division of labor. South Asian countries, i.e., India, Pakistan, Bangladesh, and Nepal, are way below the 45-degree line, around 20% in import shares. Although India showed some upward movement in the 2010s, as of yet these countries do not participate in international production networks in machinery; and Indonesia is also struggling with entering such networks.

5 Productivity Growth

Highlights

- Regarding labor productivity, based on GDP at constant basic prices per hour worked, the US has maintained a sizeable gap over even the highest Asian performers (Figure 30 and Table 18). In 2020, the productivity gap between the US and the Asian leader, Singapore, remained at 12% (Figure 29).
- From 2015 to 2020, the labor productivity of Asia25 grew by 2.9% per year on average, down from 4.8% in 2010–2015. China experienced a significant slowdown in labor productivity growth to 4.7% from 7.6% over the same period. The main drivers of productivity resurgence in Asia25 were Turkey, Vietnam, Bangladesh, China, and Korea (Figure 32 and Table 19).
- In Asia25, TFP growth held at zero in 2015–2020, declining from an improvement of 0.7% in 2010–2015 and 1.7% in 2005–2010, reflecting the stagnating impact of the COVID-19 pandemic. The decline in TFP growth in ASEAN6 and South Asia was abysmal, falling to –1.6% and –0.3%, respectively, over the same periods (Figure 36). This was a significant slowdown in South Asia from the high TFP growth rates (1.3% in 2010–2015 and 1.9% in 2005–2010).
- The growth of Asia25 has been predominantly explained by the contribution of capital input, representing 64% (59% for non-IT and 5% for IT capital) of the regional economic growth achieved from 2000 to 2020. The role of TFP growth is also significant, contributing 18% in the same period (Figure 40).
- Capital deepening is the key mechanism of Asia25's labor productivity growth of 4.2% in 2000–2020, accounting for 53% (48% for non-IT and 5% for IT capital). The contributions of labor quality and TFP are 25% and 22%, respectively, in Asia25. In ASEAN, where the regional TFP growth for 2000–2020 was almost zero, 73% of the 3.0% average annual growth in labor productivity was contributed by improved labor quality (Figure 47).

Labor productivity is measured in several ways, depending on the definitions of output and labor input measures. Section 5.1 presents the labor productivity measure in terms of GDP per worker.[26] As workers in high-performing Asian countries tend to work longer hours on average than those in the US, as shown in Figure 87 in Section 9.3.1, the worker-based labor productivity gaps in this instance cast the Asian countries in a particularly favorable light. Section 5.2 focuses on alternative estimates of labor productivity, namely GDP per hour worked.[27]

The sources of economic growth in each economy are decomposed into the contributions of capital and labor inputs and total factor productivity (TFP), based on the growth accounting framework.[28] In Sections 5.3 and beyond, capital input is included as another key factor of production,[29] and TFP estimates are presented for the Asia25 economies and the US. Finally, Section 5.7 presents the estimates of energy productivity, becoming an important policy target for pursuing sustainable growth of Asian countries. The

26: GDP is valued at basic prices in this chapter, as opposed to GDP at market prices used in the previous chapters. GDP at basic prices is defined as GDP at market prices, minus net indirect taxes on products. As most Asian countries do not provide official estimates for GDP at basic prices in their national accounts, they are calculated based on available tax data. See Section 9.1.7 for the methods employed for our calculations.

27: This edition of the Databook newly added the labor productivity estimates for the EU15, France, Italy, Germany, and the UK as the references economies, in addition to the US and Australia, which have been included in the past Databook.

28: The growth accounting approach is based on the microeconomic production theory and the nominal accounting balance of input and output of production. See OECD (2001) for a presentation of definitions, theoretical foundations, and a number of practical issues in measuring productivity.

details of long-term estimates of growth accounting for the APO21 economies and regions are provided in the country profiles of Chapter 8.

5.1 Per-Worker Labor Productivity

Cross-country comparisons of per-worker labor productivity levels in 2020, measured as GDP per worker in US dollars as of 2020, are presented in Figure 28. On this measure, Singapore is the leading economy with $150,300, 9% higher than the US ($137,500).[30] Hong Kong and the ROC follow, with per-worker labor productivity of more than $100,000. Turkey, Korea, and Japan took the next tier with more than $75,000, at 34–44% below the US. Iran and Malaysia followed, with about $50,000. It is worth noting that Iran has the lowest employment rate in Asia, as presented in Figure 17 in Section 3.3, bringing about higher performance in labor productivity. After that, many countries in Asia followed with labor productivity levels at less than 25% of the US. This pulled down the average performance of the group to 21% for Asia25, 21% for the ASEAN6, and 9% for CLMV. Bringing up the rear were China and India, with productivity levels that were 21% and 11% of the US level, respectively, in 2020.

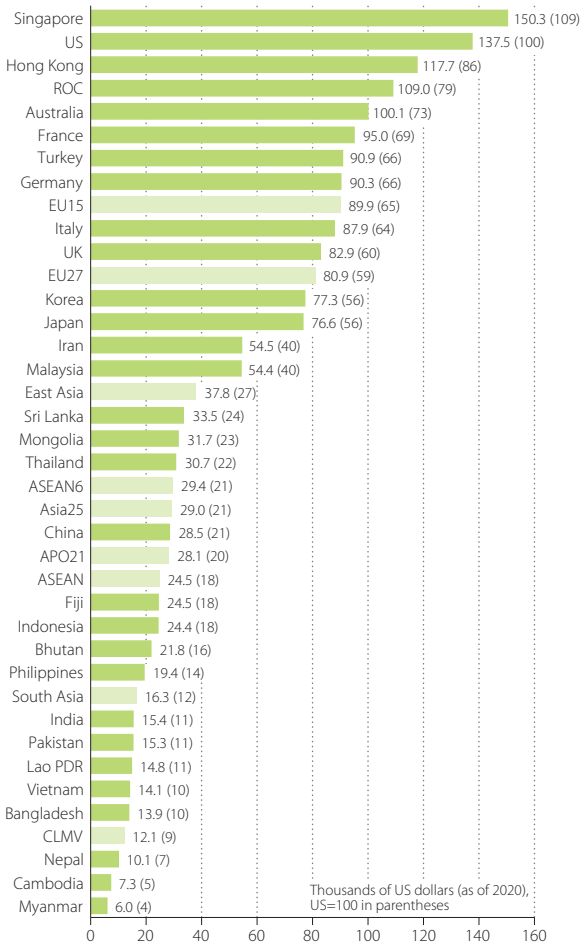

Figure 28 Per-Worker Labor Productivity Level
—GDP per worker in 2020, using the 2017 PPP, reference year 2020

Unit: Thousands of US dollars (GDP per worker at constant basic prices). Sources: Official national accounts in each country and APO Productivity Database 2022. Note: See Table 16 in Appendix 3 for the time-series comparison from 1970.

5.2 Per-Hour Labor Productivity

The per-worker-based labor productivity gaps with the US in Figure 28 are most likely conservative estimates because workers in high-performing Asian countries tend to work longer hours than those in the US, on average. To adjust for this discrepancy, total hours worked are constructed in the Asia QALI Database for the 25 Asian countries, although the quality of the estimates may

29: The measurement of capital stock of produced assets, land, and inventory, and capital services are presented in Section 9.2. Since the previous edition of the Databook (APO 2021), inventory has been considered one of the capital inputs.
30: Cross-country level productivity comparisons are notoriously difficult to make, hence subject to much data uncertainty. Estimates should therefore be taken as indicative of broad groupings rather than precise ranking.

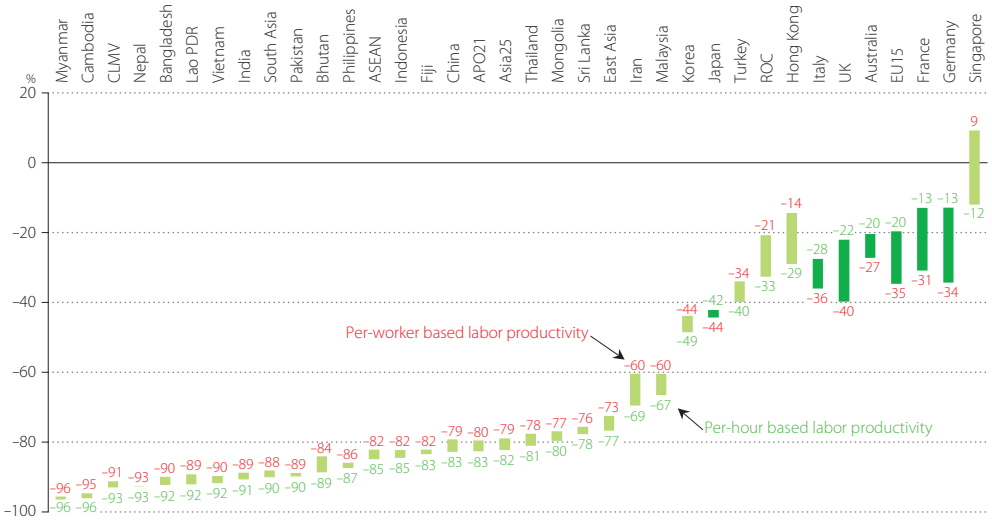

Figure 29 Per-Worker and Per-Hour Labor Productivity Gap, Relative to the US
——Indices of GDP per worker and hour in 2020, using the 2017 PPP

Unit: Percentage (evaluated at constant basic prices). Sources: Official national accounts in each country and APO Productivity Database 2022. Note: Light green is used for countries where per-hour labor productivity is lower than per-worker labor productivity.

vary considerably across countries.[31] Figure 29 shows how the productivity gap with the US in 2020 varies depending on which measure of labor productivity is used.[32] The productivity gap with the US widens for all Asian countries except Japan when the differences in working hours are considered. The choice of labor productivity measure makes a significant difference for the previously high-performing countries relative to the US, such as Singapore (from 9% higher on a worker basis to 12% lower on an hourly basis) and Hong Kong (from 14% lower to 29% lower). On the other hand, European countries tend to work fewer hours per capita than the US, and the labor productivity gap between the EU15 and the US narrows from 34% on a worker basis to 20% on an hourly basis.

Based on GDP at constant basic prices per hour worked, US labor productivity has sustained a sizeable gap over the Asian high performers for a half-century, as presented in Figure 30 (and Table 18 in Appendix 3). The gap between the US and the Asian leader, Singapore, has been narrowing slowly, and the productivity gap of 12% remains in 2020. Hong Kong and the ROC have improved nine and 14 times in this period and overtook Japan in 2007 and 2010, respectively. In the 2000s, Turkey and Korea were at the same level, but in recent years Turkey's labor productivity has improved, and in 2020 it overtook Japan. While such acceleration has not been seen in Korea, Japan's stagnation in labor productivity is remarkable. If Korea can maintain the current pace they could catch up with Japan within five years.

The average growth rates of hourly labor productivity performances for the Asia25 economies and regions are compared in Figure 31 and Table 19 in Appendix 3. In Asia25 as a region, labor productivity growth accelerated to 4.5% per year in 2010–2019 (3.9% in 2010–2020 if the pandemic year is included), compared to the past two-decade averages of 3.9% in 1990–2010 and 2.5% in 1970–1990. Figure 32 focuses

31: Chapter 19 in the SNA 2008 recommends developing the estimate of total actual hours worked as a standardized measure of labor input (United Nations 2009). In the Asian countries studied, only Japan published the data on total hours worked as part of the official accounts, but not for the whole period studied in this report. See Section 9.3.1 for an explanation of the estimation procedure of total hours worked.
32: The labor productivity gap for country x is country x's labor productivity divided by the US's labor productivity in Figure 29.

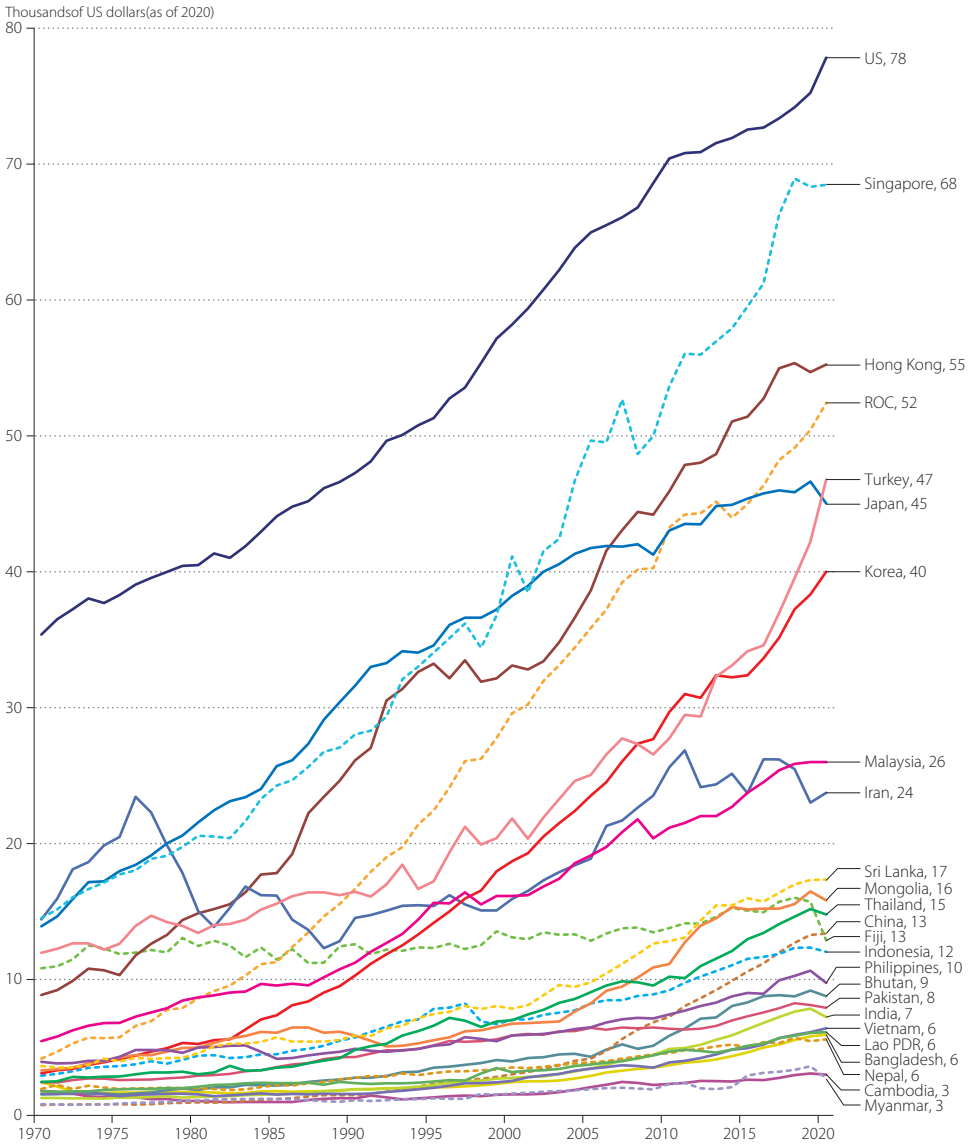

Figure 30 Per-Hour Labor Productivity Level in the Long Run
—GDP per hour in 1970–2020, using the 2017 PPP, reference year 2020

Unit: Thousands of US dollars (2020 constant basic price). Sources: Official national accounts in each country and APO Productivity Database 2022. Note: See Table 18 in Appendix 3 for the numbers of this figure.

on more recent productivity performances. As a region, labor productivity growth in the most recent period, 2015–2019, was strong at 4.1% per year, though it is below the highest record of the regional productivity growth (5.6% in 2005–2010), which was accelerated by the extremely high performance of China (11.0%). The main drivers of the recent productivity performances in 2015–2020, reflecting the stagnation because of the impact of the COVID-19 pandemic, are Turkey (6.3%), Vietnam (5.2%), Bangladesh (4.9%), China (4.7%), and Korea (4.1%).

One can identify where countries are today in terms of their hourly productivity performance against a backdrop of Japan's historical experience. Figure 33 traces the long-term path of Japan's per-hour labor productivity for 1885–2020 along the green line, expressed as relative to Japan's 2020 level (set equal to

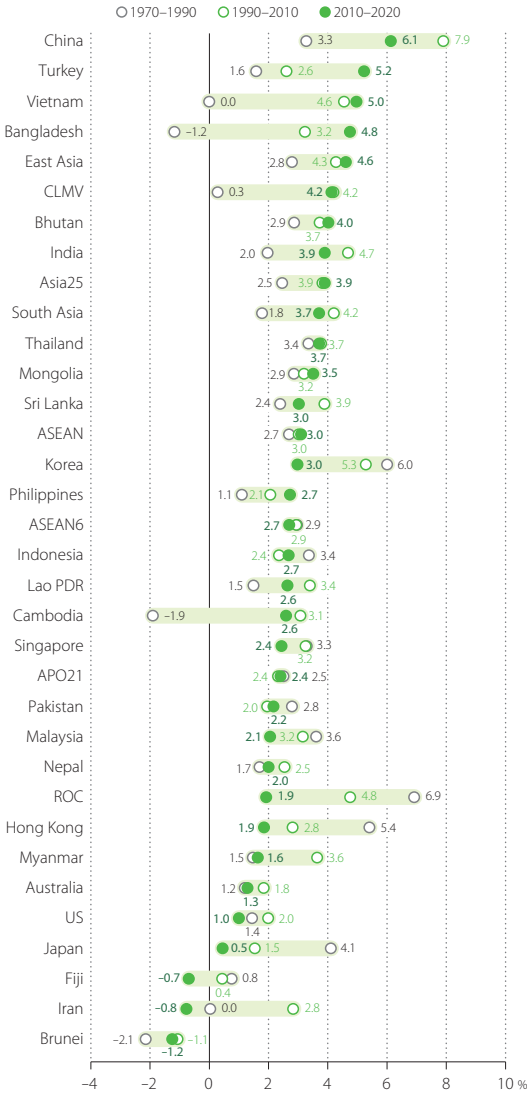

Figure 31 Labor Productivity Growth in the Long Run

——Per-hour GDP growth in 2010–2020, 1990–2010, and 1970–1990

Unit: Percentage (average annual growth rate of per-hour GDP at constant basic prices). Sources: Official national accounts in each country and APO Productivity Database 2022. Note: The starting period for Australia is 1978.

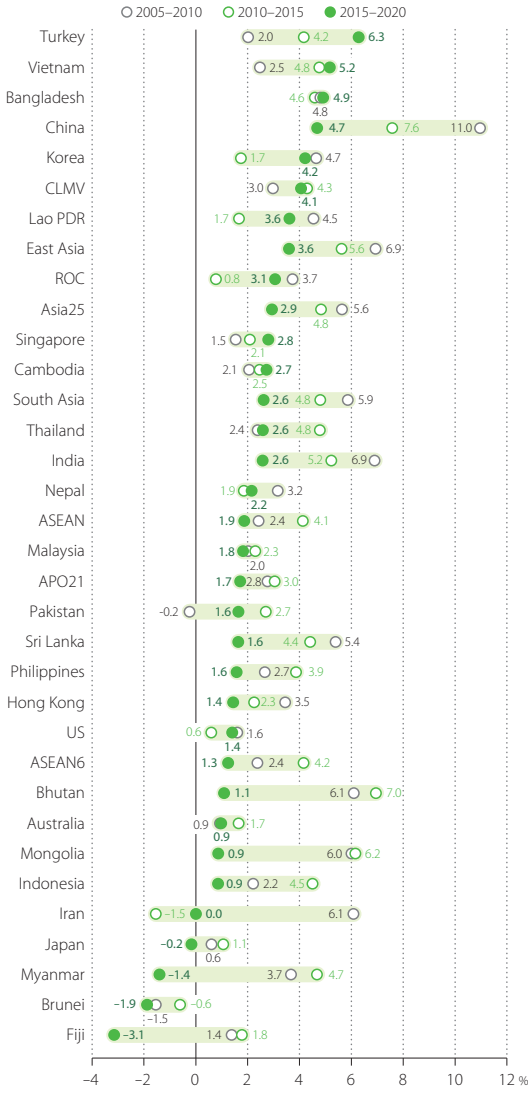

Figure 32 Labor Productivity Growth in the Recent Periods

——Per-hour GDP growth in 2015–2020, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate of per-hour GDP at constant basic prices). Sources: Official national accounts in each country and APO Productivity Database 2022. Note: See Table 19 in Appendix 3 for the growths for 2015–2019 and 2019–2020, which isolate the impact of the COVID-19 pandemic.

1.0).[33] A structural break was observed during World War II when output collapsed. Countries' relative hourly productivity levels against Japan in 2020 are then mapped against Japan's growth (as circles). Here, the corresponding year can be located when Japan's hourly productivity level was the closest to the country in question. Most Asian countries are clustered around Japan's level between the 1960s and the early

33: While mindful that level comparisons of productivity among countries and over periods are subject to a great degree of data uncertainty, they should provide a rough sketch of the productivity divergence in Asia.

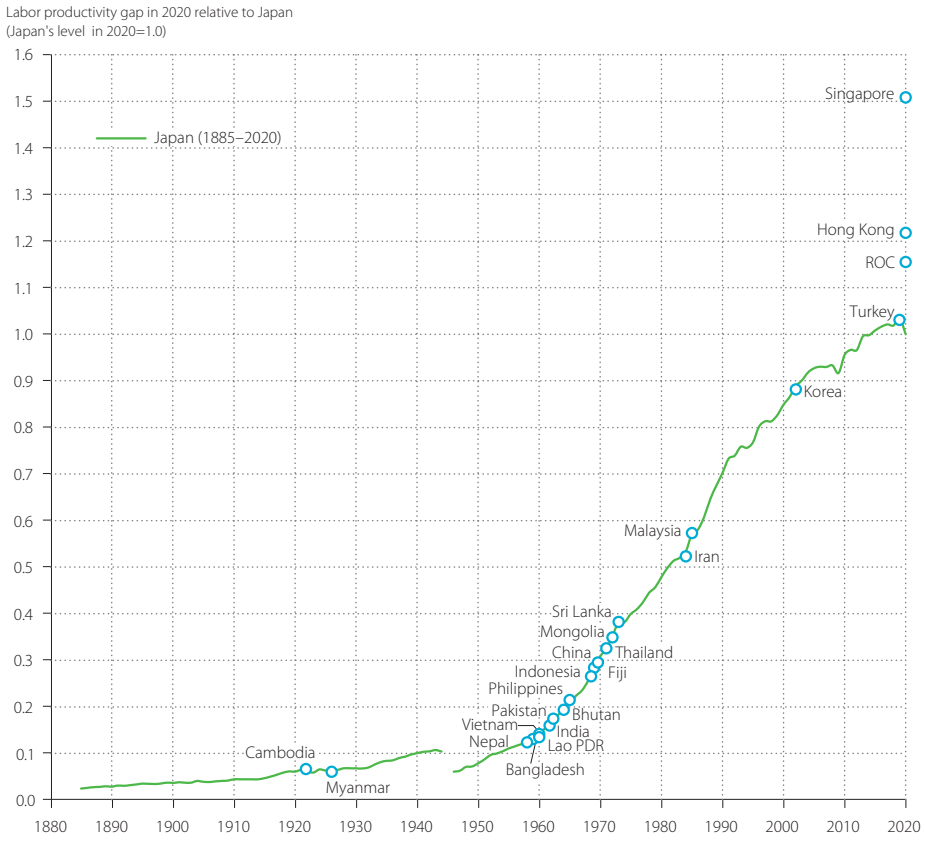

Figure 33 Historical Labor Productivity Trend of Japan and Current Level of Asia
——Japan's per-hour GDP in 1885–2020 and for Asian countries in 2020, using the 2017 PPP

Unit: Index (Japan's per-hour GDP at constant basic prices=1.0). Sources: For historical data of Japan, the sources of GDP are Ohkawa, Takamatsu, and Yamamoto (1974) during 1885–1954 and the JSNA by ESRI, Cabinet Office of Japan, during 1955–2020 (including author adjustments). Hours worked data for Japan is based on KEO Database, Keio University, during 1955–2020. During 1885–1954, the average hours worked per person were assumed to be constant. The labor productivity level of Asian countries in 2020 is based on the APO Productivity Database 2022.

1970s. Myanmar and Cambodia, with the lowest hourly productivity in 2020, see levels corresponding to Japan in the middle 1920s. Even if they manage Japan's long-term productivity growth of 2.7% on average per year, it will take them about a century to catch up with the Asian leaders' current position.

The productivity leaders are the Asian Tigers, of which Singapore, Hong Kong, and the ROC have already surpassed Japan. Figure 34 compares the time taken by each country to raise its labor productivity from 30–70% of Japan's level today (unit of measurement on the y-axis of Figure 33). What Japan had achieved in the 21 years from 1970 to 1991, Hong Kong, the ROC, and Korea managed to achieve in 15, 15, and 18 years, respectively

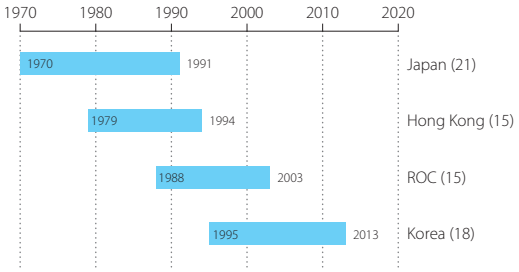

Figure 34 Time Durations Taken to Improve Labor Productivity by Japan and Asian Tigers

Unit: Years. Source: See Figure 33. Note: In parentheses after the country name, the years it took each country to raise its labor productivity to 30–70% of the current Japanese level.

(Figure 34). Although the speed of catch-up for latecomers is increasing somewhat, most Asian countries will take a long time to catch up to the leaders, currently clustered near Japan's 1960–1970 levels (Figure 33).

5.3 Total Factor Productivity

Labor productivity in the previous sections is only a one-factor or partial-factor productivity measure and does not provide a full perspective of production efficiency. Observation of low labor productivity could suggest production inefficiency, but it could also reflect different capital intensities in the chosen production method under the relative capital-labor price faced by the economy concerned. Observing labor productivity alone makes it difficult to distinguish which is the case. In populous Asian economies, which are relatively plentiful in low-skilled labor, production lines may be deliberately organized to utilize this abundant, and hence relatively cheap, resource. It follows that the chosen production method is most likely (low-skilled) labor-intensive and with little capital, manifested in low labor productivity and high capital productivity. Therefore, economists analyze TFP, GDP per unit of combined inputs, to determine the overall efficiency of a country's production.

Measuring capital input is a key factor for determining TFP. It is defined by capital services—the flow of services from productive capital stock, as recommended in the 2008 SNA and OECD (2009).[34] The required basis for estimating capital services is the appropriate measure of capital stock. The SNA recommends constructing the national balance sheet accounts in official national accounts. However, this is not a common practice in the national accounts of many Asian countries.[35] Even where estimates of net capital stocks are available for the entire economy, assumptions and methodologies can differ considerably among countries. In response to this challenge, harmonized estimates for capital stocks and capital services have been constructed and compiled within the APO Productivity Database, based on the same methodology and assumptions. In this methodology, changes in the capital quality are incorporated into the measurement of capital services in two ways: changes in the composition are captured by explicitly differentiating assets into 16 types, and appropriate and harmonized prices are used for IT capital to reflect the rapid quality change embodied in IT-related assets (see Section 9.2.2).[36]

The APO Productivity Database 2022 constructs growth accounts for 25 Asian countries that decompose each country's economic growth into growth in IT and non-IT capital services, hours worked, labor quality, and TFP.[37] In addition, the regional growth accounts are developed for six country groups—Asia25, APO21, East Asia, South Asia, CLMV, and ASEAN6.[38] Cross-country comparisons of TFP growth for

34: See Chapter 20 on capital services and the national accounts of the 2008 SNA (United Nations 2009). The second edition of the *OECD Capital Manual* (OECD 2009) provides a comprehensive framework for constructing prices and quantities of capital services. In the APO Productivity Database 2022, the Törnqvist index is used for aggregating 16 types of capital inputs (11 types of fixed assets provided in Table 4 in Section 9.2.2, 4 types of land in Table 6 in Section 9.2.6, and inventory stock in Section 9.2.3).

35: Based on our metadata survey, half of APO member economies do not develop balance sheet accounts within the official national accounts; these countries are Bangladesh, the ROC, Indonesia, the Lao PDR, Mongolia, Nepal, Sri Lanka, and Vietnam (but the National Wealth Survey is available in the ROC for some selected years).

36: IT capital is defined as a composite asset of IT hardware (computers, electric computing equipment copying machines, and other office machinery), communications equipment, and computer software.

37: In measuring TFP, income generated from domestic production should be separated into labor and capital compensations. The national accounts readily provide the estimates of compensation of employees as a component of value added in many countries; compensation for the self-employed is not separately estimated but is combined with returns to capital in mixed income, except in China, where labor remuneration in the national accounts includes labor income for the self-employed (Holz 2006). The assumption on wages for self-employed and contributing family workers is presented in Section 9.3.3. See Box 6 for the sensitivity of our assumptions to the TFP results.

38: In Databook, the country aggregations of capital and labor inputs are based on the estimates of PPP for capital and labor inputs, respectively, which are the updates of the estimates developed in Nomura (2018). In most Asian countries, the PPP for output underestimates the PPP for capital input, indicating the capital prices are higher than the output prices, and overestimates the PPP for labor inputs, indicating the labor prices are lower than the output prices.

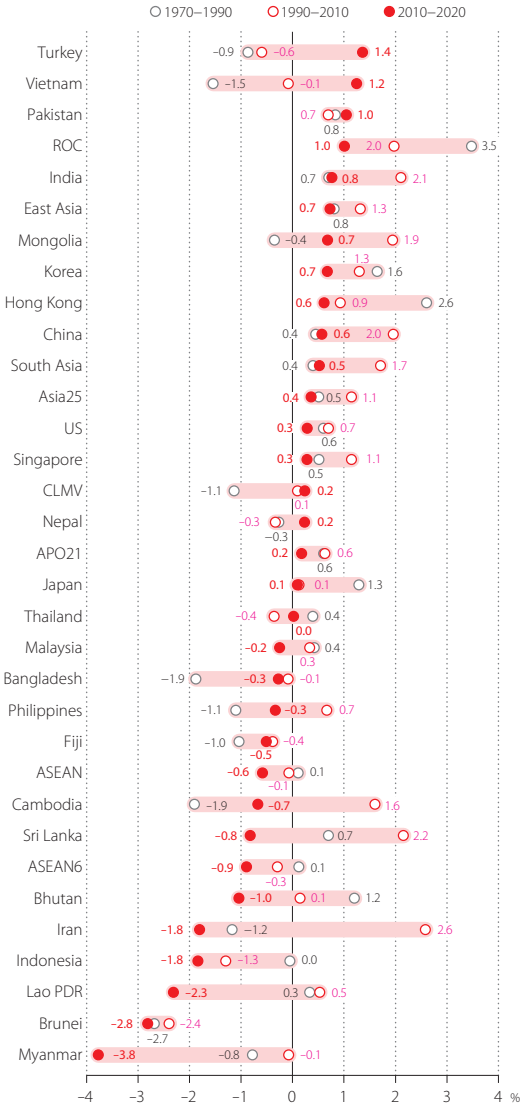

Figure 35 TFP Growth in the Long Run
——Growth of total factor productivity in 2010–2020, 1990–2010, and 1970–1990

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

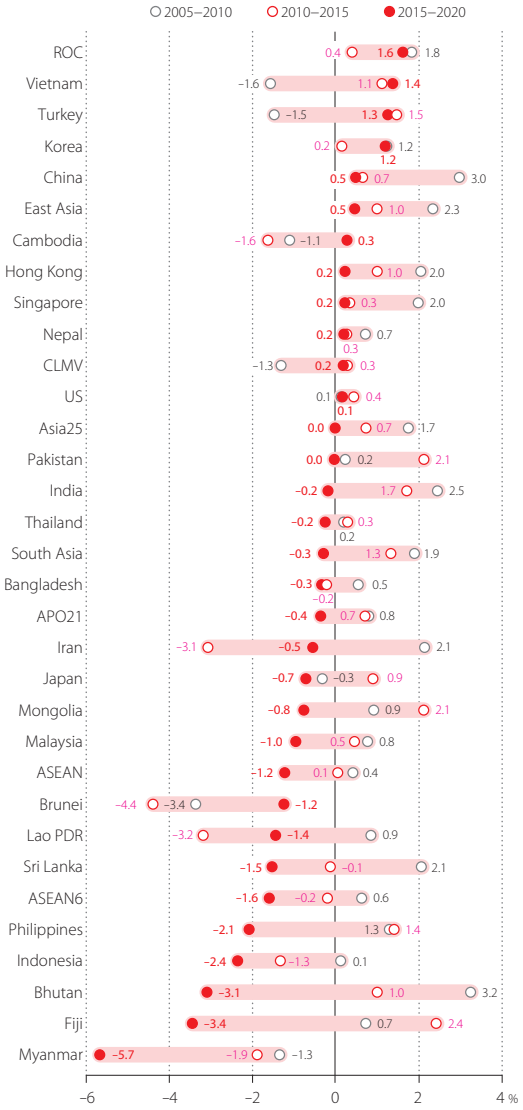

Figure 36 TFP Growth in the Recent Periods
——Growth of total factor productivity in 2015–2020, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022. Note: See Table 20 in Appendix 3 for the estimates for the periods of 2015–2019 and 2019–2020, which isolate the impact of the pandemic.

Asia25 and the US are shown in Figure 35 for the recent decade of 2010–2020, compared with the past two-decade averages in 1970–1990 and 1990–2010. Figure 36 shows the TFP growth every five years since 2005, focusing on more recent years. While it is important to understand the damage to TFP caused by the COVID-19 pandemic, it may be necessary to exclude it to understand the medium- to long-term trends. For this reason, Table 20 in Appendix 3 also provides the estimates for the periods of 2015–2019 and 2019–2020.[39]

Asia25 has doubled its TFP growth rate from 0.5% per year on average in 1970–1990 to 1.1% in 1990–2010. It slowed to an average of 0.4% per year in 2010–2020, as shown in Figure 35. This slowdown in the recent decade resulted from the significant impact of the pandemic, as Table 20 indicates healthy TFP growth for Asia25 at 0.7% in 2010–2015 and 1.2% in 2015–2019. The pandemic caused TFP to decline by –4.8% from 2019 to 2020 in Asia25. To assess whether this deterioration is temporary, it is necessary to wait for data on factor inputs to be constructed. However, Asian countries that publish quarterly GDP growths generally show a significant recovery in economic growth from 2020 to 2021, as shown in Figure B1.2 in Box 1. The TFP slowdown in 2020 is likely to be only temporary.

In the 2010s, TFP growth in Asia was more pronounced in South Asia. The TFP in South Asia improved by 1.8% on average in 2015–2019, exceeding East Asia and CLMV at 1.4%. The driving force was India, which achieved a TFP growth of 2.3% in the same period. However, the damage to the Indian economy due to the pandemic was significant, recording a sharp TFP deterioration of –10.1% in 2019–2020, much more severe than–3.5% in China and –4.9% in Japan. As a result, the decade average of Indian TFP in 2010–2020 was 0.8%, a significant slowdown from the two-decade average of 2.1% in 1990–2010 (Figure

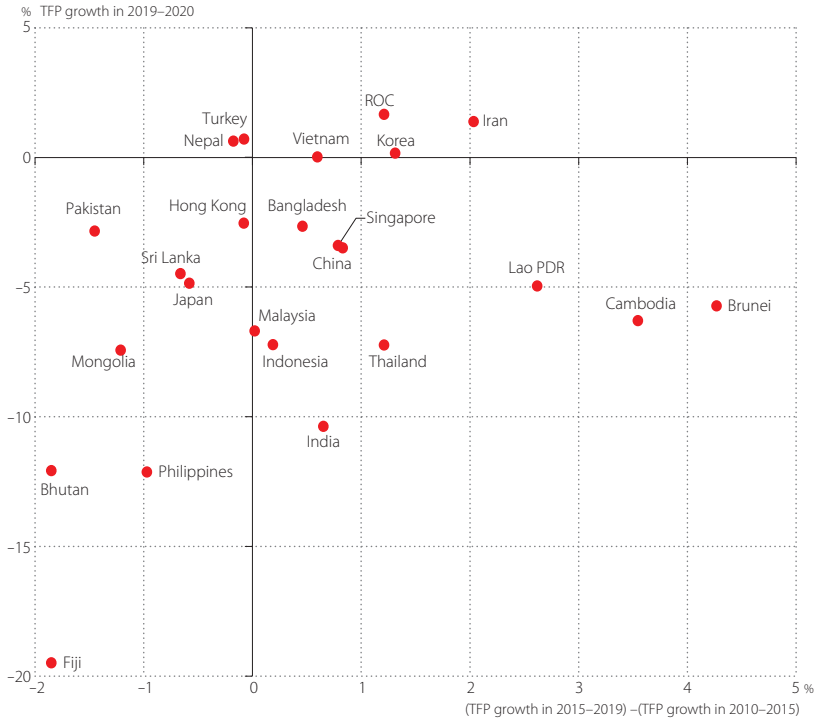

Figure 37 TFP Deterioration Resulted from the COVID-19 Pandemic
——TFP-growth difference between 2010–2015 and 2015–2019 and TFP deterioration in 2019–2020

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022. Note: See Table 20 in Appendix 3 for the numbers.

39: China's productivity account was significantly revised in the previous edition of the Databook (APO 2021) and was reviewed again in this edition. See Appendix 2 for the abstract of the revision. Compared to the past estimates in the 2020 edition, China's TFP growths in this edition were downwardly revised from 1.4% to 0.4% in 1970–1990, from 4.0% to 2.0% in 1990–2010, and from 2.6% to 1.0% in 2010–2018.

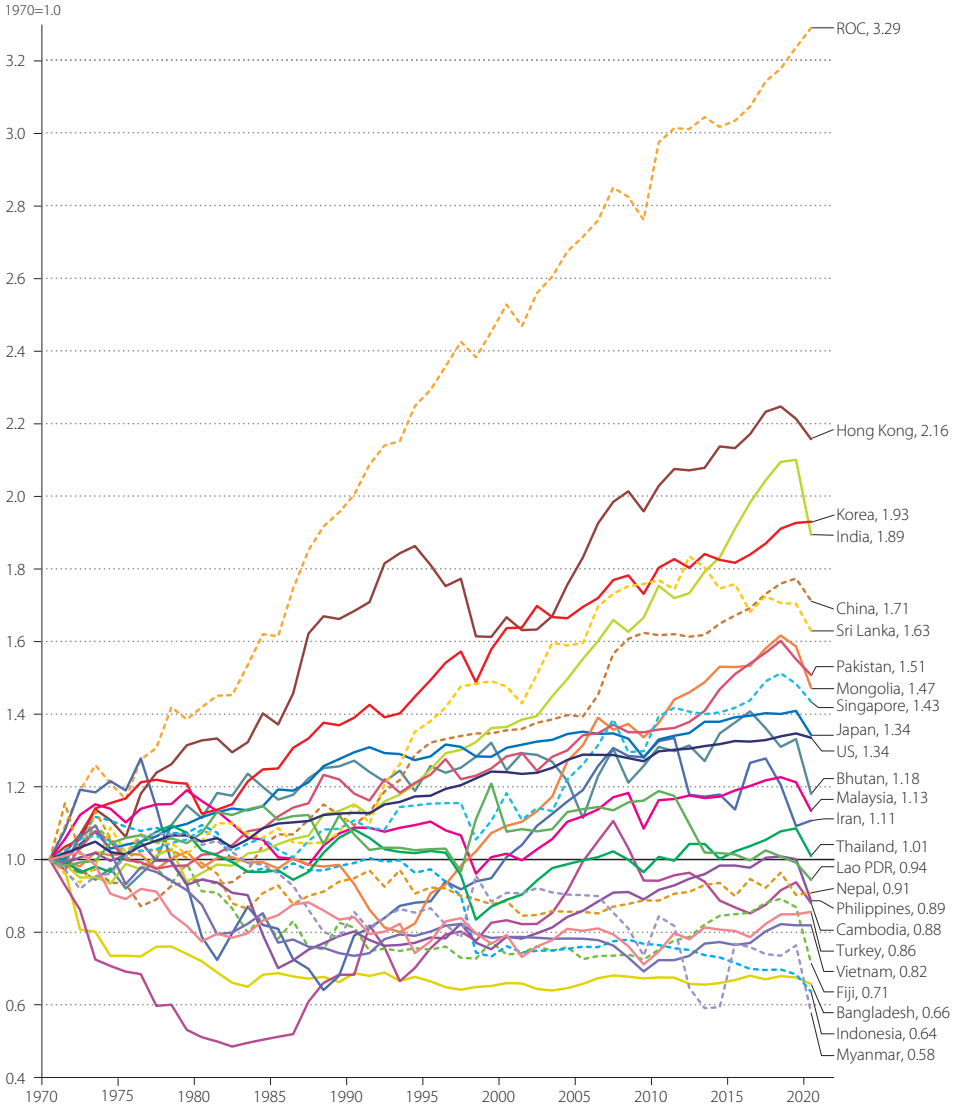

Figure 38 Half-Century TFP Trends by Country
——Index of total factor productivity in 1970–2020

Init: Index (1970=1.0). Source: APO Productivity Database 2022.

35). However, this stagnation is also likely to be temporary. According to the quarterly GDP published by the national statistical office, ministry of statistics and programme implementation (MOSPI), the Indian economic growth rebounded sharply to 9.0% in 2020–2021 (Figure B1.2 in Box 1).

Similar but slightly more modest, TFP improvements are seen in the CLMV, recording an annualized TFP improvement of 1.4% in 2015–19. Vietnam and Cambodia were the region's leaders. In contrast to India, Vietnam was one of the least damaged Asian countries due to the pandemic, with TFP only flattening out in 2019–2020. Cambodia's TFP growth slowed sharply to –6.3% in the same period. Myanmar's TFP also significantly deteriorated to –27.8% because of the impact of political turmoil. As a result, CLMV's deceleration of TFP in 2019–2020 was –4.7%, well below the –7.5% of ASEAN6 (Table 20).

In 2015–2019 excluding the impact of the pandemic, taking the US as the reference economy, with a TFP growth of 0.4% per year, 15 economies of Asia25 achieved higher TFP growth than the US. The US maintained the same level of TFP improvement of 0.4% from 2010–2015 to 2015–2019, while some Asian countries slowed down significantly from the first half to the second half of the 2010s; Fiji (from 2.4% in 2010–2015 to 0.6% in 2015–2019), Bhutan (from 1.0% to –0.8%), Pakistan (from 2.1% to 0.7%), Mongolia (from 2.1% to 0.5%), the Philippines (from 1.4% to 0.4%), Sri Lanka (from –0.1% to –0.8%), and Japan (from 0.9% to 0.3%). While these countries are suspected of being inefficient in economic operations in the 2010s, it may not be a coincidence that they were among the Asian countries hit hardest by the pandemic in 2019–2020, as shown in Figure 37.[40]

Figure 38 compares the half-century trends of the TFP index in our observation period for the Asia25 economies. There is a wide range in TFP growth in the long run. While the TFP of the ROC more than tripled (3.3 times) and those in Hong Kong and Korea more than doubled (2.2 times and 1.9 times, respectively) in the past half a century, Singapore's was smaller (1.4 times), and its improvement was sustained only from the mid-2000s. TFP has not improved in 10 Asian countries over the past half-century. While these assessments vary greatly depending on the correspondence between the initial point of this figure (i.e., 1970) and the start of economic growth with productivity gains, a sustained improvement trend can be observed since the 2000s for the Philippines and since the 2010s for Turkey and Vietnam.

5.4 Sources of Economic Growth

For Asian countries to formulate appropriate macroeconomic policies, it is necessary to identify the drivers of economic growth. If growth has been driven by capital accumulation rather than by assimilation of existing technology from developed countries (measured as TFP growth), the growth model may be expensive for many less affluent countries to emulate. Figures 39 and 40 show the two-decade observation of the sources of economic growth by country and region, averaged over the past two decades from 2000 to 2020. It shows that 64% (59% for non-IT and 5% for IT capital) of Asia25's economic growth was achieved by capital accumulation, well above the TFP growth rate of 18% contribution rate, indicating a major role of capital accumulation in their economic growth. Much of the technology propagation was not realized without cost, but through the accumulation of capital that embodied existing technology.

This trend is also true in various regions and countries in Asia. In these two charts, countries are lined up based on their economic growth rates in this period. Figure 39 shows that in high-growth countries, which tend to have lower per-capita income, the contributions of TFP and labor quality improvement to economic growth are not necessarily large. The contribution shares shown in Figure 40 show that TFP and labor quality improvement play a larger role in higher-income countries,[41] indicating a greater role for capital accumulation, especially in economic development's early and middle stages.

In Asia, TFP growth in Hong Kong and the ROC over the past 20 years has been quite significant, explaining 47% and 37% of their economic growth, respectively, as shown in Figure 40. Figure B.5 in Box 5 shows that the ROC has an R&D stock estimated at three times the IT capital stock in 2020, the third-largest share in Asia after Korea and Japan. Conversely, IT capital stock in Hong Kong was nearly twice as large as R&D stock in 2020. Although the direct effects of increased capital input due to R&D and IT

40: Thailand had improved its TFP growth rate from the early to the late 2010s but has been relatively damaged among Asian countries in 2019–2020, as shown in Figure 37. This is likely due to the country's heavy reliance on tourism in its GDP; in 2019, National Economic and Social Development Council (NESDC) Secretary-General Thosaporn Sirisamphand said the government plans to increase the tourism sector's GDP contribution from about 20% in 2019 to 30% by 2030 (Bangkok Post "Prayut: Zones vital for growth," September 19, 2019).

41: Box 5 provides another view on labor input, focusing on college and non-college labor inputs.

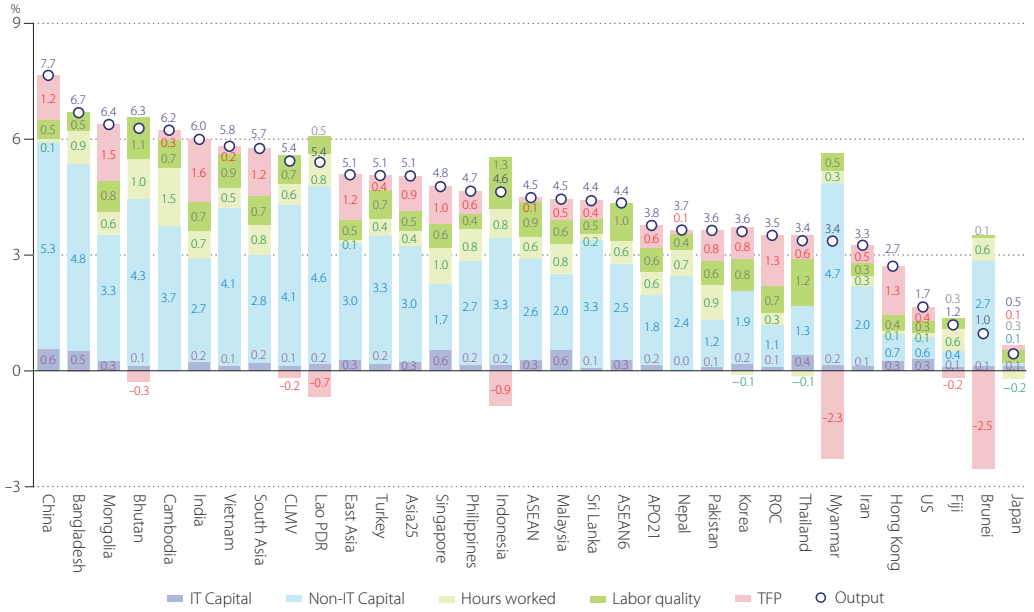

Figure 39 Sources of Economic Growth

——GDP growth and contributions of capital, labor, and TFP in 2000–2020

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

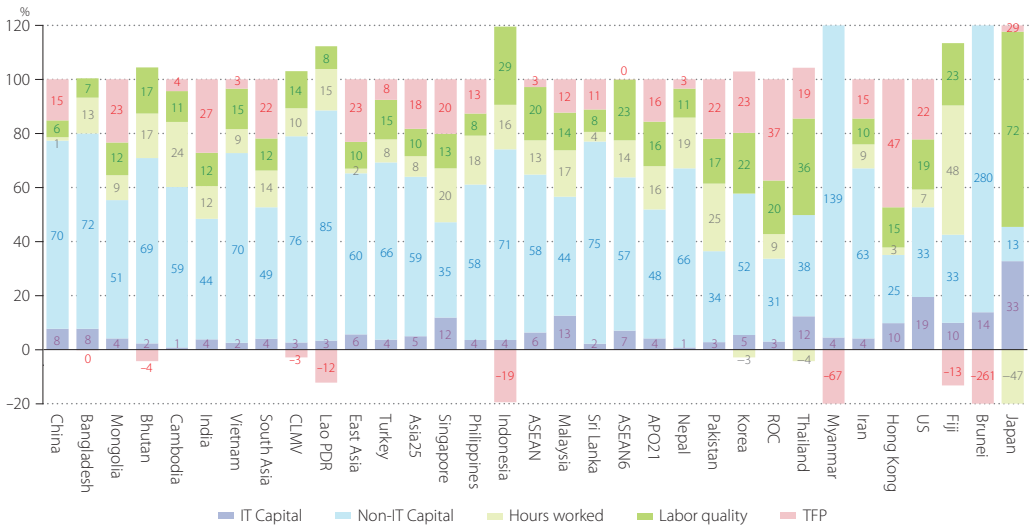

Figure 40 Contribution Shares of Economic Growth

——Contribution shares of capital, labor, and TFP in 2000–2020

Unit: Percentage (average annual contribution shares). Source: APO Productivity Database 2022.

capital stock expansion is already taken into account in growth accounting in Figure 40, the high TFP growth rate may reflect the external effects of such R&D and IT capital. However, in Singapore and Thailand, where the share of such assets is large (Figure B.5), the TFP growth rate is not so pronounced. It can be said that the expansion of such assets does not guarantee a high TFP growth rate.

Tracking the size and growth of IT capital has become a standard practice in productivity research, following attempts to establish the driving force behind productivity resurgence in developed economies. This started with the US in the 1990s. Unlike technological advancements in the past, which were largely confined to manufacturing, IT can permeate the economy and bring about significant production gains in, for example, wholesale and retail, banking and finance, and transportation and telecommunications (service sectors that have traditionally struggled with slow productivity growth). Given the share of the service sector in the economy (Table 23 in Appendix 3), the potential and implications for economic development and productivity gains could be immense. A frequent question of policymakers and researchers is how best to capitalize on the productivity potential invited by DX (digital transformation). As with non-IT capital, it involves a process of accumulation and assimilation. IT capability becomes a factor that determines an economy's long-term growth prospects.[42]

Japan and the Asian Tigers have been leading Asian countries in terms of IT capital contribution to economic growth. Japan's shift in capital allocation took off in earnest in the mid-1990s, with the contribution of IT capital to capital input growth rising from a low of 11% in 1994 to a high of over 40% in the late 1990s, as shown in the left chart of Figure 41. This was when Japan's overall investment growth slowed significantly after the economic collapse of the early 1990s. After years of excesses, Japan shifted away from non-IT to IT capital as a profitable investment.

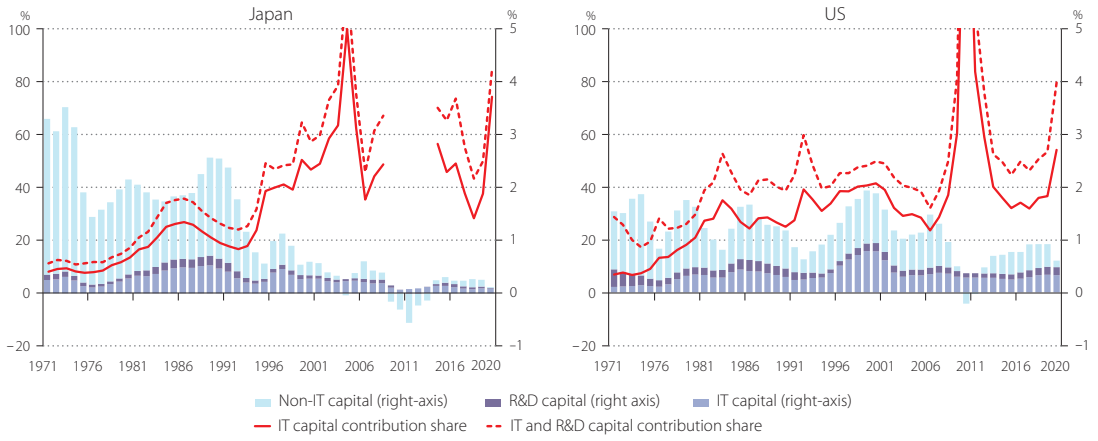

Figure 41 IT and R&D Capital Contribution Share in Japan and the US
——IT and R&D capital contribution share in capital input growth in 1970–2020

Unit: Percentage. Source: APO Productivity Database 2022.

42: The 2008 SNA (United Nations 2009) formally acknowledges the IT sector's importance to the modern economy and has made it more identifiable and separable in industry classification and asset type.

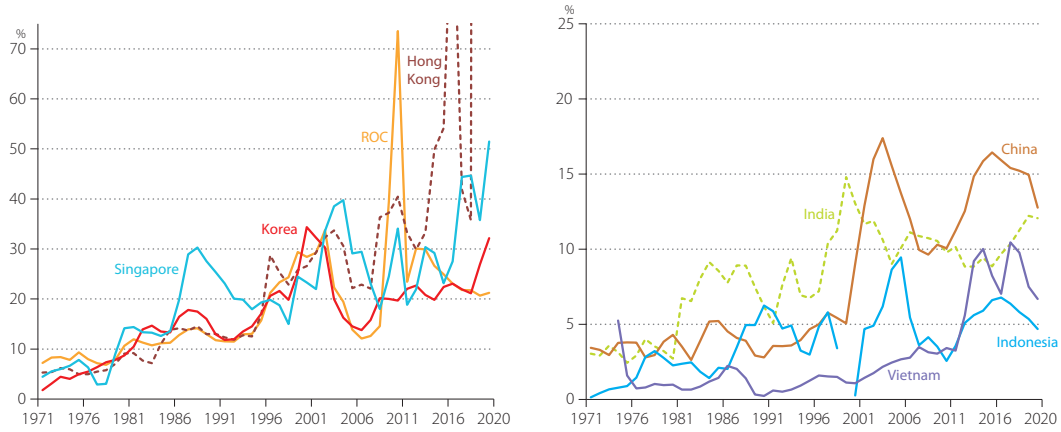

Figure 42 IT and R&D Capital Contribution Share in Selected Asian Countries
——IT and R&D capital contribution share in capital input growth in 1970–2020

Unit: Percentage. Source: APO Productivity Database 2022.

The US shifted toward IT capital much earlier than any Asian economy and over a longer period, as shown in the right chart of Figure 41. Since the early 1980s, IT capital has accounted for over 25% of US capital input growth, reaching over 40% in the late-1990s. Over the past quarter-century, IT capital has tended to account for about 40% of capital growth in both Japan and the U.S., although the contribution share has fluctuated widely because of the changes in total capital growth. The R&D capital has accounted for about 10% of capital input growth in Japan and the US, although it is smaller than the impact of IT capital.

A similar allocation shift to IT and R&D capital is also found in the Asian Tigers, as shown in the left chart of Figure 42.[43] In the Asian Tigers, the contribution share of IT and R&D capital to total capital input peaked at about 30% at the turn of the millennium, from a share of 20% or below before 1994. Since the early 2010s in Hong Kong and the mid-2010s in Singapore, it has accounted for about 40% of capital input, a level approaching that of Japan and the US. In contrast, the IT and R&D capital contribution share has declined in ROC since the early 2000s, indicating that its growing dependence is not necessarily essential for economic growth. China was a late-comer in terms of deepening in IT and R&D capital, with a surge in its contributions only taking off around 2000 and peaking at 17% in the early 2000s, as shown in the right chart of Figure 42.

43: Readers should mind that the quality of the data on investment for IT capital (IT hardware, communications equipment, and computer software) varies considerably among countries, despite our best efforts in harmonizing data. See Sections 9.1.4 and 9.2.1.

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Figure 43 Growth Accounting Decomposition by Country and Region
——GDP growth and contributions of labor, capital, and TFP in 1970–2020

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

Box 4 Role of College Workers in Asia

Chapter 5 decomposes the growth in labor input into the effects of changes in hours worked, and labor quality, based on the Asia QALI database developed at KEO. According to this database, it can also be decomposed into labor inputs for college and non-college graduates. Figure B4.1 shows the long-term trends of college-graduate workers in total hours worked in Asian countries. While it is surprising that college labor is still expanding even in the US, in Asia, Korea has been increasing its share at an accelerating pace since the late 1990s and now approaching 50% of the total hours worked. Among the East Asian country's share of college labor, the high share of Mongolia, with a per capita GDP of $12,200, is distinctive. While the country's recent economic growth has relied heavily on expansion in mining (coal and copper) and agriculture (Chapter 6), the higher quality of this labor force is indicative of the country's growth potential in other more-productive sectors.

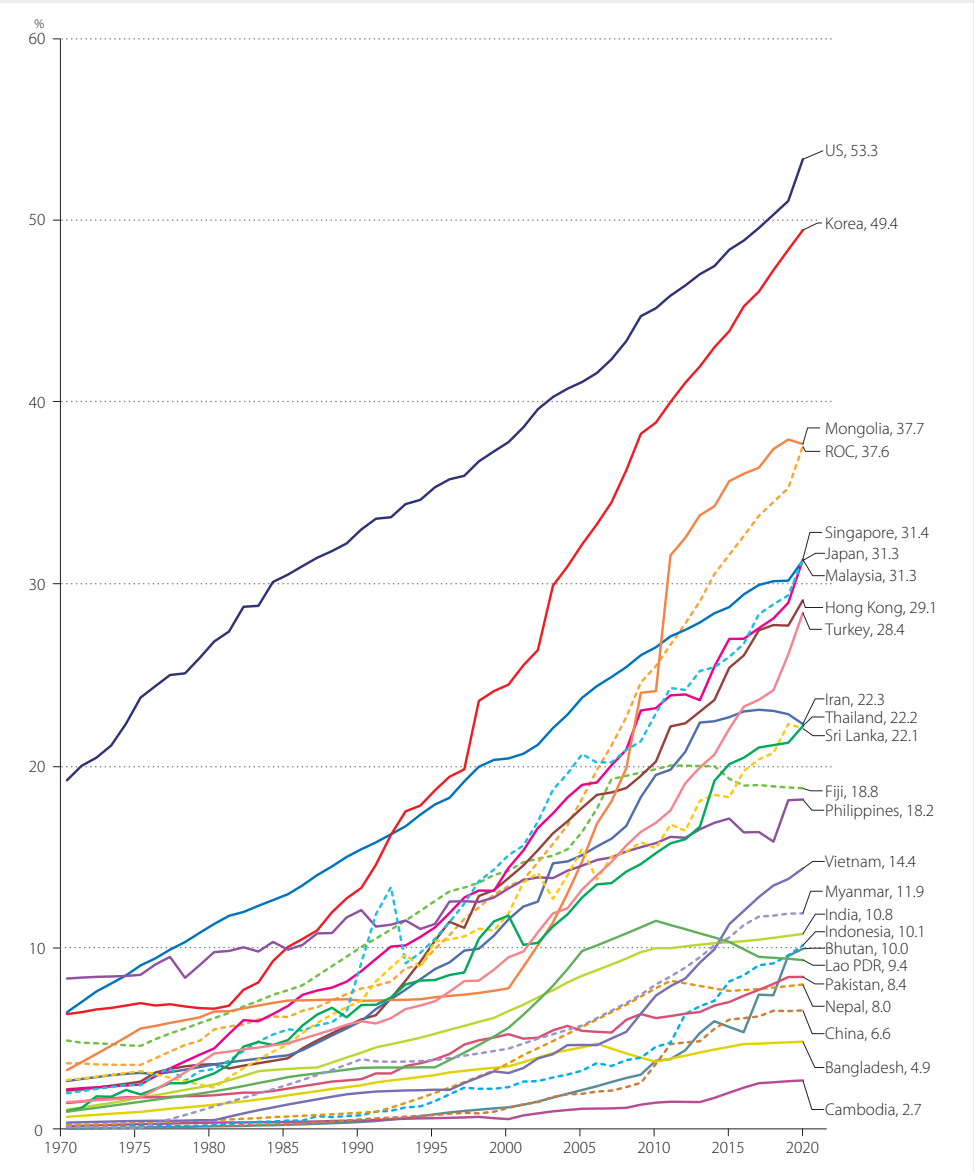

Figure B4.1 College Labor Share
——Share of college labor in total hours worked in 1970–2020

Unit: Percentage. Source: Asia QALI Database 2022.

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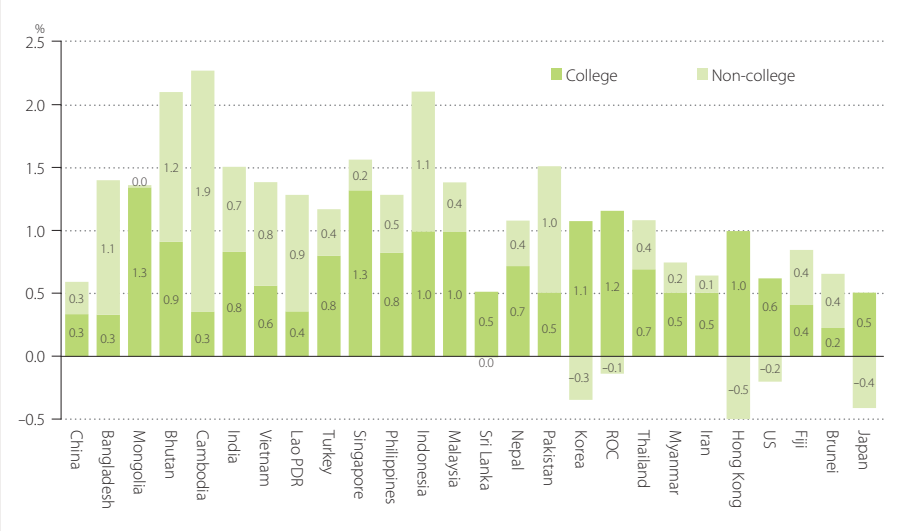

Figure B4.2 College and Non-College Labor Contributions to Economic Growth
——Contributions of college and non-college labor to economic growth in 2000–2020

Unit: Percentage (average annual contributions). Source: Asia QALI Database 2022.

Figure B4.2 shows the contribution of the college and non-college labor inputs to economic growth over the same two decades. The countries are listed in descending order of economic growth rate in this period. In general, except for Mongolia, high-growth countries tend to have higher growth rates for non-college labor. The US, Japan, Korea, ROC, and Hong Kong recorded minimally positive growth due to the expansion of college labor, while the non-college labor declined. Within a single country, or even across countries, there can be many differences in the quality of college labor. Despite these limitations as an indicator, it would be useful to understand how improving labor quality contributes to economic growth; and define specific policy goals for this purpose.

5.5 Capital Productivity

Labor productivity has received attention because it is closely related to GDP per capita. Based on the growth accounting framework, average hourly labor productivity growth can be decomposed into three factors. The first is qualitative improvements that make labor more highly skilled, measured in terms of quality-adjusted labor input per hour worked (Section 5.4). The second is "capital deepening," which evaluates how labor can use more capital, measured as capital input per hour worked. The third is TFP, which measures how efficiently all inputs are used. In other words, labor productivity growth depends not only on improvements in labor quality but also on how well capital and technology are used.

Capital deepening has been underway in almost all countries for almost all periods, except for a few foreign countries, such as Brunei, as shown in Figure 44. In Asia25, the speed of capital deepening has been stable at 6% to 7% per year since 2005. The experience of countries suggests that capital deepening is an accompanying process of economic growth. In 2015–2020, Myanmar, China, Lao PDR, Bangladesh, Turkey, and India moved up to occupy the top spots.

While labor productivity steadily improved for all countries (with a few exceptions), as shown in Figure 31 in Section 5.2, the growth rate of capital productivity (as the other measure of partial productivity) remained negative for many countries regardless of the observation periods, as shown in Figure 45. On average, in 2015–2020, although labor productivity improved by 4.7% in China and 2.6% in India (Figure

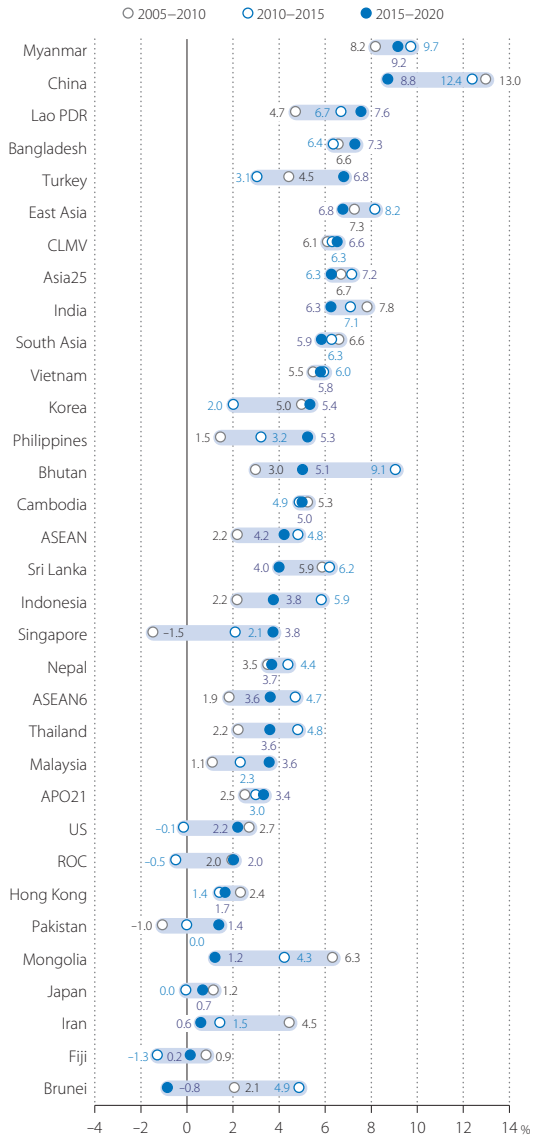

Figure 44 Capital Deepening
——Growth of capital input per hour worked in 2015–2020, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

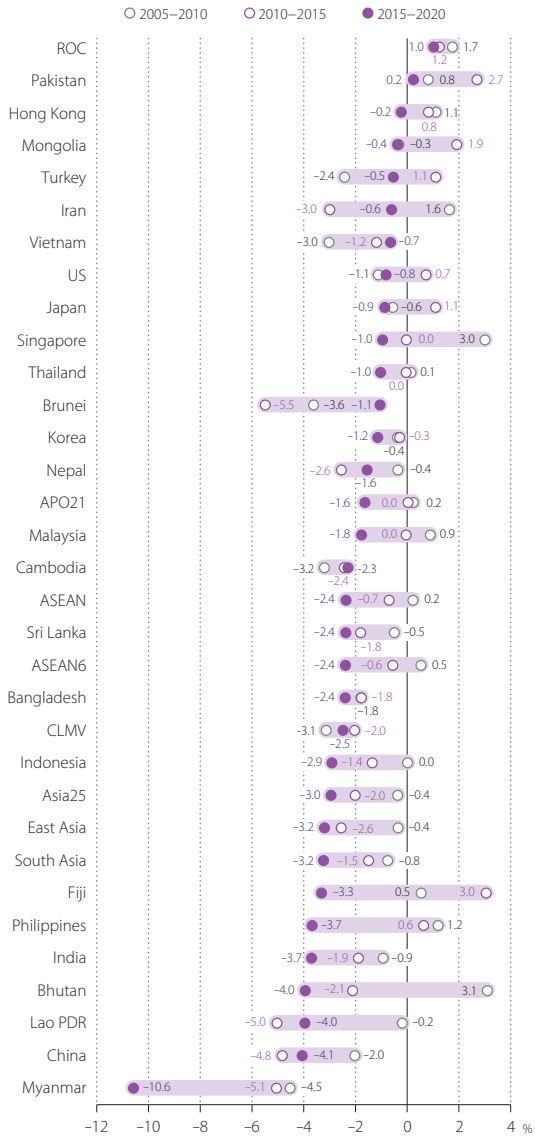

Figure 45 Capital Productivity Growth
——Growth of GDP per capital input in 2015–2020, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

32 in Section 5.2) and the rates of capital deepening were outstanding at 8.8% and 6.3%, respectively (Figure 44), their capital productivity experienced the sharpest decline of 4.1% and 3.7%, respectively. The decline in capital productivity is a necessary burden to increase labor productivity through capital deepening, as long as it does not worsen TFP.

Box 5 An Alternative Path to Fully Developed Economy?

The Databook presents the decomposition of capital stock, which includes the stock of IT (hardware and software) and R&D capital. Figure B5 shows these stocks relative to GDP in 2020. R&D capital has been regarded as the basis of scientific knowledge and crucial inputs for innovation. As shown in Figure B5, the ratio of R&D capital to GDP is particularly high in Korea, Japan, Singapore, and the US, followed by the ROC. It is perhaps not surprising that other Asian countries have extremely low ratios of R&D capital to GDP. There exists a big gap between economies that have reached the high-income level and those that have not. Our conventional understanding is that innovation capability, backed by R&D capital in a well-organized massive national innovation system, is essential for stepping up from upper-middle-income to fully developed economies.

However, our IT capital data may suggest a different view. The IT capital here consists of IT software and hardware, such as computers, communications equipment, TVs, radios, and cellular phones. The stock of this IT capital relative to GDP is much larger than that of R&D capital in most developing countries, and the gap between developed and developing countries is much smaller. Thailand and Malaysia have IT shares comparable to those of developed countries. Although we are not sure why Thailand has much larger IT hardware than IT software, fully developed and newly developed economies tend to have large IT software stocks (software embedded in hardware is counted as hardware, and the breakdown between the two may not be very meaningful due to different business practices in different countries).

The current developing countries are not conducting cutting-edge innovation at the technological frontier but are proactively engaged in deploying new technologies even though such activities are not counted as R&D investment. In the past two decades, business innovation was shifting its weight from gradual innovation with large-scale R&D investment to disruptive innovation (Bower and Christensen 1995). The latter is characterized by multiple trials and errors—many failure cases with a few extremely successful cases as unicorns. Although it may not be properly counted in GDP, the proliferation of new services is astounding, which includes social media, e-commerce, matching, service outsourcing, e-payment, fintech, and e-government. New technologies also rejuvenate old industries such as agriculture, manufacturing, transportation, and tourism. These suggest that heavy and slow R&D and perhaps manufacturing-centric development may not be the only way to step up to fully developed economies from now on.

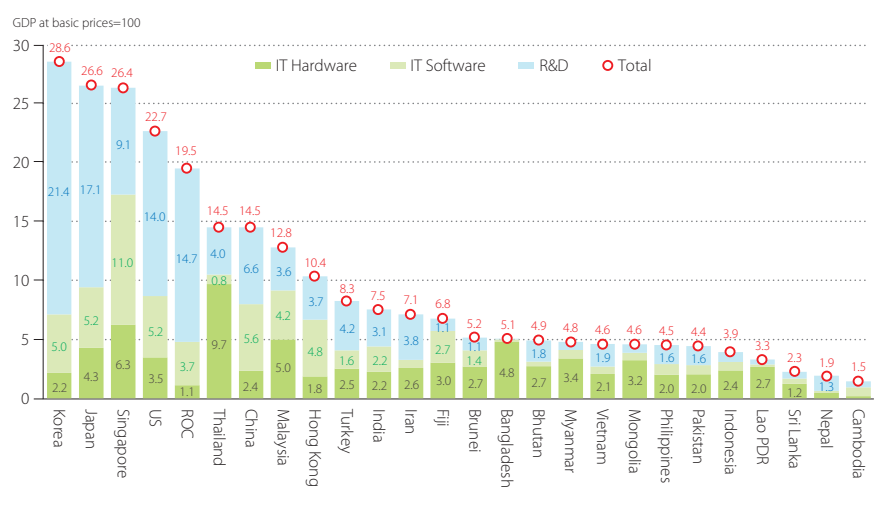

Figure B5 Stock of IT and R&D Capital, Relative to GDP in 2020
——Ratios of the end-of-year capital stocks of IT and R&D to the basic-price GDP at current prices in 2020

Unit: Percentage. Source: APO Productivity Database 2022.

5.6 Sources of Labor Productivity Growth

Capital deepening should raise labor productivity, all other things being equal. Figures 46 and 47 show the contributions to per-hour labor productivity growth and their contribution shares in 2000–2020.

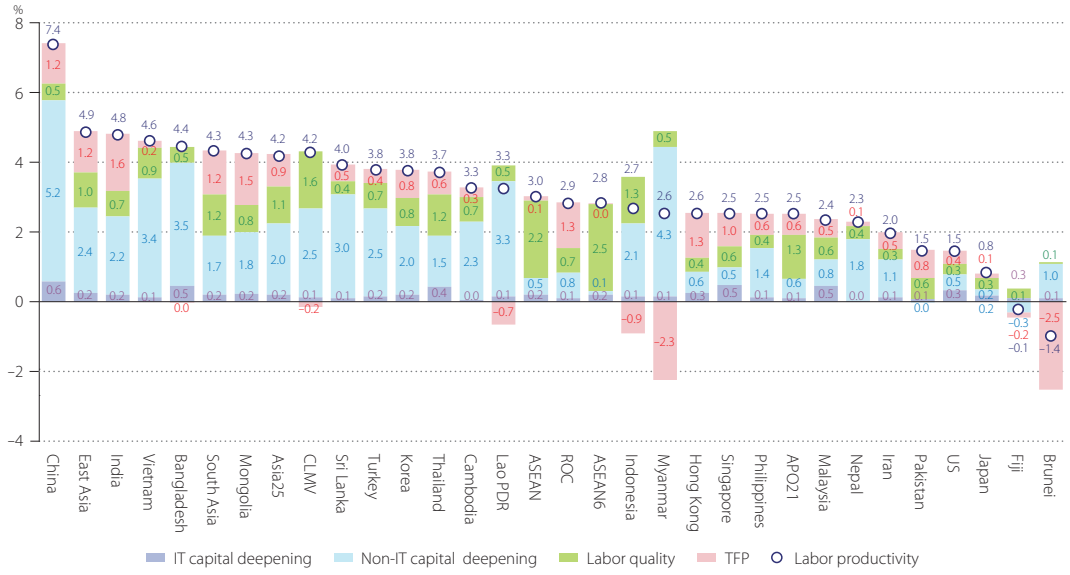

Figure 46 Sources of Labor Productivity Growth
——Decompositions of the growth GDP per hour in 2000–2020

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

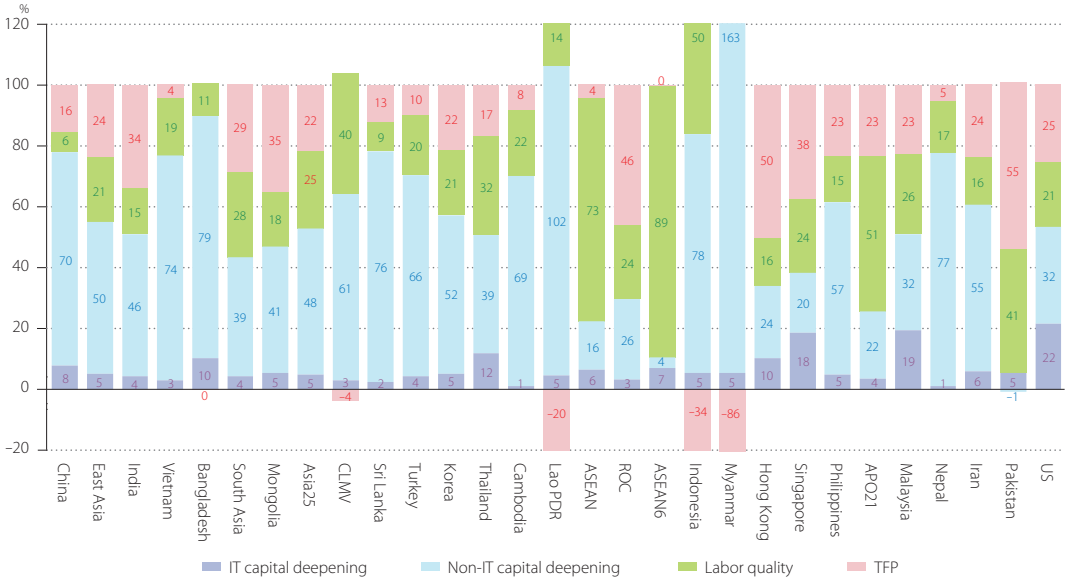

Figure 47 Contribution Shares of Labor Productivity Growth
——Contribution shares of capital deepening, labor quality, and TFP in 2000–2020

Unit: Percentage. Source: APO Productivity Database 2022. Note: The countries with negative growth in labor productivity are excluded.

According to these figures, it remains the prime engine of labor productivity growth, explaining 55% (48% for non-IT and 5% for IT capital) in East Asia. The contribution of improvement in labor quality is more moderate at 21% in East Asia than 24% of the TFP contribution.

However, the role of labor quality changes is more significant in emerging Asian countries. In the ASEAN, with 0.1% growth of regional TFP in 2000–2020, labor quality was the prime engine contributing 73% of the regional improvement in labor productivity. In South Asia, the labor quality growth explains 28% of labor productivity improvement, almost equivalent to the contribution of TFP growth (29%).

5.7 Energy Productivity

In Asia31, to produce 45% of the world output in 2019, 45% of world energy was consumed, and 53% of world CO2 was emitted (Figure 48), compared to 15%, 10%, and 8% in the EU27. This implies that Asia has lower energy productivity (defined as a ratio of output per energy consumption) and higher carbon intensity of energy at the aggregate level compared to the EU27. It is imperative to improve energy productivity and carbon intensity in the growing economies of Asia to reduce CO2 emissions in the world in the long run.

There is considerable diversity in energy productivity among countries in Asia. Figure 49 compares energy productivity trends of Japan, China, Asia31, and the EU15 from 1970 to 2019, relative to the US. While considering that such comparisons at the aggregate level are only rough indicators, given the different industrial structures and climates in different countries, Japan's energy productivity level is almost equivalent to the EU15 from the mid-1990s. By this measure, the Japan-EU level is about 40% higher than that of the US. Chinese energy productivity was less than 40% of that of the US in the 1970s and the 1980s. However, China succeeded in improving energy productivity along with its economic growth since the 1990s, closing the gap with the US to 23% in 2019.

The energy productivity measure reflects not only the difference in energy efficiencies of industries and households but also the difference in industry and production structure of the economy. Thus, the energy productivity at the aggregate level is highly dependent on the development stage of the economy and industrial structure. Figure 50 places countries on the two partial productivity indicators of labor and energy, measured in 2019. Less-developed countries with lower labor productivity (such as the Philippines,

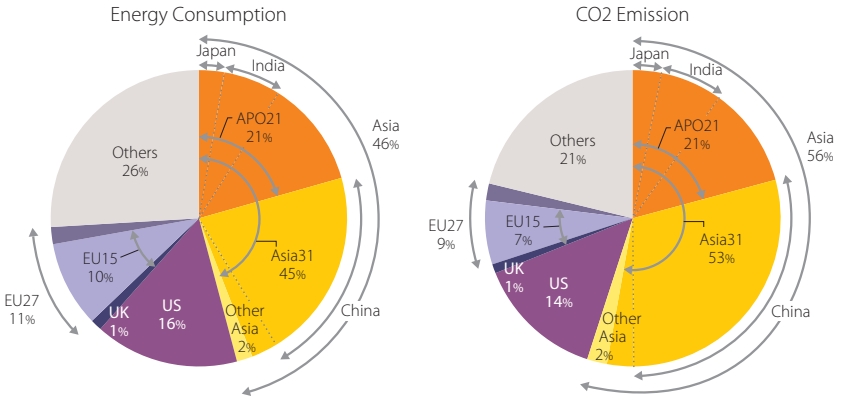

Figure 48 Asia in World Energy Consumption and CO2 Emission
——Share of final energy consumption and CO2 emission in 2019

Unit: Percentage. Sources: IEA (2021a and 2021b).

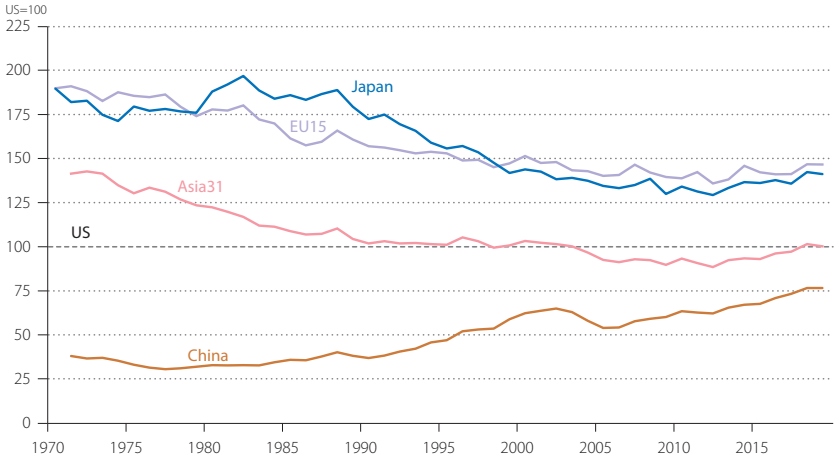

Figure 49 Energy Productivity of Japan, China, and the EU, Relative to the US

——Index of GDP per final energy consumption in 1970–2019

Unit: Index (GDP at constant market prices, using the 2017 PPP, per final energy consumption in the US=100). Sources: Official national accounts in each country (including author adjustments) and IEA (2021b).

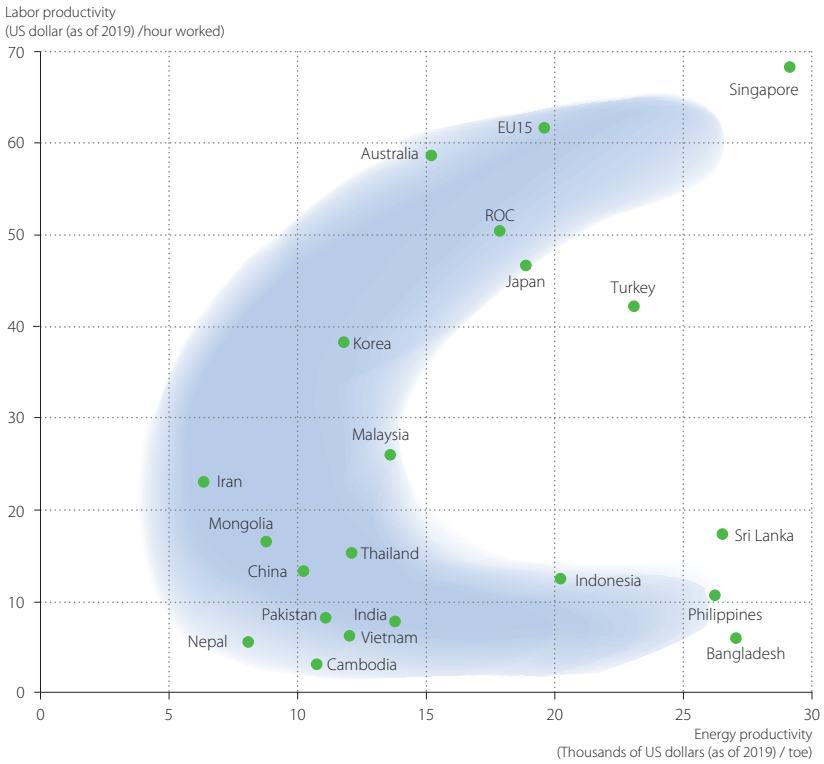

Figure 50 Labor Productivity and Energy Productivity

——Per-hour labor productivity level and energy productivity level in 2019

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including author adjustments), IEA (2021b), and APO Productivity Database 2022.

Sri Lanka, and Bangladesh) tend to have higher energy productivity. One of the effective strategies to improve labor productivity in such countries is to expand the manufacturing sector and capital accumulation. This frequently follows the deterioration in energy productivity. In the next stage of economic growth, well-developed countries will be able to pay more attention to improving energy productivity by abolishing implicit or explicit subsidies on energy prices, especially electricity prices, and levying heavier taxes on energy consumption. The C-shape dynamics between labor and energy productivities in Figure 50 corresponds to the so-called Environmental Kuznets curve, as an inversed U-shape relationship between environmental quality (at the y-axis) and economic development (at the x-axis).

Figure 51 decomposes the sources of CO2 emission growth (from fuel combustion) in the Asian countries during 2000–2019, based on the so-called Kaya identity. The growth in CO2 emissions is decomposed into three components: changes in the constant-price GDP, the carbon intensity of energy, and the energy intensity of GDP (the inverse of energy productivity). In many countries, the production expansion (real GDP growth) is the most significant factor in explaining the growth of CO2 emissions. Except for Iran, energy productivity has improved in many Asian countries in this period. However, these improvements are not enough to offset an expansion of energy consumption in all Asian countries except Japan.

On the other hand, in many Asian economies, the carbon intensity of energy has increased, mainly due to an expansion of coal consumption. Japan achieved some improvement in energy efficiency in this period, but the carbon intensity of energy increased due to an extremely low operation rate of nuclear power plants after the Fukushima Daiichi nuclear disaster in March 2011. Singapore realized a significant improvement (decrease) in the carbon intensity of energy by the shift from oil to LNG in electricity power generation.[44] This helped offset the increases in CO2 emissions accompanied by strong economic growth,

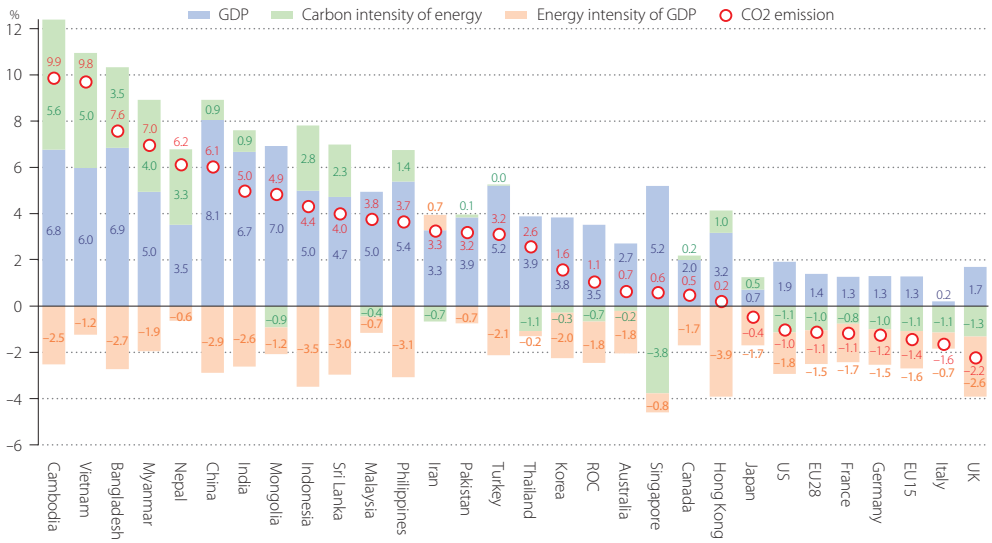

Figure 51 Sources of CO2 Emission Growth
——Growth of CO2 emission in 2000–2019

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including author adjustments) and IEA (2021a and 2021b).

44: In Singapore, the share of natural gas in electricity generation reached 95% in 2019 from 18% in 2000, compared to the decrease in the share of oil in power generation from 80% in 2000 to 0.4% in 2019 (IEA 2021b).

regardless of a modest energy productivity improvement. In this period, decoupling in the growth of GDP and CO2 emission is apparent in a few developed countries, especially in the EU15 and the US. However, this may be due mainly to the shift in energy-consuming production to the Asian countries, where more energy was required, and more CO2 was emitted to produce the same output.

5.8 Comparison with OECD Countries

This section compares the performances of Asian countries with those of OECD countries published in the OECD Productivity Database (OECD 2022) to give readers a wider perspective of the results. For this comparison, the growth accountings for Asian countries are re-estimated based on the OECD-compliant methodology only in this section of this report. There are two main differences between them. First, land and inventory are not considered capital input in the OECD-compliant methodology,[45] and this adjustment would expand the speed of capital accumulation and thus constrain the rate of TFP growth, compared to the results of this report. Second, change in labor quality is not considered in labor input. Labor input is measured by hours worked, and the measured TFP growth rate includes the effect of labor quality improvements.[46] Figure 52 provides the revision on the two-decade average of the TFP growth by country from 2000 to 2020, resulting from these two methodological changes. Based on OECD-compliant methodology, most Asian countries are increasing by 0–1 percentage points per year.

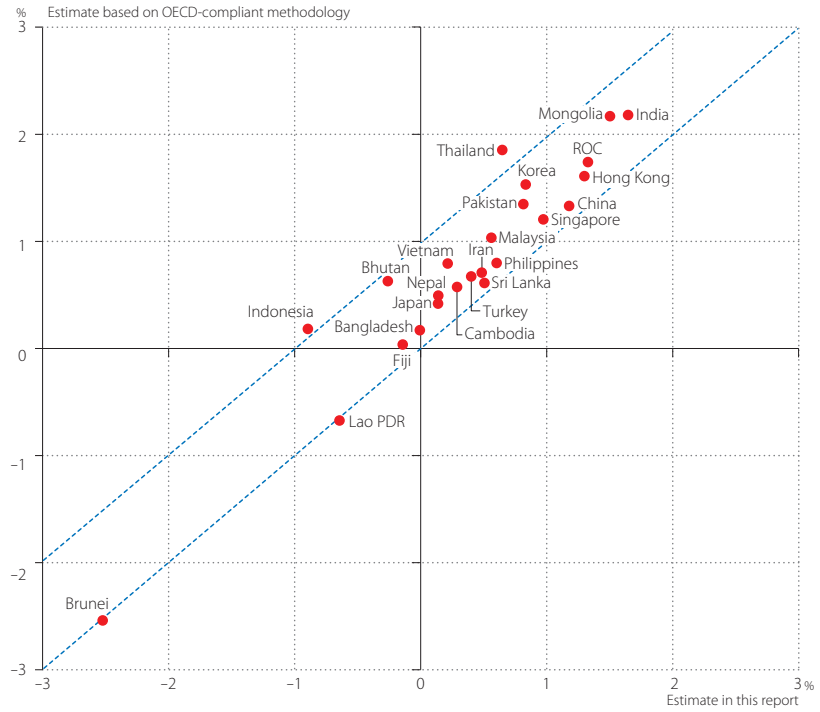

Figure 52 Comparison of TFP Estimates Based on Different Methodology
——TFP growth in 2000–2020

Unit: Percentage (average annual growth rate). Sources: APO Productivity Database 2022. Note: See the main text for differences between the OECD-compliant methodology and the methodology of this report.

45: Due to this methodological change, the rate of return of capital is re-estimated endogenously (see Section 9.2.7).

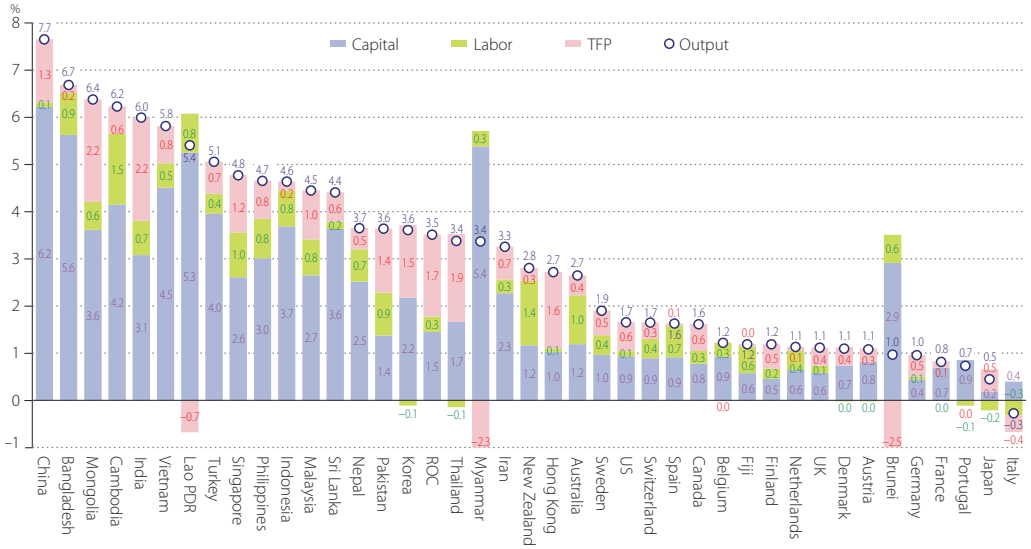

Figure 53 Comparison of Sources of Economic Growth with OECD Countries

——GDP growth and contributions of capital, labor, and TFP in 2000–2020

Unit: Percentage (average annual growth rate). Sources: APO Productivity Database 2022 for the Asia25 economies and the US. The OECD.Stat (Dataset: Multi-Factor Productivity) and OECD (2022) for OECD countries (except Japan, Korea, Turkey, and the US). Note: The impacts of labor quality changes are included in TFP; land stock is not included in capital inputs. The ending years for Spain and Portugal are 2019.

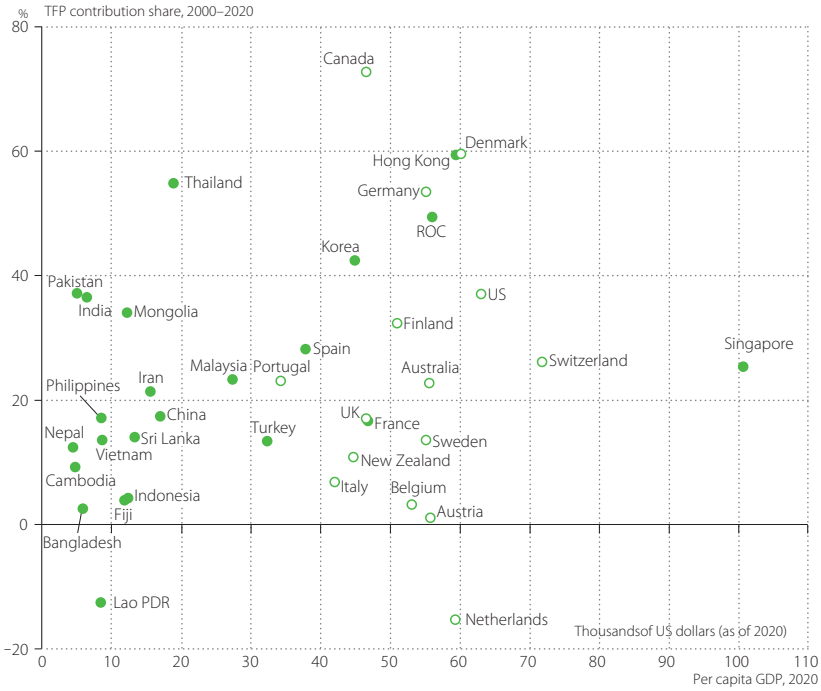

Figure 54 Comparison of TFP Contribution Share with OECD Countries

——Contribution share of TFP in economic growth in 2000–2020

Unit: Percentage (contribution share) for the vertical axis and thousands of US dollars for the horizontal axis. Sources: APO Productivity Database 2022 for the Asia25 economies and the US. The OECD.Stat (Dataset: Multi-Factor Productivity) and OECD (2022) for OECD countries (except Japan, Korea, Turkey, and the US). Note: The impacts of labor quality changes are included in TFP; land stock is not included in capital inputs. The ending years for Spain and Portugal are 2019.

Figure 53 compares the growth accountings between Asian countries (based on the OECD-compliant methodology) and OECD countries (OECD 2022) for the period 2000–2020. Under methodologically identical comparison, Asian countries enjoy higher TFP growth rates than OECD countries. Though growing at a more subdued pace, the contribution made by TFP in the slower-growing, mature economies should not be underestimated. Figure 54 plots the per capita GDP level in 2020 and the TFP contribution share in each country from 2000 to 2020 for the 25 Asian countries (as dots) with the comparison of OECD countries (as white circles). There are no significant differences in the roles of TFP contribution to economic growth between the mature OECD economies and the middle-income Asian countries.

46: The multi-factor productivity in the OECD Productivity Database (OECD 2022), referred to as TFP in this report, defines total input as the weighted average of the growth rates of total hours worked and capital services. Although our methodology is changed to be comparable with them in Figures 53 and 54, readers should mind two differences in assumptions remain. First, capital services of residential buildings are included in our estimates of capital input in order to be consistent with output that includes the imputed cost of owner-occupied housing. Second, the compensation of capital is defined in our estimates as the residual of the value added and the compensation of labor (compensations for employees, self-employed persons, and contributing family workers), whereas the OECD defines it as the imputed value of capital services based on the assumptions of an ex-ante rate of returns on capital. Thus, although both apply the same Törnqvist index, the weights to aggregate labor and capital can differ. Other than these, our methodology and assumptions in measuring capital services are designed to be largely consistent with the OECD methodology; and the impact of the differences in assumptions on the volume estimates of capital services is judged to be limited.

Box 6 Sensitivity to TFP Estimates by Labor Share

TFP computations, based on the growth accounting framework, depend on data that is often difficult to observe. One difficulty is calculating the compensation for the self-employed and unpaid family workers. Section 9.3.3 presents the assumption of measuring the labor compensation for total employment in the Asia QALI Database 2022. The future review of this assumption affects TFP estimates directly through the revision of factor income shares and indirectly through the estimates of the ex-post rate of return, and thus the aggregate measure of capital services.

The right panel of Figure B6.1 presents the labor income share (the ratio of compensation of employees to the basic-price GDP) based on the official national accounts (including author adjustments in basic-price GDP for some countries) in the Asia25 economies and the US in 2020. The left panel of the figure illustrates the employee share to total employment. There is a significant difference in employee labor income share among the Asian countries. This does not necessarily reflect differences in the number of employees in total employment. Although Malaysia and Turkey have a high employee share of 79% and 74%, the labor income share is only 41% and 32% in 2020, respectively.

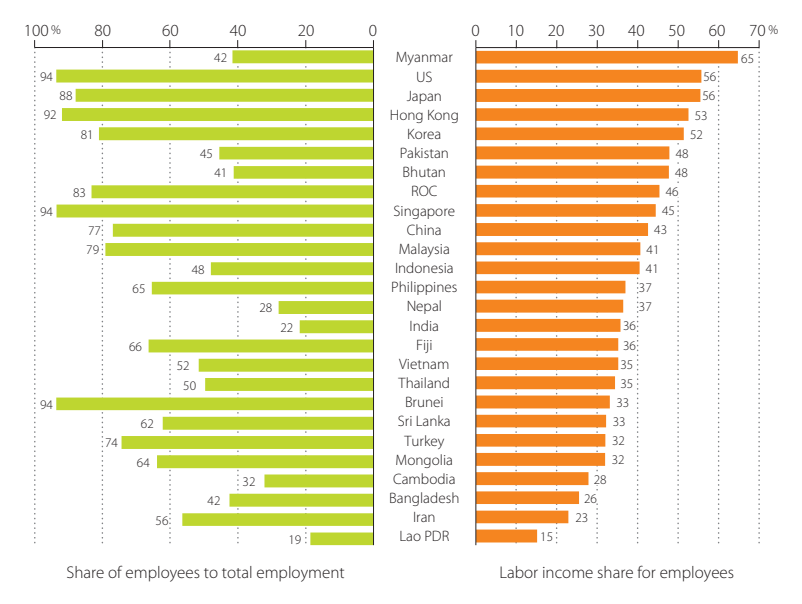

Figure B6.1 Labor Income Share for Employees in 2020

Unit: Percentage. Sources: Official national accounts in each country (including author adjustments) and Asia QALI Database 2022.

Figure B6.2 illustrates the sensitivity of TFP estimates by changing the factor income share from 2010 to 2020. In general, the growth rate of capital input is higher than that of labor input, and therefore the higher income share of labor results in higher estimates of TFP growth. In other words, labor productivity (Figure 32 in Section 5.2) is improved much faster over a given period than capital productivity (Figure 45 in Section 1.1), the growth of which frequently tends to be negative. The TFP estimate reflects the improvement of labor productivity more when the labor share increases. In the case of Vietnam, the average TFP growth rate for 2010–2020 is 1.2%, but if the labor share in its current estimates were underestimated by 10%, the true TFP growth rate would be revised to 1.7%. Given the larger informal economy in Asian countries and the difficulty of capturing income from such sectors, it is appropriate to capture TFP growth rates with an error margin of about Figure B6.2.

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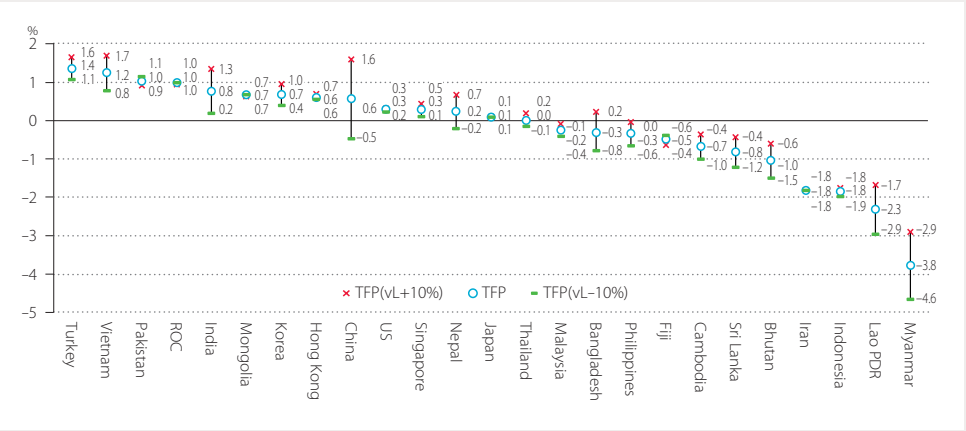

Figure B6.2 Sensitivity of TFP Estimates by the Change of Labor Share
——Growth of total factor productivity in 2010–2020

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

6 Industry Perspective

Highlights

- While Asian countries are diversifying and moving away from agriculture, forestry, and fishing, this sector continues to dominate employment, accounting for 30% of total employment in 2020 in Asia25 (Figure 59), down from 63% in 1980. Its share in total value added decreased more moderately, from 17% to 9% over the same period (Figures 55 and 62).
- Manufacturing is a significant sector, accounting for over 20% of total value added in nine Asian countries in 2020 (Figure 55 and Table 23). It is particularly prominent at 33% in ROC, 27% in Korea, 26% in Thailand, and 25% in China. Manufacturing is dominated by machinery and equipment in most Asian economies, while Bangladesh and Cambodia concentrate on light manufacturing, such as textiles and the food industry (Figures 57 and 68).
- In labor productivity growth by region, the manufacturing sector's contribution is significant at 30% in East Asia in 2010–2020 but remains moderate in CLMV at 18% and South Asia at 15% (Figure 71). In South Asia, 62% of the labor productivity growth is explained by improvement in the service sector, compared to 29% in East Asia and 38% in CLMV (Figure 72).

Industry decomposition gives insight into the source of a country's economic dynamics, which, in turn, determines its overall performance and characteristics, its strengths, and its vulnerabilities. On the one hand, a broad industry base reflects diversification and sophistication in the economy and is more resourceful in weathering economic shocks. On the other hand, reliance on a narrow industry base leaves an economy more vulnerable to shocks and more susceptible to volatility. The different composition of economic activities among countries is one of the main sources of the huge gap in average labor productivity observed at the aggregate level in Chapter 5. By analyzing the industry structure of the Asian economies, one can trace the path of economic development and identify countries' respective stages based on their characteristics.[47]

6.1 Industrial Structure

Table 1 in Section 3.2 introduces a country grouping according to stages of development from the point of view of long-run economic growth from 1970 (as measured by per capita GDP relative to the US). Table 2 regroups countries based on the same set of criteria as in Table 1, but applies it to 2020 income levels and focuses on a more recent catch-up to the US from 2010.

Countries at the lower rungs of the development ladder tend to have greater agriculture, forestry, and fishing sector as a share of value added.[48] Based on the measures using the first-digit industry classification, this primary industry dominates in seven countries: Nepal, Pakistan, Cambodia, Lao PDR, Myanmar, Fiji, and Bhutan. Figure 55 shows the industry composition of the Asian economies and regions in

47: Constructing the industry origins of labor productivity growth requires confronting a large volume of data from different sources. Issues of data inconsistency arising from fragmentation of national statistical frameworks can present enormous hurdles to researchers in this field. The industry data in this chapter is mainly based on official national accounts. Where back data is not available, series are spliced together using different benchmarks and growth rates. Data inconsistencies in terms of concepts, coverage, and data sources have not been fully treated although levels of breakdown are deliberately chosen to minimize the potential impact of these data inconsistencies. In constructing the APO Productivity Database 2022, we have comprehensively examined the problems of time-series connections of industry data in each Asian country, but problems still remain. Readers should bear these caveats in mind in interpreting the results.

Table 2 Country Groups Based on the Current Economic Level and the Pace of Catching Up
——Level and average annual growth rate of per capita GDP at constant market prices, using 2017 PPP

Per capita GDP level in 2020, relative to the US	Average annual rate of catch-up to the US during 2010–2020					
	(C6) <–1%	(C5) –1% ≤–< 0%	(C4) 0% ≤–< 1%	(C3) 1% ≤–< 2%	(C2) 2% ≤–< 3%	(C1) 3% ≤
(D1) 100% ≤	Brunei, Qatar		UAE	Singapore		
(D2) 70% ≤ - <100%	Kuwait	Australia, EU15, France, Germany, Hong Kong, Saudi Arabia, UK	Bahrain	ROC, Korea		
(D3) 40% ≤ - < 70%	Oman	EU27, Japan		Malaysia		Turkey
(D4) 20% ≤ - < 40%	Iran			Sri Lanka, Thailand		China
(D5) 10% ≤ - < 20%		Fiji			Bhutan, India, Indonesia, Lao PDR, Philippines	Mongolia, Vietnam
(D6) < 10%		Myanmar	Pakistan	Nepal	Cambodia	Bangladesh

Sources: Official national accounts in each country, including author adjustments. Note: The annual catch-up rates in the column are based on the estimates for 2010–2020.

2020, with the reference chart on GDP per capita (using the 2017 PPP) at the left of Figure 55.[49] In the figure, the countries are listed in descending order of GDP per capita, but there is a negative correlation such that the share of the primary industry expands with lower income.[50] The changes in industry shares of value added are presented in Table 23 in Appendix 3.

Adopting technologies from advanced economies is important to foster productivity in less-developed countries. In this view of assimilation, manufacturing is a key sector in driving countries to leap in economic development. It accounts for 20% more of the total value added in nine of the Asian countries compared in Figure 55. Figure 56 compares the estimates of TFP growth during 2010–2020 and the shares of manufacturing in 2020. A positive correlation between them seen in past decades is no longer clear in the 2010s but appears to exist for each group of high-income countries, such as Japan and the Asian Tigers, and other middle-income countries. However, Thailand is an exception, with slow growth in TFP despite its high manufacturing ratio.

48: In Chapter 5, GDP is adjusted to be valued at basic prices (if the official estimates at basic prices are not available, they are our estimates). However, the definition of GDP by industry differs among countries in this chapter due to data availability. The industry-level GDP is valued at factor cost for Fiji and Pakistan; at basic prices for Cambodia, Hong Kong, India, Korea, the Lao PDR, Mongolia, Nepal, Singapore, and Vietnam; at producers' prices for Bangladesh, Iran, the ROC, and the Philippines; and at market prices for Indonesia, Japan, Malaysia, Sri Lanka, Thailand, and Turkey.

49: The nine industries are 1–agriculture forestry, and fishing; 2–mining; 3–manufacturing; 4–electricity, gas, and water supply; 5–construction; 6–wholesale and retail trade, hotels, and restaurants; 7–transport, storage, and communications; 8–finance, real estate, and business activities; and 9–community, social, and personal services. Cambodia, Iran, and Nepal use the International Standard Industry Classification of All Economic Activities (ISIC) Rev.3. Other Asian economies already have switched to the ISIC Rev.4. See Appendix 10 in the 2018 edition of the Databook for the concordances between the industry classification used in the Databook and the ISIC Rev.3 and Rev.4.

50: The regional averages as industry share of value added are based on a country's industrial GDP, using the PPPs for GDP for the whole economy without consideration of the differences in relative prices of industry GDP among countries.

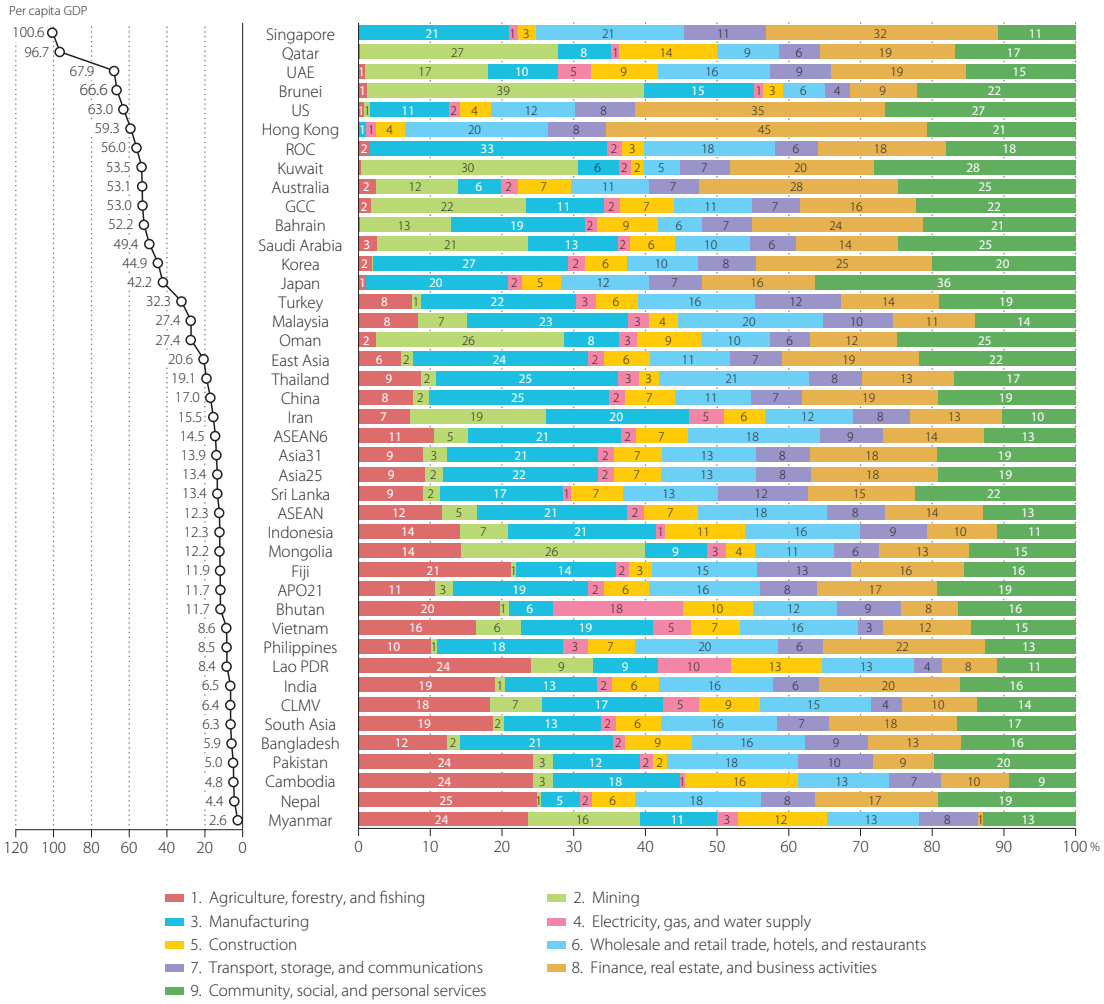

Figure 55 Industry Shares of Value Added
——Shares of industry GDP in aggregate GDP in 2020

Unit: Percentage (current-price share). Sources: Official national accounts in each country, including author adjustments. Note: The reference chart at the left shows per capita GDP in 2020, using the 2017 PPP for GDP, the reference year 2020 (thousands of US dollars).

Figure 57 shows the breakdown of the share of manufacturing GDP, comprising nine sub-industries, for 17 selected Asian countries, for which data are available, and the US in 2020.[51] Countries are sorted based on the size of the share of 3.8–machinery and equipment manufacturing. The dominance of machinery and equipment in manufacturing is apparent in Asian Tigers and Japan. At the other end are countries dominated by light manufacturing e.g., 3.1–food products, beverages, and tobacco products sector in Mongolia, the Philippines, and Fiji; 3.2–textiles, wearing apparel, and leather products in Cambodia and Bangladesh.

51: Manufacturing consists of nine sub-industries: 3.1–food products, beverages, and tobacco products; 3.2–textiles, wearing apparel, and leather products; 3.3–wood and wood products; 3.4–paper, paper products, printing, and publishing; 3.5–coke, refined petroleum products, chemicals, rubber, and plastic products; 3.6–other non-metallic mineral products; 3.7–basic metals; 3.8–machinery and equipment; and 3.9–other manufacturing.

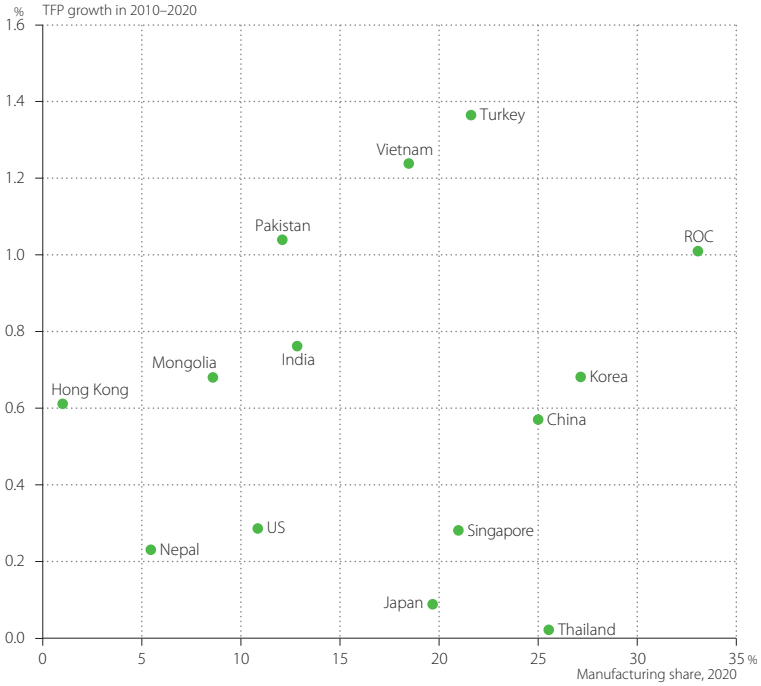

Figure 56 Manufacturing GDP Share and TFP Growth

——GDP share of manufacturing in 2020 and TFP growth in 2010–2020

Unit: Percentage (average annual growth rate for the vertical axis and current-price share for the horizontal axis). Sources: Official national accounts in each country (including author adjustments) and APO Productivity Database 2022. Note: Countries with negative TFP growth are excluded.

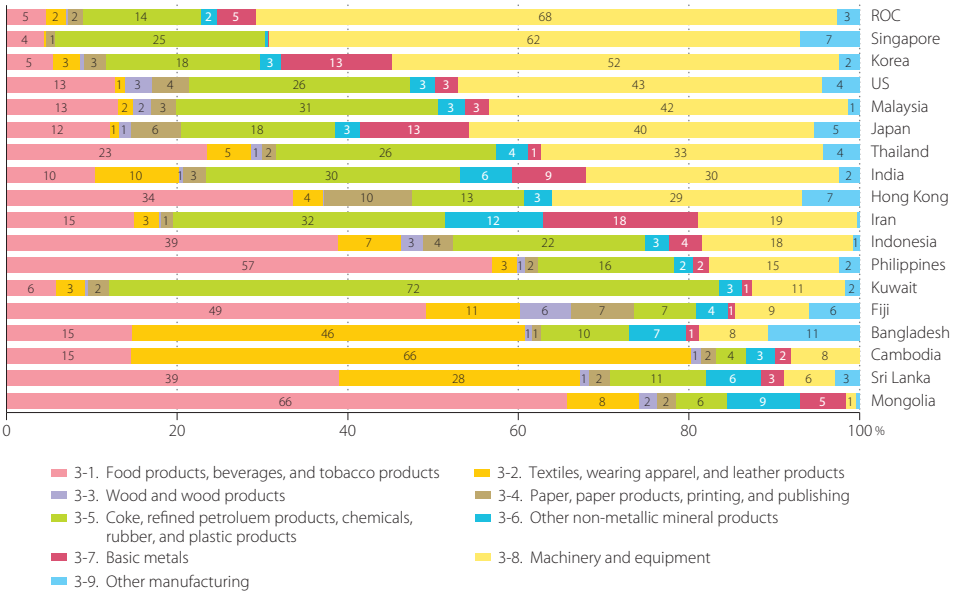

Figure 57 Industry Shares of Value Added in Manufacturing

——Shares of sub-industry GDP in manufacturing in 2020

Unit: Percentage (current-price share). Sources: Official national accounts in each country, including author adjustments.

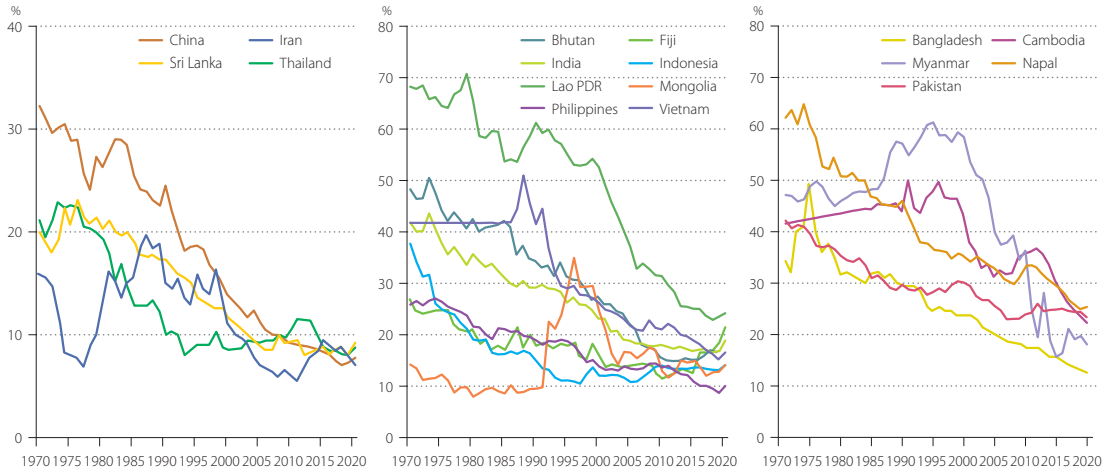

Figure 58 Trend of Value-added Share in Agriculture, Forestry, and Fishing
——Share of agriculture, forestry, and fishing sector GDP in aggregate GDP in 1970–2020

Unit: Percentage (current-price share). Sources: Population census and labor force survey in each country, including author adjustments.
Note: Countries are grouped according to the per capita income levels in 2020, relative to the US, as defined in Table 2.

Figure 58 shows how the share of the agriculture, forestry, and fishing industry in total value added dropped over time in the Asian economies, with per capita GDP lower than 40% of the US level in 2020. This could reflect the actual decline in agricultural output and/or the relatively rapid expansion in other sectors. Particularly in the lower-income countries in Group-D6, where per capita GDP is lower than 10% of the US level in 2020 (Table 2), the declining trend is evident, as shown in the right chart of Figure 58. However, there is a tendency for the agricultural GDP share to level off at around 10%, such as in the 2000s in Group-D5 (in the center chart) and in the 2010s in Group-D4 (in the left chart).

6.2 Employment Allocation

Despite the relative decline in the share of agriculture, forestry, and fishing in total value added, employment in the sector accounts for 30% of total employment for Asia in 2020. Figure 59 shows industry shares in total employment by country and region, ranking them by per-worker labor productivity in 2020, which is presented in the reference at the left.

Figure 60 traces the historical trajectory of Japan's employment share of agriculture for the period 1885–2020 and the countries' levels in 2020 (as circles), mapped against Japan's experience. Large shares of agriculture, forestry, and fishing employment—over 30% in 10 countries—correspond to Japan's level at the end of the 1950s and the onset of high economic growth. This may indicate room for improving labor productivity and per capita income if more productive industries are developed, and jobs are created.

The trend of employment share over time (Figure 61) suggests that the relative decline in the share of agriculture, forestry, and fishing in total value added has been accompanied by a downward trend in its share in total employment.[52] This trend is unmistakable in most of the countries plotted in Figure 61.[53]

52: Nepal's employment-by-industry figures are constructed by interpolating benchmark data taken from its labor force survey, as well as its population census. Figure 61 indicates that its share of agriculture has increased since 2001. This reflects the employment share of agriculture at 61% in the population census of 2001 and its share of 70% in the labor force survey of 2008.

Figure 59 Industry Shares of Employment
——Shares of the number of employment by industry in 2020

Unit: Percentage. Sources: Population census and labor force survey in each country, including author adjustments. Note: The reference chart at the left shows per-worker labor productivity in 2020, using the 2017 PPP, the reference year 2020 (thousands of US dollars).

Between 1970 and 2020, the employment share in this sector dropped from 82% to 22% in China and from 77% to 32% in Thailand.

Comparisons of the value-added and employment shares reveal some interesting facts. Agriculture, forestry, and fishing is the only industry sector that consistently has a disproportionately higher employment share than justified by its share in value added across all economies in Asia, except Fiji. This suggests that agriculture is still highly labor-intensive and/or there may be a high level of underemployment in the sector, implying that the labor productivity level is low compared to other sectors.[54] Thus, countries with a

53: However, the decline in a share does not always reflect an actual fall in employment for the agriculture sector; rather, it could reflect total employment rising faster than employment in agriculture. Countries that have been experiencing a consistent fall in actual employment in the agriculture sector are, for example, the ROC, Hong Kong, Japan, and Korea, whereas in Bangladesh, India, Iran, Nepal, and Pakistan, actual employment has been rising. Other countries such as Cambodia, Indonesia, Malaysia, Singapore, Thailand, and Vietnam have no established trend in employment growth. China, however, has seen actual employment in agriculture falling since the turn of the millennium.

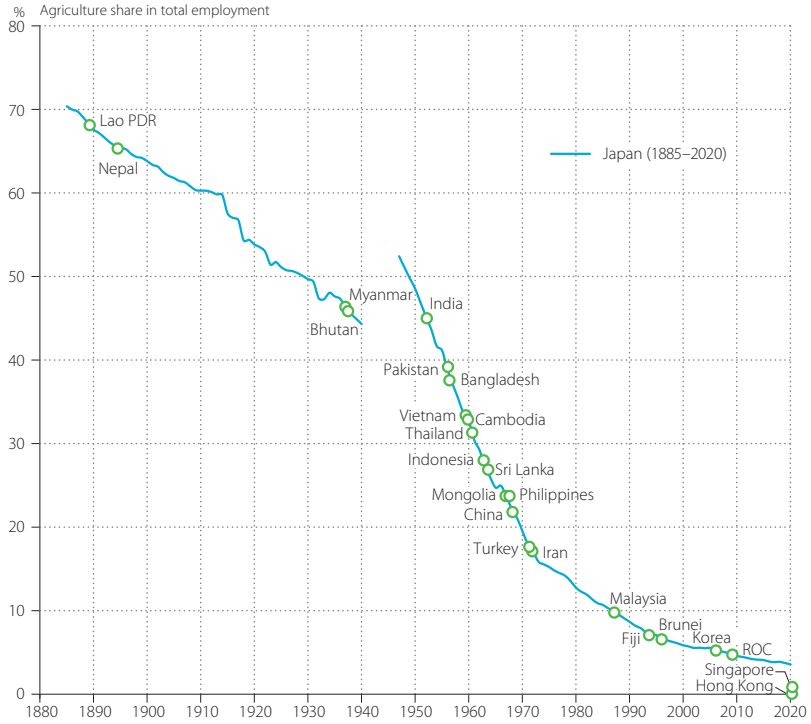

Figure 60 Historical Employment Share of Agriculture in Japan and Current Level of Asia

——Share of the number of employment in agriculture, forestry, and fishing for Japan in 1885–2020 and for Asian countries in 2020

Unit: Percentage. Sources: Population census and labor force survey in each country, including author adjustments. The historical data sources of Japan are Ohkawa, Takamatsu, and Yamamoto (1974) during 1885–1954 and population censuses since 1920.

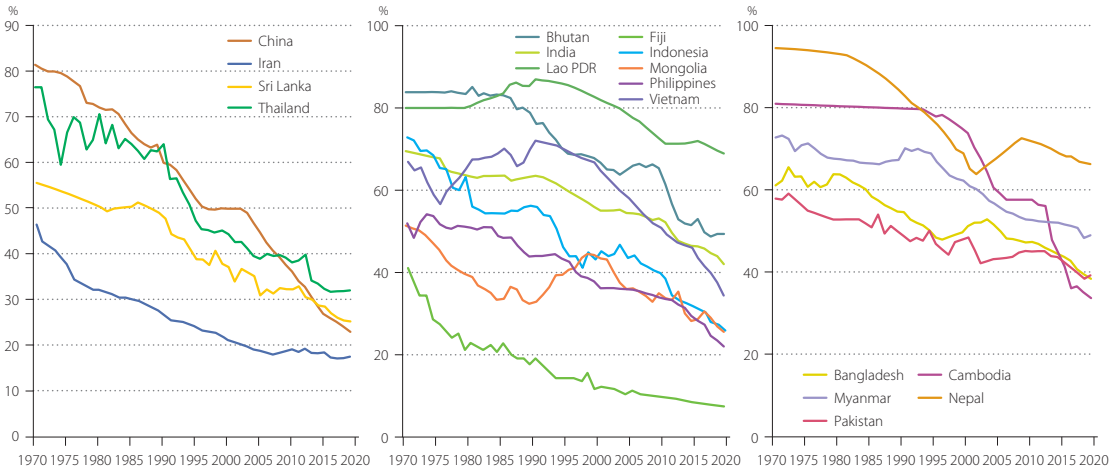

Figure 61 Trends of Employment Share in Agriculture, Forestry, and Fishing

——Share of number of employment in agriculture, forestry, and fishing in 1970–2020

Unit: Percentage. Sources: Population census and labor force survey in each country, including author adjustments. Note: Countries are grouped according to the per capita income levels in 2020, relative to the US, as defined in Table 2.

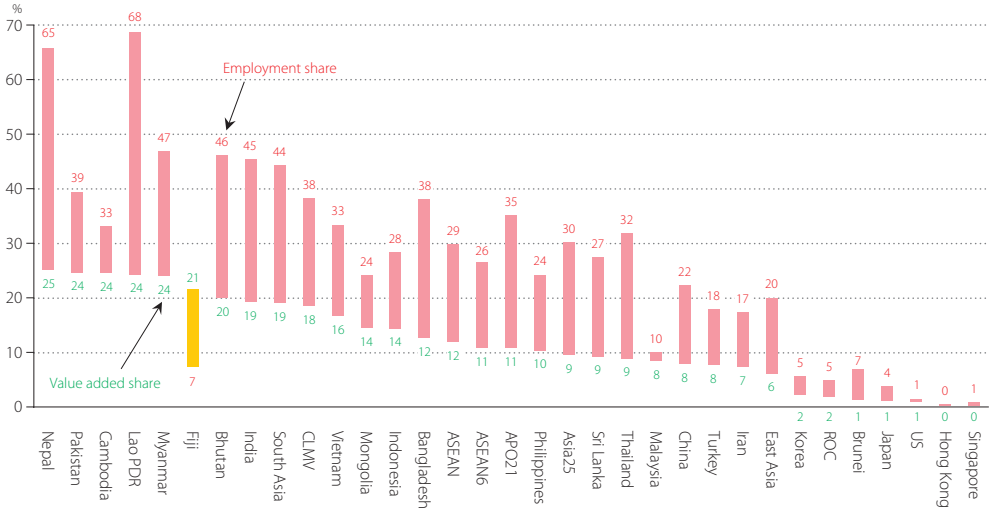

Figure 62 Value Added and Employment Share of Agriculture, Forestry, and Fishing
——Share of industry GDP in aggregate GDP and the number of employment in 2020

Unit: Percentage (current-price share). Sources: Official national accounts, population census, and labor force survey in each country, including author adjustments.

sizeable agriculture sector often have low per capita GDP. In these cases, shifting out of agriculture will help boost economy-wide labor productivity.

The US is an exception, where the agricultural value-added and employment shares are similar at 1%, as shown in Figure 62, suggesting that labor productivity in this sector is higher than that experienced in Asian countries.[55] The reverse is true for the sector of finance, real estate, and business activities, which often generate a much greater value-added share than suggested by its employment share. In 2020, the sector accounted for 35% of total value added generated by 21% of US employment and 18% and 2% in Asia25, respectively (Figures 55 and 59).

When the number of underemployed workers (known as "labor surplus") in each country is estimated, based on the simple assumption that the employment share is equivalent to the value-added share of agriculture, forestry, and fishing in the status of zero labor surplus,[56] the number of labor surplus reaches 336 million persons for Asia25 in 2020. Figure 63 presents the country contributions and regional totals (right chart) of the estimated labor surplus. It suggests a labor surplus of more than 100 million in India and China in 2020.

It is the manufacturing sector that largely absorbs workers who have been displaced from the agriculture sector, especially in the initial stages of economic development. Figure 64 traces the trajectory of growth rates of GDP and employment in combination with manufacturing for Asian countries and the US over the past five decades. Each point represents the average annual growth rate in each decade, and an arrow

54: Gollin, Parente, and Rogerson (2004) and Caselli (2005) demonstrate the negative correlation between the employment share of agriculture and GDP per worker. They show that the agriculture sector was relatively large in less well-off countries and agricultural labor productivity was lower than that in other sectors.
55: Jorgenson, Nomura, and Samuels (2016) indicates agriculture, forestry, and fishery sector is one of the industries, which realized a high TFP growth constantly in the US (1.0% on average per year in 1970–2012), compared to its stagnation in Japan's agriculture (–0.1%), reflecting differences in the scale of individual production units, as well as massive public investments (including research and development) in new agricultural technology in the US.
56: In this calculation the mining sector is excluded in the totals in both employment and value added.

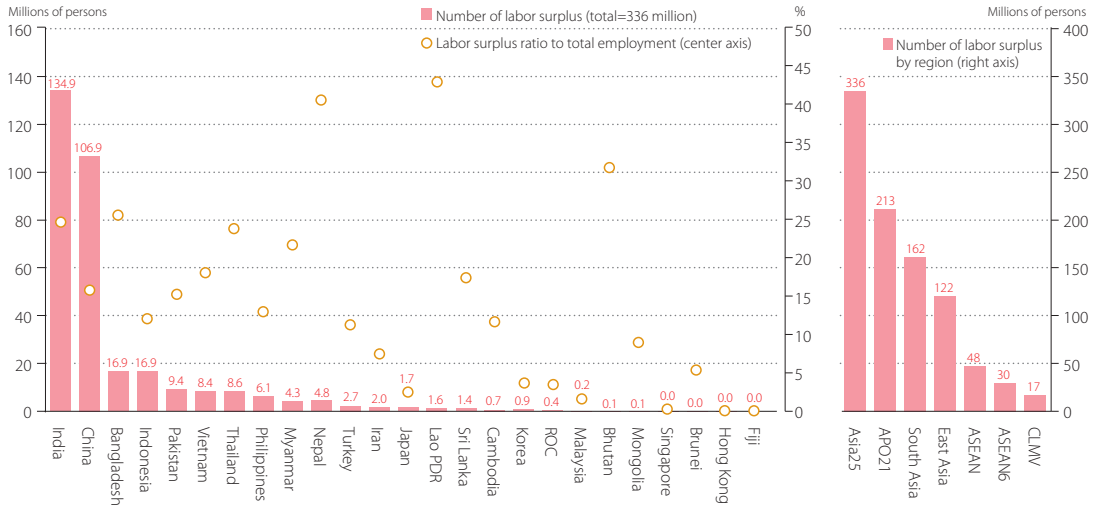

Figure 63 Labor Surplus

——Number and ratio of labor surplus in 2020

Unit: Millions of persons in the marginal axis and percentage in the center axis. Sources: Our estimates based on the APO Productivity Database 2022.

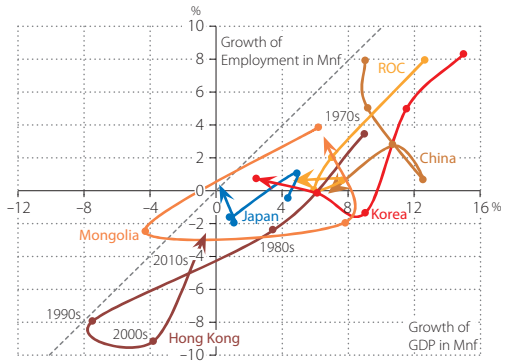

Figure 64.1: East Asia

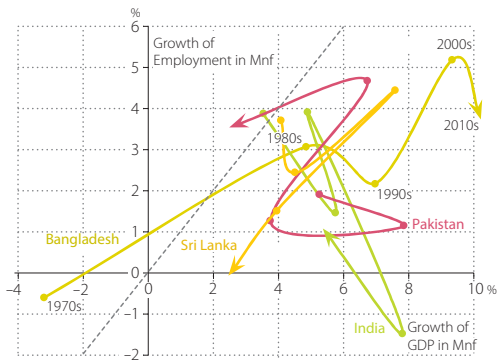

Figure 64.2: South Asia

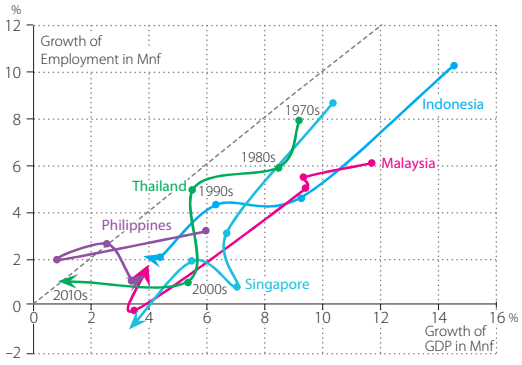

Figure 64.3: ASEAN6

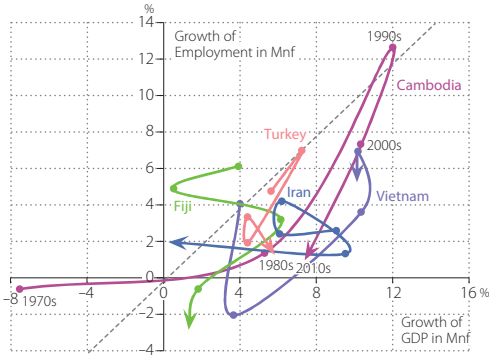

Figure 64.4: CLMV and Other Asian

Figure 64 Job Creation in Manufacturing

——GDP growth and the number of employment in 1970–2020

Unit: Percentage (average annual growth rate). Sources: Population census, labor force survey, and official national accounts in each country, including author adjustments. Note: Each dot represents the average annual growth rate in manufacturing (mnf) in the 1970s, 1980s, 1990s, 2000s, and 2010s (2010–2020). The arrows indicate the rate in the 2010s.

illustrates the growth rate in the recent decade of 2010–2020. If manufacturing GDP and employment grow at the same rate, a dot will be on a 45-degree line through the origin running from the lower left to upper right quadrants. Despite positive gains in manufacturing GDP in Japan, the overall growth in manufacturing employment was negative or slightly positive.

In Korea and the ROC, manufacturing output expansion could increase employment in the 1970s and 1980s (Figure 64.1). However, since the 1990s, manufacturing has not been an absorption sector of employment, regardless of the sound expansion of production in this sector. The experiences of Thailand and Singapore are closer to the 45-degree line through the origin, implying well-balanced output growth and employment in the manufacturing sector. The job creation role of manufacturing has remained in these countries, but it is diminishing rapidly (Figure 64.3).

6.3 Industry Origins of Economic Growth

Industry origins of economic growth by country and region for the period 2010–2020 are shown in Figure 65. China and India have been the two main drivers among the Asian economies, accounting for 54% and 15% during 2015–2020, respectively, as shown in Figure 7 in Section 3.1. However, the industry composition's origins of economic growth in China and India are quite different. China's economic growth has been fueled by industry sector expansion, whereas India's economic growth has been led by service sector expansion. However, growth started shifting toward services in China and manufacturing in India in recent years.

Figure 66 contrasts industry contributions to economic growth among regions for the recent decade of 2010–2020, compared with the past two-decade averages in 1970–1990 and 1990–2010.[57] For half a century, the contribution of manufacturing to Asian economic growth has been significant: on average, from 1990 to 2010, 29% of Asia25 economic growth came from manufacturing expansion, well above the 18% in the US. From 2010 to 2020, the contribution from manufacturing growth shrank to 25% even in Asia 25, with economic growth driven by the personal services sector on the back of income growth. In the US, the manufacturing sector's contribution declined significantly to 6% over the same period, while the financial and other business activities sector increased significantly. In Asia, the contribution of manufacturing was particularly pronounced in the CLMV during the 2010s, while South India did not increase its contribution (partly due to the COVID-19 pandemic in 2020), and ASEAN6 saw its contribution decline.

There are considerable differences in experience among countries contributing to the manufacturing sector's economic growth. Figure 67 shows the experience of each country in 2000–2010 and 2010–2020, sorted by the contribution of manufacturing to economic growth.[58] Comparing the two periods, the role of manufacturing has declined in many countries, partly due to the impact of the pandemic. The relative decline is particularly pronounced in Japan, Thailand, Iran, and Myanmar. The ROC has realized as much as a 50% contribution to economic growth in both periods from the manufacturing sector. Figure 68 illustrates the sub-industry origins of the average annual growth of manufacturing GDP for selected Asian

57: Asian averages are calculated using the Törnqvist index to aggregate the growth rates of industry GDP of each country based on the two-period average of each country's shares of industry GDP to the gross regional products as weights.

58: The Törnqvist quantity index is adopted for calculating the growth of real GDP. Using this index, the growth of real GDP into the products of contributions by industries can be decomposed:

$$\underbrace{\ln\left(GDP^{t}/GDP^{t-1}\right)}_{\text{Real GDP growth}} = \underbrace{\Sigma_j (1/2)\left(s_j^{t}+s_j^{t-1}\right)\ln\left(Q_j^{t}/Q_j^{t-1}\right)}_{\text{Contribution of an industry } j}$$

where Q_j^t is real GDP of an industry j in period t and s_j^t is the nominal GDP share of an industry j in period t.

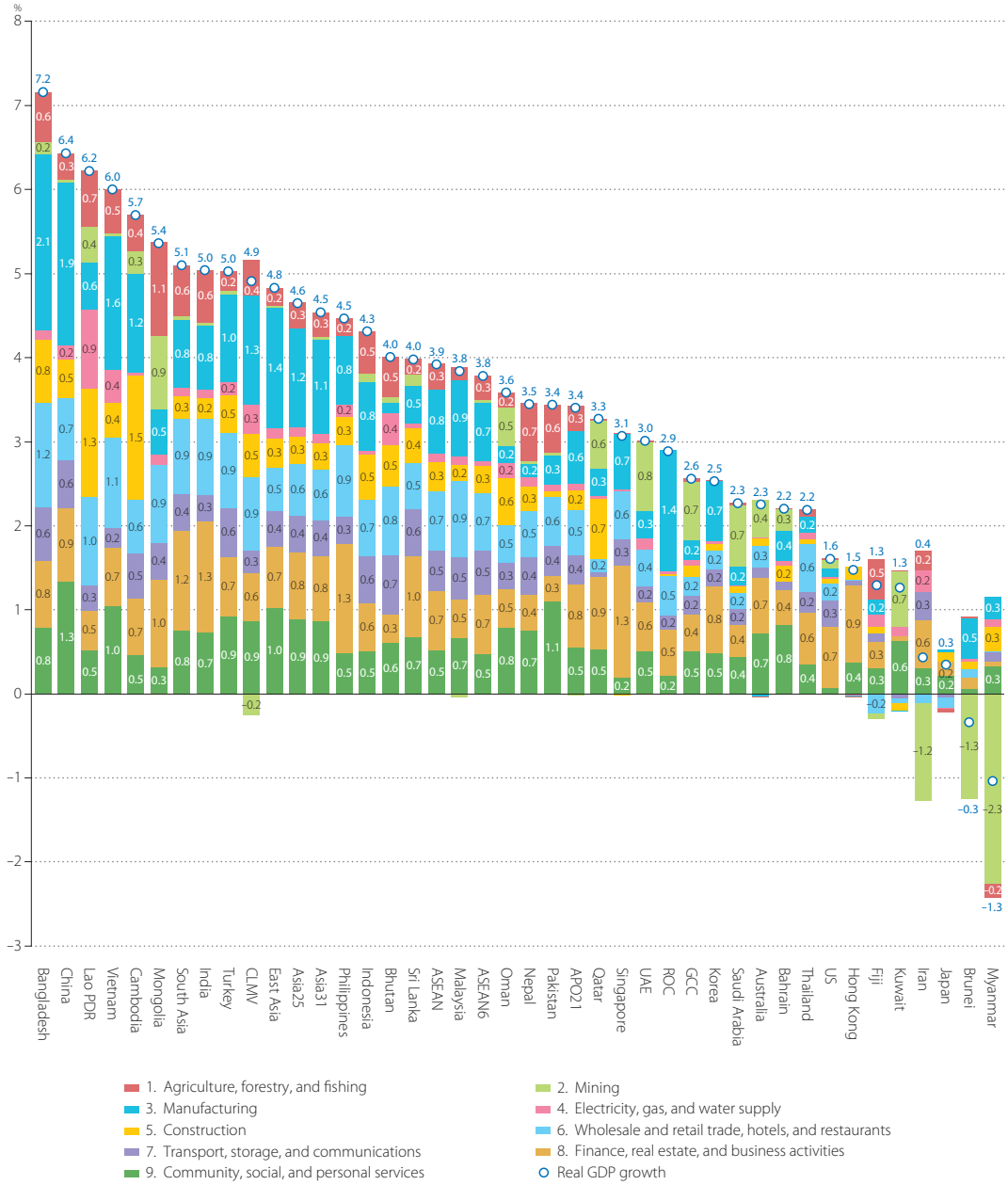

Figure 65 Industry Origins of Economic Growth
——Industry decomposition of the GDP growth in 2010–2020

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country, including author adjustments.

Figure 66 Industry Origins of Regional Economic Growth
——Contribution shares of industry GDP growth by region in 1970–1990, 1990–2010, and 2010–2020

Unit: Percentage (contribution shares). Sources: Official national accounts in each country, including author adjustments.

countries from 2010 to 2020.[59] The expansion of ROC's manufacturing sector is characterized by a considerable concentration in the 3.8–machinery and equipment sector.

Bangladesh and Vietnam have further expanded their high manufacturing shares from 2000–2010 to 2010–2020, driving high economic growth, as shown in Figure 67. In Bangladesh, more than half of the annual growth rate of over 10% in this period depends on the expansion of 3.2–textiles, wearing apparel, and leather products (Figure 68). The expansion of the manufacturing sector, skewed by the growth of the textile sector, is also seen in Cambodia.

Over the past two decades, the importance of the services sector in Asian economic growth has expanded. While some countries, such as Fiji, have been severely damaged by the pandemic, many Asian countries have experienced the impact of the services sector to economic growth, as shown in Figure 69. The story behind India's growth has been one of the services. Modern information and communication technology have allowed India to take an unusual path in its economic development, bypassing a stage when manufacturing steers growth. Recently, however, the country has been focusing on developing the manufacturing sector under the "Make In India" initiative launched in 2014.[60] From 2010 to 2020, India's

59: The Törnqvist quantity index is adopted for calculating the growth of real GDP of manufacturing. Using this index, the growth of real GDP of manufacturing into the products of contributions by sub-industries of manufacturing can be decomposed:

$$\underbrace{\ln\left(GDP^{t}/GDP^{t-1}\right)}_{\text{Real GDP growth of manufacturing}} = \Sigma_j \underbrace{(1/2)\left(s_j^{t}+s_j^{t-1}\right)\ln\left(Q_j^{t}/Q_j^{t-1}\right)}_{\text{Contribution of a sub-industry } j}$$

where Q_j^t is real GDP of a sub-industry j in period t and s_j^t is the nominal GDP share of a sub-industry j in period t.

60: The "Make in India" initiative launched by Prime Minister Narendra Modi in 2014 is based on four pillars (new processes, new infrastructure, new sectors, and new mindset), which have been identified to give a boost to entrepreneurship in India, not only in manufacturing but also other sectors. (https://www.pmindia.gov.in/en/major_initiatives/make-in-india/)

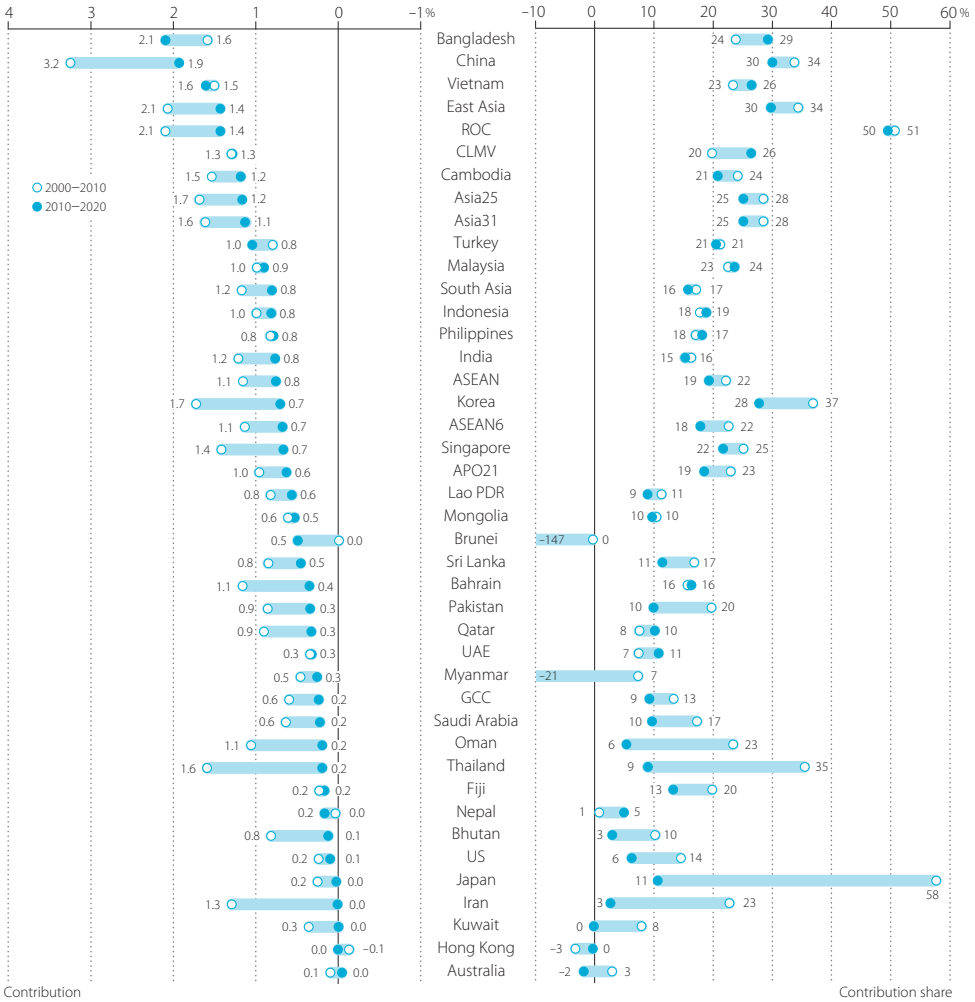

Figure 67 Contribution of Manufacturing to Economic Growth
——Contributions and contribution shares in 2000–2010 and 2010–2020

Unit: Percentage point (average annual contributions) and percentage (contribution shares). Sources: Official national accounts in each country, including author adjustments.

manufacturing expansion was led by 3.5–coke, refined petroleum products, chemicals, rubber, and plastic products, and 3.8–machinery and equipment, as shown in Figure 68. For further improvement in per capita GDP and to capitalize on the demographic dividend (see Box 2), expansion of labor-intensive manufacturing may be required in India for greater job creation.

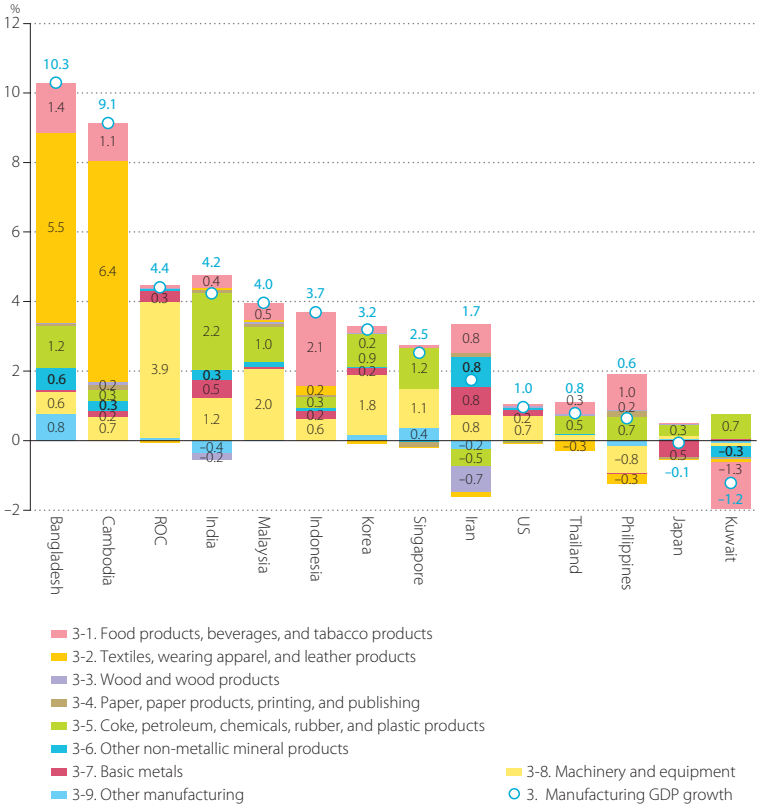

Figure 68 Industry Origins of Output Growth in Manufacturing
——Sub-industry contributions in the manufacturing GDP growth in 2010–2020

Unit: Percentage (average annual contributions). Sources: Official national accounts in each country, including author adjustments.

6.4 Industry Origins of Labor Productivity Growth

This section analyzes the industry sources of labor productivity growth in Asia.[61] Figure 70 shows the industry origins of average labor productivity growth per year from 2010 to 2020.[62] Positive labor productivity growth was achieved across all sectors for Asia25. The findings highlight that service industries no longer hamper an economy's productivity performance but are as capable as manufacturing in achieving productivity growth. There are no significant differences between manufacturing and

61: The data presented in this chapter are subject to greater uncertainty than those in previous chapters and the quality across countries is also more varied. Employment data of the less developed countries often lack frequency as well as industry details. Neither does the industry classification of employment data necessarily correspond to those of industrial output data. Consequently, the quality of labor productivity estimates at the industry level is compromised. Furthermore, estimates of the manufacturing sector should be of better quality than those of the service sector as many countries have occasional manufacturing censuses, but do not have a similar census covering the service sector.

62: Not all Asian countries are included, as employment by industry is not available for some countries. Labor productivity growth in Table 25 in Appendix 3 is defined simply as per-worker GDP at constant prices by industry (v_j). The industry decomposition of labor productivity growth for the whole economy (v) in Figure 70 (industry contribution in Table 25) is based on the equation $v = \sum_j \overline{w}_j v_j^*$ where the weight is the two-period average of value-added shares. In this decomposition, the number of workers as a denominator of labor productivity (v_j^*) is adjusted, weighting the reciprocal of the ratio of real per-worker GDP by industry to its industry average. Thus, the industry contribution ($\overline{w}_j v_j^*$) is emphasized more in industries in which the per-worker GDP is higher than the industry average, in comparison with the impact ($\overline{w}_j v_j$) of using the non-adjusted measure of labor productivity.

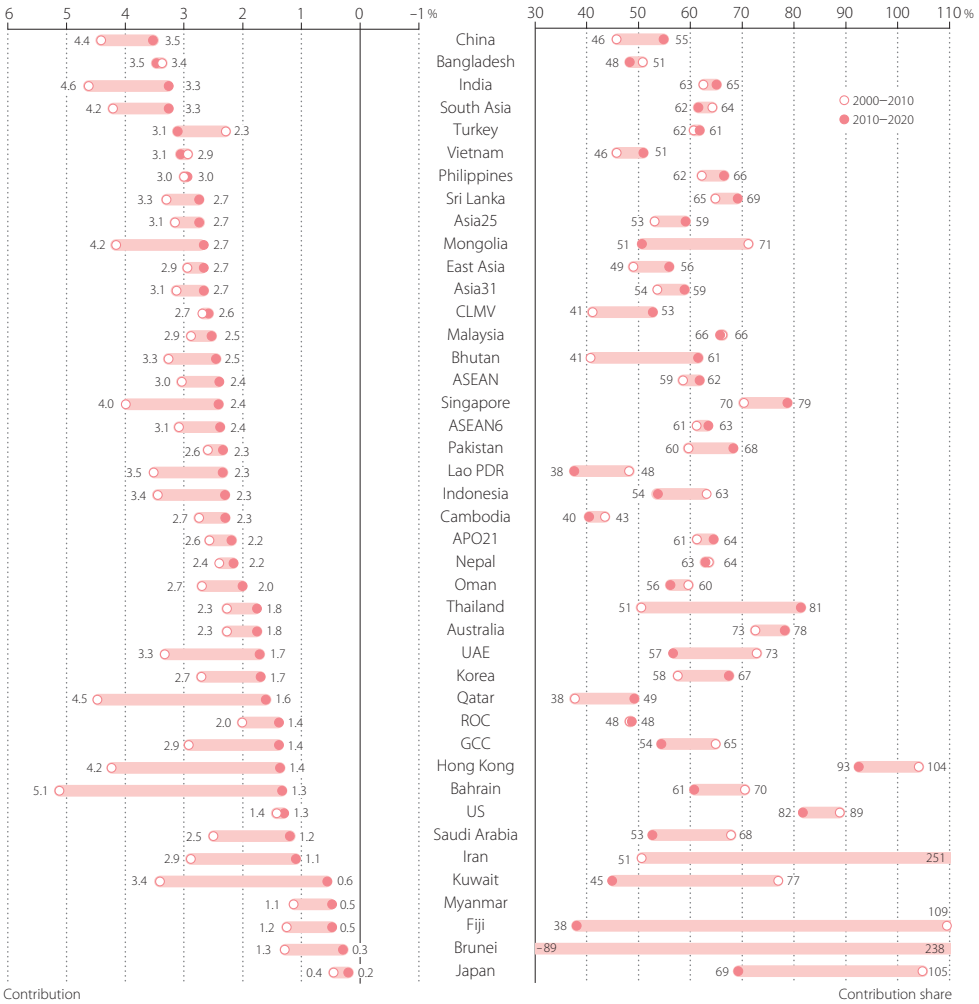

Figure 69 Contribution of Service Sector to Economic Growth
——Contributions and contribution shares in 2000–2010 and 2010–2020

Unit: Percentage point (average annual contributions) and percentage (contribution shares). Sources: Official national accounts in each country, including author adjustments.

non-manufacturing sectors in Asia25; i.e., manufacturing (at 4.3% on average per year), agriculture, forestry, and fishing (5.5%), construction (3.5%), electricity (2.5%), and transport, storage, and communications (2.7%), as provided in Table 25 in Appendix 3.

Looking at changes by country, Figure 71 shows that in many Asian countries, the manufacturing sector's role, which has been the driving force behind labor productivity growth in the past, has declined recently. Malaysia fell to 44% in 2010–2020 from 64% in 2000–2010, and South Korea to 40% from 51%. On the other hand, it has still significantly impacted the ROC and Singapore, accounting for 69% and 58% of labor productivity improvements in the whole economy, respectively. In CLMV and South Asia, manufacturing contributed moderately to their improvement in regional labor productivity at 18% and 15%, respectively, in 2010–2020.

The service sector has traditionally had difficulty increasing productivity, but recent information and communication technology advances are changing this trend. This sector has a large number of IT-intensive

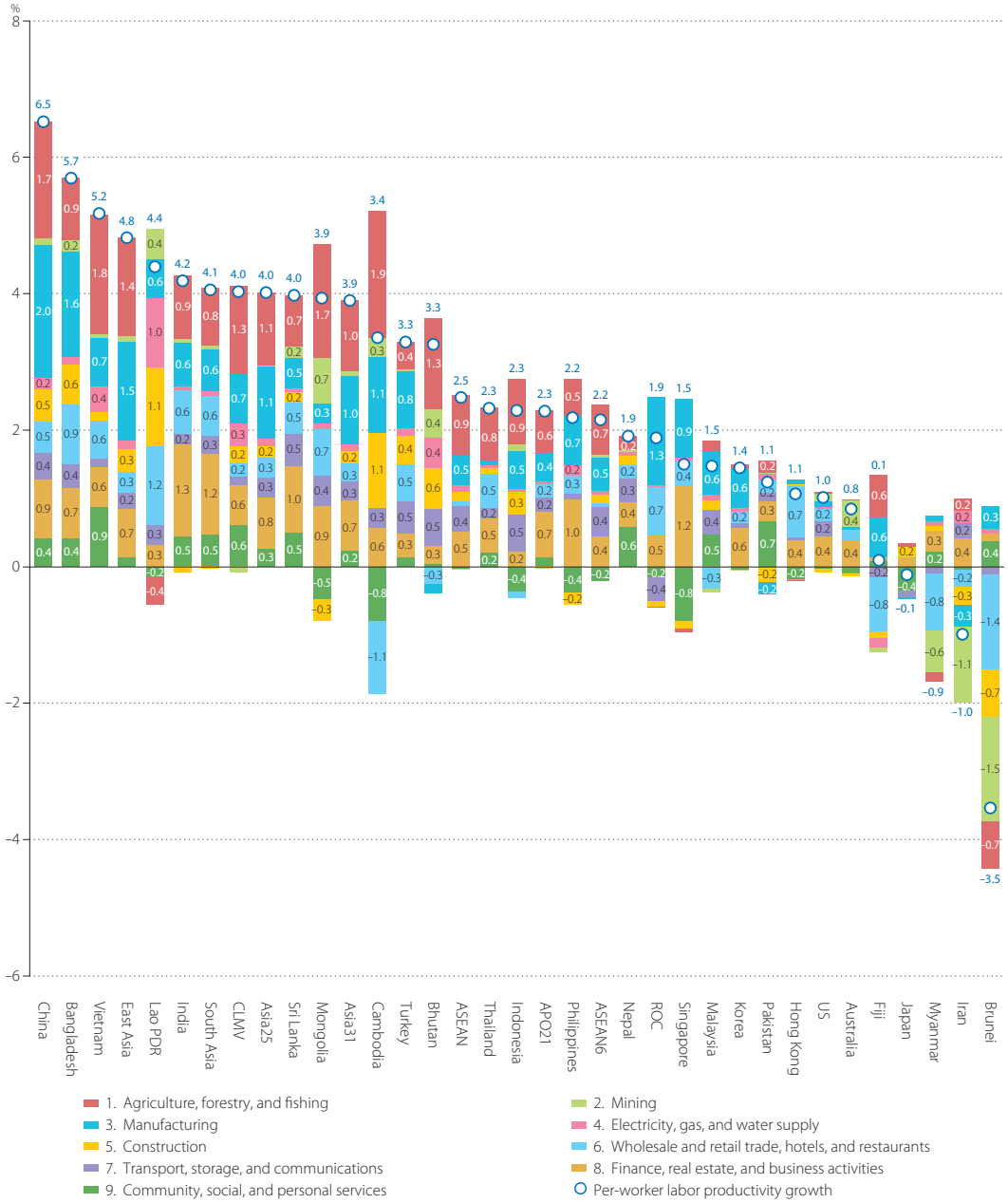

Figure 70 Industry Origins of Labor Productivity Growth
——Per-worker GDP growth and industry contributions in 2010–2020

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2022.

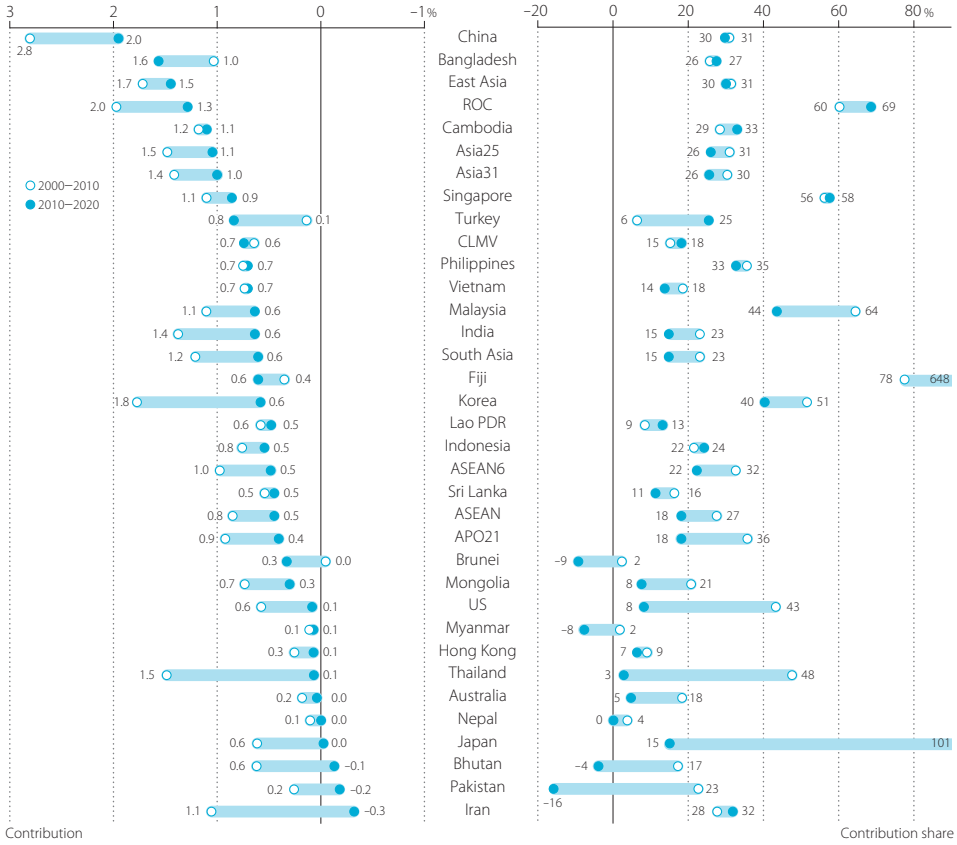

Figure 71 Contribution of Manufacturing to Labor Productivity Growth
——Contributions of manufacturing to per-worker labor productivity growth in 2000–2010 and 2010–2020

Unit: Percentage point (average annual contributions) and percentage (contribution shares). Source: APO Productivity Database 2022.

users and can capture the productivity gains arising from the use of IT (see Box 5). We observe the growing importance of these services in explaining productivity growth in recent decades. In Asia, the contribution from services matches that of manufacturing (Figure 70). Among the four industries in the service sector, three, in particular, are potentially IT-employing industries: wholesale and retail trade, hotels, and restaurants; transport, storage, and communications; and finance, real estate, and business activities.

Figure 72 presents the contribution of services to labor productivity growth by country in 2000–2010 and 2010–2020. Services contributed at least one-third or more to labor productivity growth in most Asian countries. By region, the contribution of services to labor productivity growth remains significant in South Asia, at 62%, although it slowed from 72% in the 2000s. This important role of services in labor productivity improvement is also prominent in South Asian countries other than India (excluding Bhutan), where it differs significantly from 38% in CLMV, 34% in ASEAN6, and 29% in East Asia.

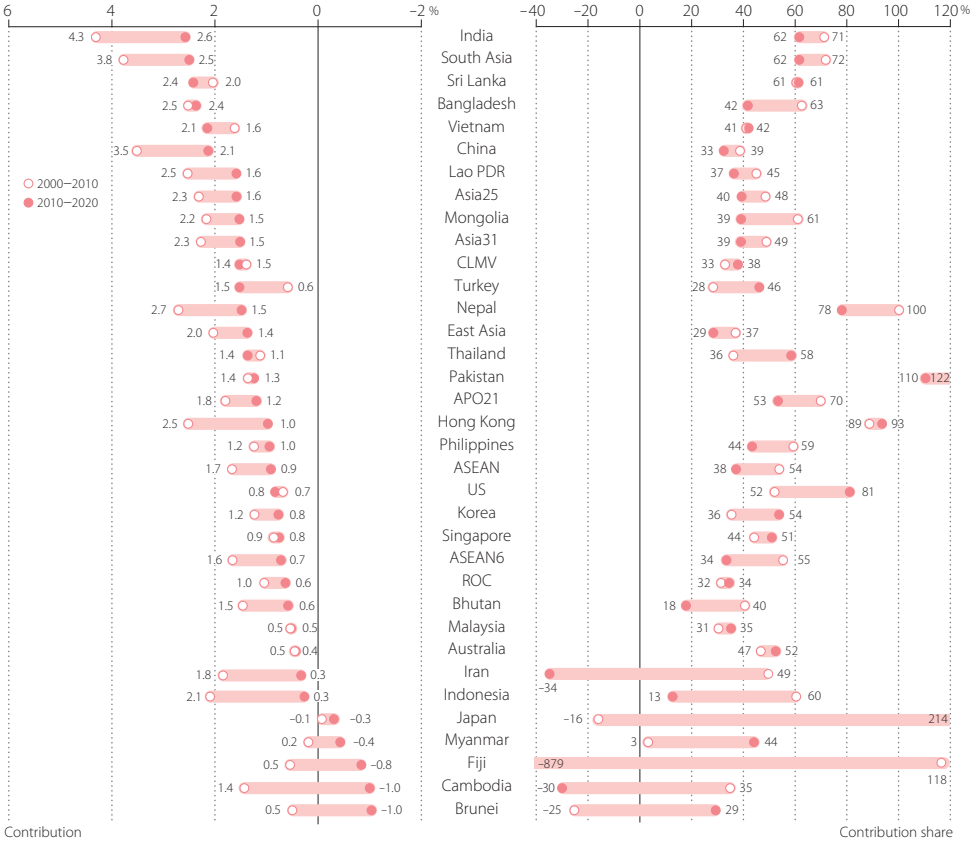

Figure 72 Contribution of Service Sector to Labor Productivity Growth

——Contributions of the service sector to per-worker labor productivity growth in 2000–2010 and 2010–2020

Unit: Percentage point (average annual contributions) and percentage (contribution shares). Source: APO Productivity Database 2022.

Box 7 Premature Deindustrialization

Deindustrialization, or the shrinkage of the manufacturing sector, has been a major concern in advanced economies for reasons Rodrik (2016) calls "premature deindustrialization." He claims that many developing economies in recent periods are starting to lose their share of the manufacturing sector without experiencing full industrialization. Premature deindustrialization may harm developing economies during their economic development because manufacturing is a dynamic sector, typically at the center of sustained economic growth and technological progress (Figure 56 in Section 6.1). The sector also has created massive jobs for relatively poor people (Figure 64 in Section 6.2). Additionally, it generates flows of labor from rural to urban and from informal to formal sectors, as well as nurturing human capital. Early servicification of the economy without a mature manufacturing sector may jeopardize a smooth transition from developing to developed economies.

Rodrik points out that premature deindustrialization is serious, particularly in Latin America and Sub-Saharan Africa. How about in Asia? Figure B7.1 plots GDP shares of the manufacturing sector in Asian

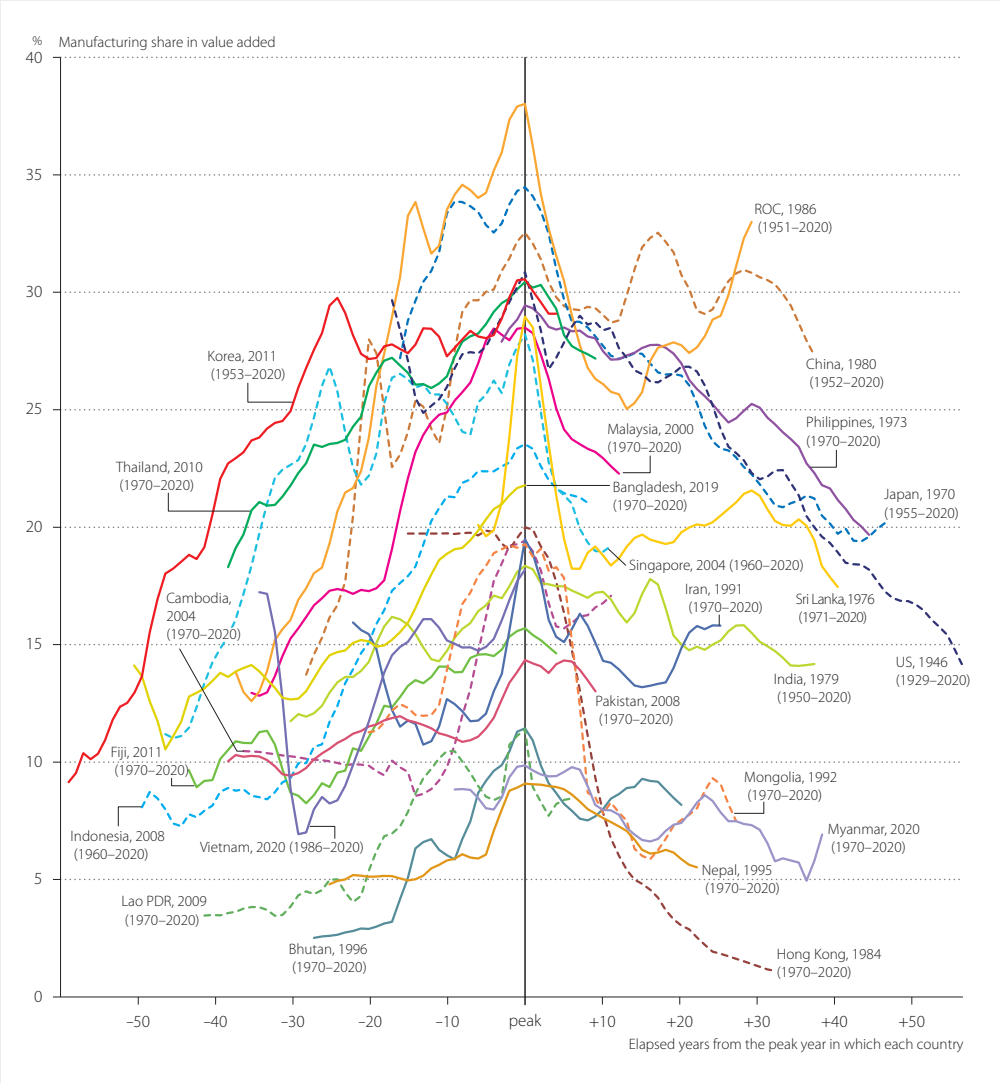

Figure B7.1 Country Peaks in Manufacturing GDP Share
——GDP share of manufacturing in 1970–2020

Unit: percentage. Sources: Official national accounts in each country (including author adjustments) and APO Productivity Database 2022. Note: The lines present the trends based on the three-year moving averages.

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economies, placing the peak of each country's inverse U shape at the center. A typical image of the up and down is drawn by the US and Japan, with peaks above 30% in 1946 and 1970, respectively. The peaks in manufacturing GDP are faster than those in manufacturing employment shares, which are 1970 in the US and 1976 in Japan. China, the ROC, and Korea also reached their peaks above 30% in 1980, 1986, and 2011, respectively, and remain high. Malaysia, Singapore, and Thailand show a similar pattern with the peaks in 2000, 2004, and 2010, respectively.

The Philippines peaked in 1973 and recently held around 20%. Indonesia is just above 20%. Although these are respectable figures, more room for industrialization may be possible. Cambodia, Bangladesh, India, Pakistan, and Vietnam are struggling below 20%. These countries are not fully industrialized yet, needing further effort to promote the sector.

On the other hand, the IMF (2018, Chapter 3) suggests that service sectors can potentially drive economy-wide productivity growth; and the decline in manufacturing jobs has contributed little to the rise in labor income inequality in advanced economies. Figure B7.2 indicates that less and middle-income Asian countries, with low and stagnated shares of manufacturing GDP, seemingly improved their per capita income level. However, it is quite uncertain if these countries will continue to grow by skipping the intermediate stage of mature industrialization.

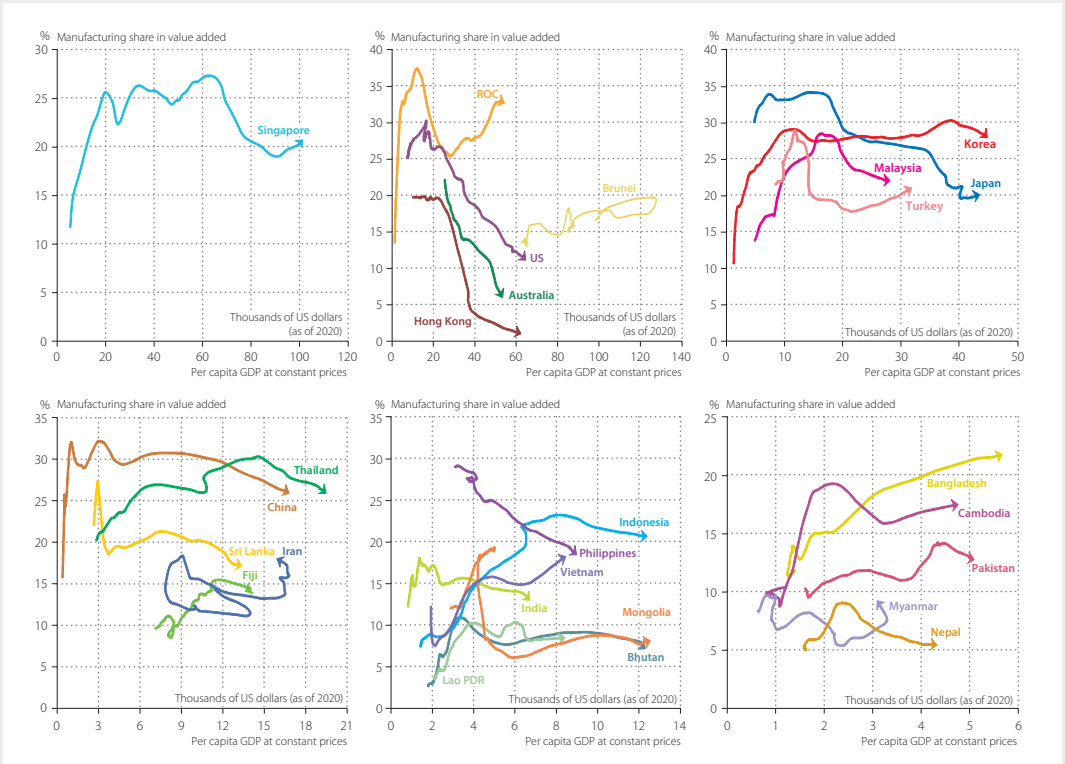

Figure B7.2 Manufacturing GDP Share and Per Capita GDP
——Five-year moving averages of share of manufacturing GDP and per capita GDP in 1970–2020

Unit: Percentage. Sources: Official national accounts in each country (including author adjustments) and APO Productivity Database 2022.

7 Real Income

Highlights

- Real GDP could systematically underestimate (or overestimate) growth in real income if the terms of trade improve (or deteriorate) in some resource-rich countries, where the trading gain has made it possible to sustain a rise in purchasing power with little real GDP growth in countries (Figure 75 and Table 26). The positive trading gain effects that oil-rich countries experienced in the 2000s were negative in 2010–2020: –2.6 percentage points in Qatar and –1.9 percentage points in Kuwait and Saudi Arabia. (Figure 74).
- Net primary income from abroad as a percentage of GDP has risen strongly in the Philippines, from 0.8% in 1990 to its peak of 11.8% in 2013. In Bangladesh, it increased from 1.9% to its peak of 7.5% in 2012 (Figure 73).
- Six resource-rich countries in Asia31 have been enjoying a trading gain of over 1.0% per annum from 2000 to 2019 (excluding the impact of the COVID-19 pandemic). Among them, Mongolia, Myanmar, and Lao PDR managed to grow labor productivity. In contrast, export-oriented, high-productivity-growth Asian countries, such as the Asian Tigers and Japan, have been facing a deteriorating trading gain position as a cost of their success (Figure 76).

The constant-price GDP captures production volume, not real income. An improvement in the "terms of trade," which is defined as the relative price of a country's exports to imports, explicitly raises real income and, in turn, welfare (Diewert and Morrison 1986; Kohli 2004). In many ways, a favorable change in the terms of trade is synonymous with technological progress, making it possible to get more for less. For a given trade balance position, a country can either import more for what it exports or export less for what it imports.

7.1 Real Income and Terms of Trade

By focusing on production, the real GDP concept does not capture the beneficial effect of the improvement in the terms of trade. In contrast, real income focuses on an economy's consumption possibilities and, in turn, captures the impact of a change in the relative price of exports to imports. Real income growth attributed to changes in the terms of trade can be significant when there are large fluctuations in import and export prices, and the economy is highly exposed to international trade, as is the case with many Asian economies, as shown in Figure 27 in Section 4.1.

The distinction between real income and real GDP lies in the differences between the corresponding deflators. Real GDP is calculated from a GDP deflator aggregating prices of household consumption, government consumption, investment, exports, and imports,[63] while real income is calculated from the prices of domestic expenditure, consisting of household consumption, government consumption, and investment. Therefore, real income can be understood as the amount of domestic expenditure that can be purchased with the current income flow.[64] As such, real income captures the purchasing power of the income flow. Furthermore, the Databook adopts the concept of gross national income (GNI) instead of

63: The weight for import price changes is negative. Thus, if import prices decrease and other conditions remain constant, this tends to raise the GDP deflator.
64: This definition of real income is the same as in Kohli (2004 and 2006). An alternative definition is a nominal GDP deflated by the price of household consumption.

GDP in its estimation of real income to consider net income transfer from abroad. Applying the method proposed by Diewert and Morrison (1986), the annual growth rate of real income can be fully attributed to three components: annual growth rate of real GDP; real income growth attributed to changes in prices of exports and imports (referred to as the trading gain);[65] and the effect of net income transfer.[66]

Figure 73 plots the time series of net primary income from abroad as a percentage of GDP for some selected countries. The role of net primary income from abroad has

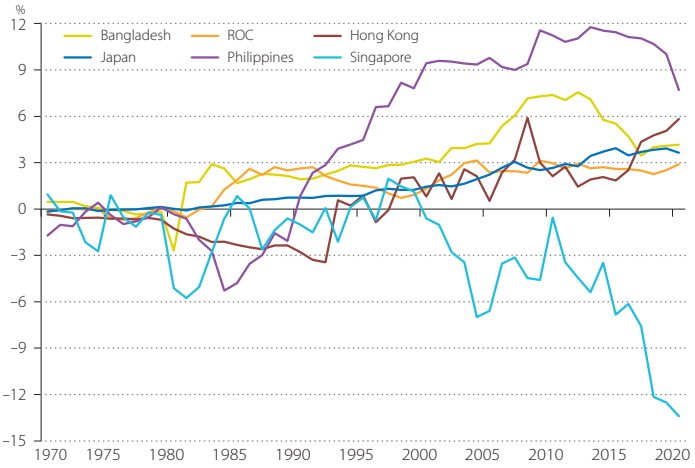

Figure 73 Effect of Net Income Transfer on GDP
——Share of net income transfer in GDP in 1970–2020

Unit: Percentage (current market price share). Sources: Official national accounts in each country, including author adjustments.

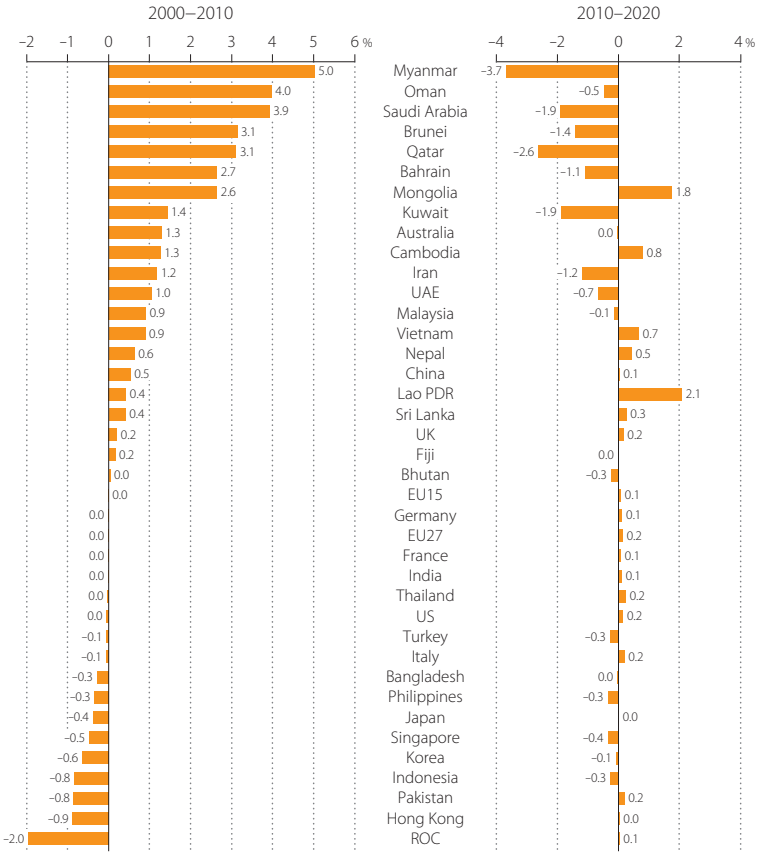

Figure 74 Trading Gain Effect
——Contributions to real income growth in 2000–2010 and 2010–2020

Unit: Percentage point (average annual contributions). Sources: Official national accounts in each country, including author adjustments.

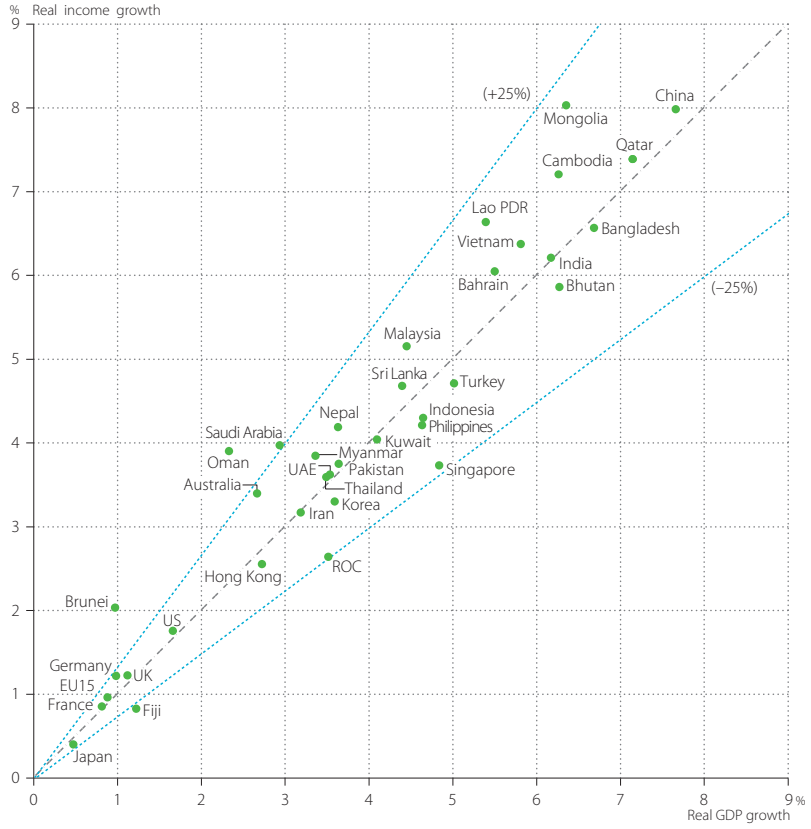

Figure 75 Real Income and GDP Growth
——GDP and real income growth in 2000–2020

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country, including author adjustments.

been shifting from negative to positive in Hong Kong, with the transition in the mid-1990s leading up to the handover of Hong Kong from British rule to China in 1997. Since then, net primary income from abroad has been positive. Net primary income from abroad has risen strongly in the Philippines, rising from 0.8% in 1990 to its peak of 11.8% in 2013, providing a significant long-term contribution to the purchasing power of Filipinos, with remittances from many overseas workers.[67] A similar but moderate trend can be found in Bangladesh. Singapore's net primary income from abroad displayed larger fluctuations in the 1980s and the 2000s, and the negative range has been rapidly increasing since the beginning of the 2010s.

65: The term "trading gain" is used by some authors (Kohli 2006). This term is adopted in this report.

66: Real income growth can be decomposed into two components as follows:

$$\underbrace{\ln\left(\frac{GNI^t}{GNI^{t-1}}\right)-\ln\left(\frac{P_D^t}{P_D^{t-1}}\right)}_{\text{Real income growth}}=\underbrace{\ln\left(\frac{GNI^t/GDP^t}{GNI^{t-1}/GDP^{t-1}}\right)}_{\text{Income transfer effect}}+\underbrace{\ln\left(GDP^t/GDP^{t-1}\right)-(1/2)\sum_i\left(s_i^t+s_i^{t-1}\right)\ln\left(P_i^t/P_i^{t-1}\right)}_{\text{Real GDP growth}}+$$

$$\underbrace{(1/2)\left(s_X^t+s_X^{t-1}\right)\left(\ln\left(P_X^t/P_X^{t-1}\right)-\ln\left(P_D^t/P_D^{t-1}\right)\right)-(1/2)\left(s_M^t+s_M^{t-1}\right)\left(\ln\left(P_M^t/P_M^{t-1}\right)-\ln\left(P_D^t/P_D^{t-1}\right)\right)}_{\text{Real income growth attributed to changes in the terms of trade (=trading gain)}}$$

where P_i^t is price of final demand i in period t and s_i^t is expenditure share of final demand i in period t. D is domestic expenditure, X is export, and M is import. Note that the real GDP growth based on this formulation may differ from that used in other chapters, since the implicit Törnqvist quantity index is adopted for calculating it.

67: In the 2018 benchmark revision of the Philippines system of national accounts (PSNA) published as of April 2020, the net primary income from abroad was revised downward considerably. The pre-revision ratio, incorporated for the first time in the 2020 edition of the Databook, was three times larger than the revised estimate in this edition.

The price changes of crude oil in the recent decade have greatly impacted trading gains in Asian countries. Figure 74 compares the trading gain effects between 2000–2010 and 2010–2020. The positive trading gain effects that oil-rich countries experienced in the 2000s were negative in 2010–2020, including the impact of the COVIID-19 pandemic: –2.6 percentage points in Qatar and –1.9 percentage points in Kuwait and Saudi Arabia. In contrast, the trading gain effects in Pakistan and the ROC turned positive at 0.2 percentage points and 0.1 percentage points per year, respectively.

Over a long period, the trading gain effect is, on average, small, but over a shorter period could be very significant. Combining the trading gain effect and net primary income from abroad, real income growth for most countries fell within the margin of ±25% of real GDP growth in the long run, as shown in Figure 75 and Table 26 in Appendix 3. In larger economies, such as the US, the EU15, China, India, and Japan, real income growth was almost equivalent to GDP growth from 2000 to 2020. Brunei, Fiji, Oman, and Saudi Arabia appear to be the outliers in this period.

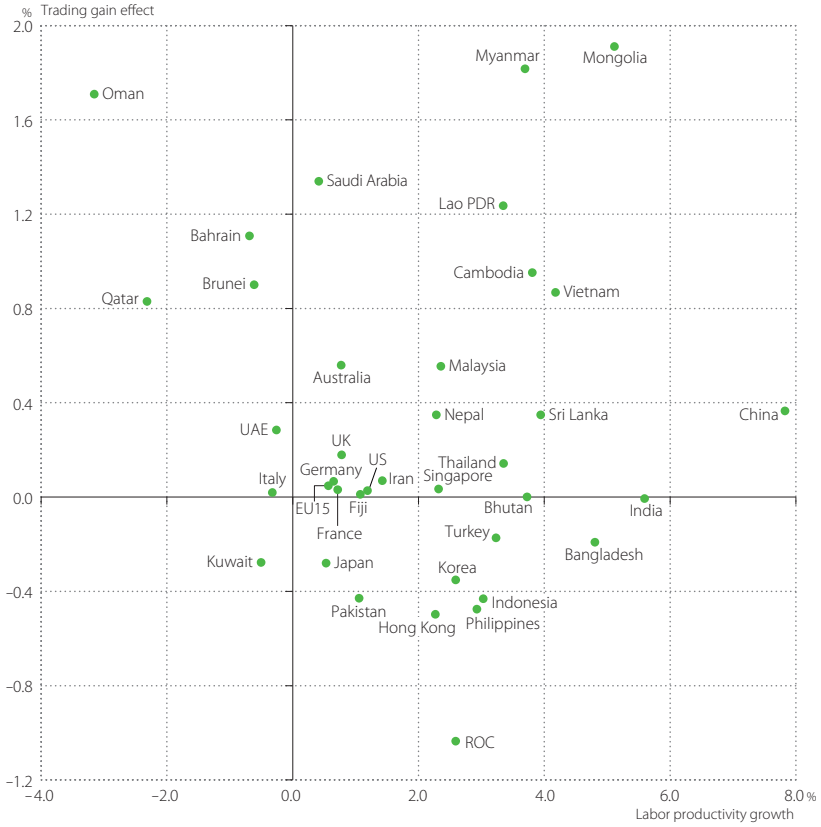

Figure 76 Trading Gain Effect and Labor Productivity Growth
——Trading gain effect and per-hour GDP growth in 2000–2019

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including author adjustments) and APO Productivity Database 2022.

7.2 Trading Gain and Productivity Growth

When the trading gain is highly favorable, it can breed a sense of complacency, with productivity performances suffering as a result. Resource-rich economies are susceptible to this pitfall because they are poised to reap extremely positive trading gains when commodity prices turn in their favor over a sustained period. Just as commodity prices can rise, so too can they fall. This is when countries' real income growth could suffer if fundamentals for real GDP growth are weak. Figure 76 plots the labor productivity growth and the trading gain effect from 2000 to 2019, excluding the impact of the COVID-19 pandemic. In general, a resource-rich country can suffer from "Dutch disease," a phenomenon where a country's currency is pushed up by the commodity boom, making other parts of its economy less competitive and potentially increasing its dependence on natural resources.[68] This is how resource abundance can easily lead to resource dependence. Six resource-rich Asian countries enjoyed trade gains of over 1.0% per year from 2000 to 2019, and Mongolia, Myanmar, and Lao PDR realized labor productivity growth in these countries. In contrast, export-oriented and highly productive Asian countries such as the Tigers and Japan have been facing a deteriorating trading gain position as a price of their success.

Figure 77 illustrates trading gain effects and changes in value-added shares of the mining sector from 2000 to 2019 in some selected countries. It indicates that large trade gainers typically have dominant mining sectors, such as petroleum and natural gas. Provided resource prices continually rise, these countries continue to gain from the positive terms-of-trade effects. However, if resource prices fall or natural reserves are depleted, then the story of the Dutch disease may appear. Richness in natural resources may become a curse if they do not have competitive industries other than mining.

A way to counteract Dutch disease is broad-based, robust productivity growth and industry diversification. Figure 77 shows that some of the trading gainers (i.e., the GCC countries) actively reduced their share of the mining sector over time, which could reflect the intention of developing industries other than

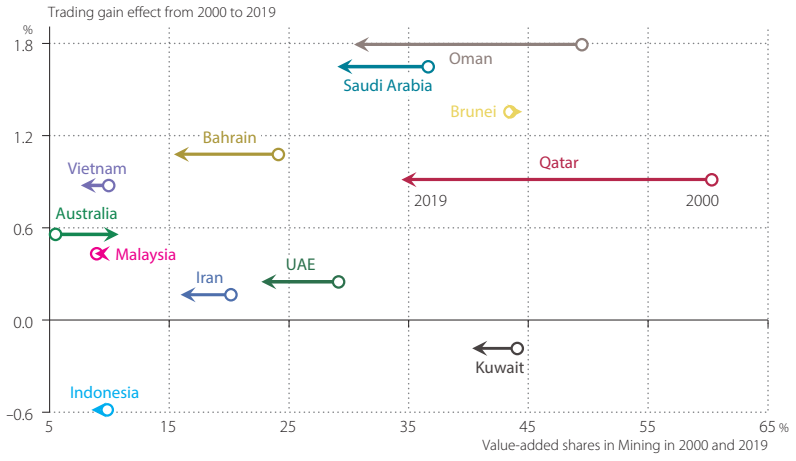

Figure 77 Trading Gain Effect and Value-added Share in Mining Sector
——Trading gain in 2000–2019 and the mining GDP share in 2000 and 2019

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including author adjustments) and APO Productivity Database 2022.

68: The term was originated by The Economist in 1977 (*The Economist*, 26 November 1977, "The Dutch Disease.") to describe the overall decline of manufacturing and the subsequent economic crisis in the 1960s in the Netherlands after the discovery of the large natural gas field in the North Sea in 1959.

mining. However, Figure 76 shows that labor productivity growth rates in these countries remained low or even negative. Even if they wanted to start industrialization, their high income and strong local currency would not allow them to easily develop a manufacturing sector or an internationally competitive service industry. Another concern is their heavy dependence on skilled and unskilled foreign workers.

On the other side of the coin are the resource/energy-importing economies. Most of these suffered negative trading gain effects, losing a part of their economic growth due to resource price hikes, particularly in the 2000s (Table 26 in Appendix 3). However, this has strengthened their competitiveness in manufacturing and other productive activities for the future. Figure 76 also shows that many Asian countries have achieved high labor productivity growth while accepting a deteriorating trading gain over the long run. These countries are typically resource importers whose voracious demand for commodities pushes up their import prices. Meanwhile, export prices tend to fall because of their achievement in productivity improvement, resulting in unfavorable movements in the terms of trade. This is particularly the case in countries where economic growth is highly dependent on export promotion. In such instances, a negative trading gain is partially a side-effect of productivity success. Although the trading gain effect partly negates their real GDP growth, they are better positioned than before their development took off without productivity improvements.

Box 8 Economic Growth Projection

The growth accounting in the Databook evaluates the quality of economic growth in each country and region in Asia. A similar framework can be applied to forecast economic growth based on future scenarios on population and technology. This Box presents the estimates of our mid-term projections on economic growth and labor productivity for 25 Asian economies through 2030. Our projections reflect the economic growth of the first quarter of 2022, where available.

Our scenario on population is based on the United Nations (2019) projection, in which the annual projections are provided by gender and age, as presented in Box 2. This is divided into estimates in different educational attainment categories, based on the projections developed in Wittgenstein Centre Data (Lutz, Butz, and KC 2014), in each class of gender and age. The employment rate in each population class by gender, age, and education is developed in the Asia QALI Database 2022 (Section 9.3.2). The employment rates in 2015–2020 are assumed to be constant for the future in each population class. Using these population and the employment rates, the employment by gender, age, and education is estimated for 2020–2030.

The rate of employment in each class is divided into estimates in different categories of employment status, i.e., own-account workers, contributing family workers, and employees, based on the current composition in 2015–2020, which is provided in the Asia QALI Database. In the future scenario of employee share, it is assumed to gradually change by 0–3% per year until 2030, based on the past trend in each country. Based on these scenarios, the projections of employment rates cross-classified by gender, age, education, and employment status are developed through 2030 in each country. The estimated average growth rates of total employment per year are presented in Figure B8.1 for the two periods, 2020–2025 and 2025–2030.

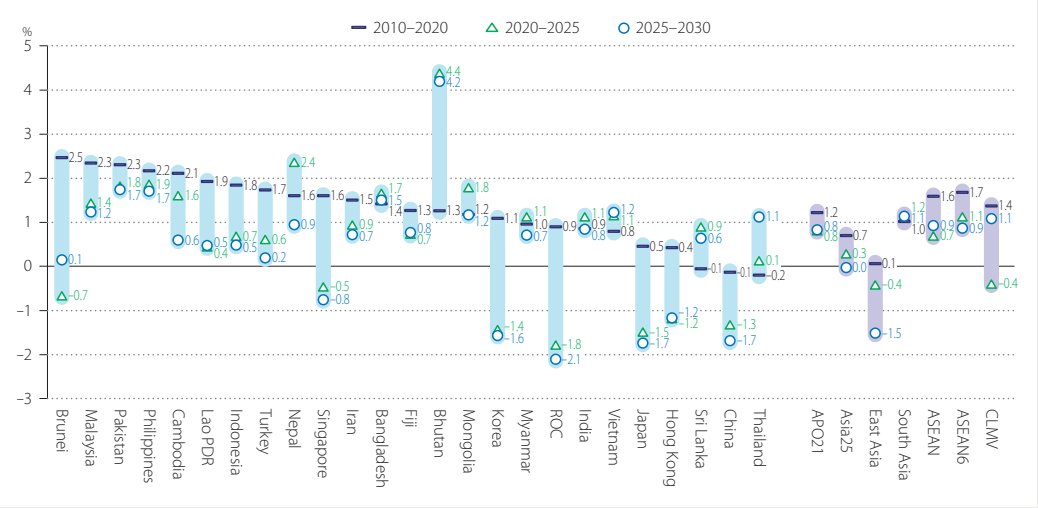

Figure B8.1 Projection of Change in Total Employment until 2030

Unit: Percentage (average annual growth rate). Sources: Our estimates based on United Nations (2019), Lutz, Butz, and KC (2014), and Asia QALI Database 2022.

In response to this future employment scenario, hours worked and labor quality are projected through 2030. For each country, the average hours worked per worker are benchmarked at the elementary level of employment by the estimates in 2015–2020 (in the Asia QALI Database 2022). These are assumed to be slightly decreased until 2030, based on past trends. The relative wage structure cross-classified by gender, age, education, and status is also provided in 2015–2020 by the Asia QALI Database 2022. Based on these data, labor quality changes are estimated through 2030. The estimates of average annual growth rates of labor quality in each country are presented in Figure B8.2. In some countries such as Indonesia, Mongolia, Thailand, Bhutan, and Turkey, the quality changes are expected to decrease considerably in the 2020s from the past achievement in 2010–2020, when labor quality growth was exceptionally high, reflecting the rapid changes in employment

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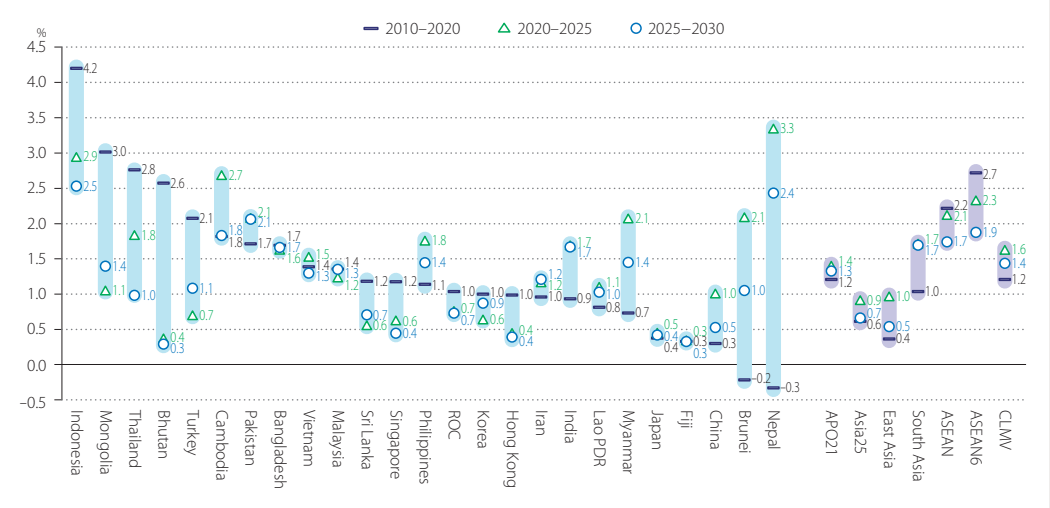

Figure B8.2 Projection of Labor Quality Change until 2030

Unit: Percentage (average annual growth rate). Source: Our estimates based on Asia QALI Database 2022.

status and educational attainment. In Asia25, the labor quality changes are estimated as stable in the 2020s. This indicates that the deteriorations in the Asian Tigers and ASEAN6 are expected to be offset by the improvements in South Asia, CLMV, and East Asia led by China.

There is significant uncertainty in future capital accumulation. As a baseline scenario in our projection, GFCF shares in Asian countries are assumed to follow the long-term trend of Japan. The dotted line in Figure B8.3 presents the past GFCF share since 1885, and the line presents the ten-year moving average. The current levels of GFCF shares in Asian countries are plotted in the years in which the per-hour labor productivities are equivalent between them and Japan (see Figure 33 in Section 5.2). Based on these historical trends, the future GFCF rates are assumed in each country. This year's investment is estimated by GDP and determines the beginning-of-the-period capital stock level for next year, which provides capital services to be used in next year's production.

Another uncertain source of economic growth is the TFP. As a baseline scenario, the TFP growth in 2010–2020 estimated in APO Productivity Database 2022 is currently used to provide benchmark estimates. In some countries, however, the past achievements reflect events that will not be repeated in the future. In these cases, benchmark estimates of TFP growth are set arbitrarily. In each Asian country, the future change in TFP is assumed to follow the long-term trend of a leading country in each region. From the first quarter of 2021 to the first quarter of 2022, including the impact of the COVID-19 pandemic (see Box 1), the actual GDP growth is observed in the quarterly national accounts (QNA) in Asian countries. The TFP growth in 2021–2022 is adjusted, so the economic growth projection is equivalent to the GDP estimates in QNA. The benchmark estimate of labor share is provided in the APO Productivity Database 2022 (see Section 9.3.3 and Box 6). The recent estimates are assumed to be time-invariant in each country.

The baseline estimates of economic growth are presented in Figure B8.4. In Asia25, the recent economic growth in 2010–2020 (4.3% per year on average) is projected to decrease slightly to 4.2% in 2020–2025. This includes recovery from the COVID-19 pandemic. Furthermore, it is projected to decrease to 3.9% in 2025–2030, representing a slight downward revision from our estimate (4.0%) in the previous edition of Databook (APO 2021) for the same period. The main country source of this slowdown in Asian growth is the deceleration of Chinese economic growth, which is projected to decrease from 5.7% in 2010–2020 to 4.1% in 2020–2025 and 2.4% in 2020–2025. South Asia is expected to improve economic performance through 2030, from 4.8% to 6.3% and 7.0%, respectively. The projected regional growth of South Asia in the second half of the 2020s, which Bangladesh and India led, is much higher than that in East Asia (2.2%). In addition, CLMV will be a strong driver of the Asian economy in the second half of the 2020s, with a projected growth rate of 7.3%,

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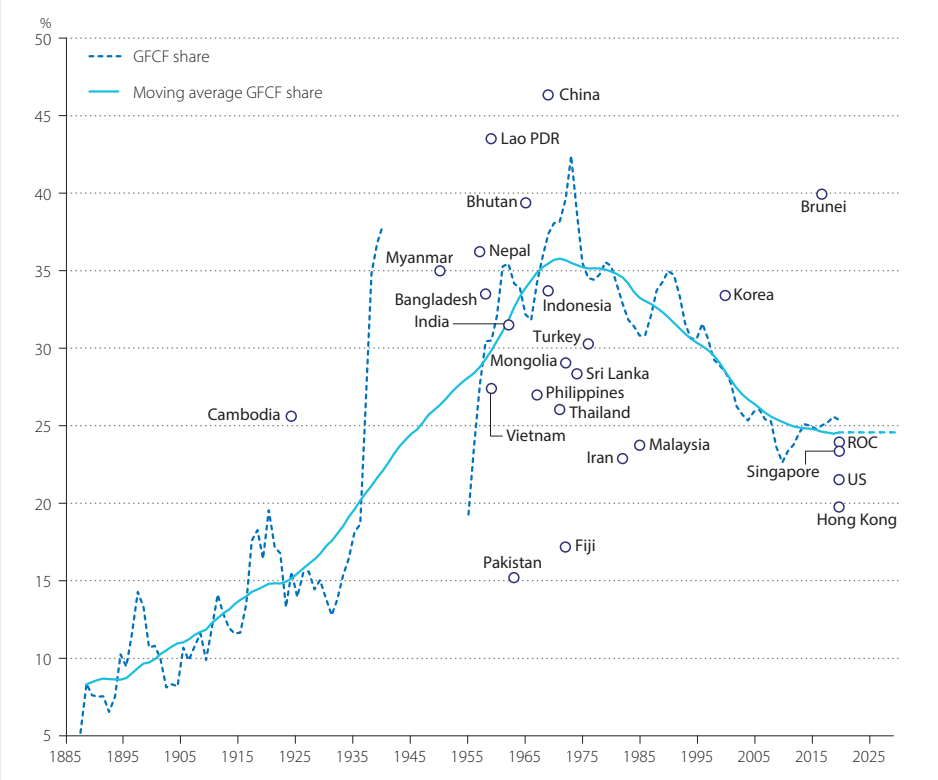

Figure B8.3 Historical GFCF Share of Japan and Current Level of Asia
——Share of GFCF in GDP at market prices for Japan in 1885–2020 and for Asian countries in 2020

Unit: percentage (current-price share). Source: Our estimates based on APO Productivity Database 2022.

the highest in the region. At this stage, there is a strong sense of uncertainty about Myanmar's recovery, but the driving force behind CLMV is the Vietnamese economy, which is expected to grow at a high rate of 7.8% in the second half of the 2020s.

Regarding per-hour labor productivity growth, the current rate of improvement (3.9% per year in 2010–2020) is projected to slightly increase to 4.2% in 2020–2025, as shown in Figure B8.5. It is expected to keep at 4.1% in 2025–2030. The driving forces in labor productivity improvement in Asia in the late 2020s will be the CLMV and South Asia, but the regional gap is expected to be smaller than that of economic growth rates (Figure B8.4). Labor productivity growth is expected to accelerate in the 2020s, not only in low-income countries such as Cambodia and Mongolia but also in high-income countries such as Japan and the ROC, compared to the 2010–2020 period.

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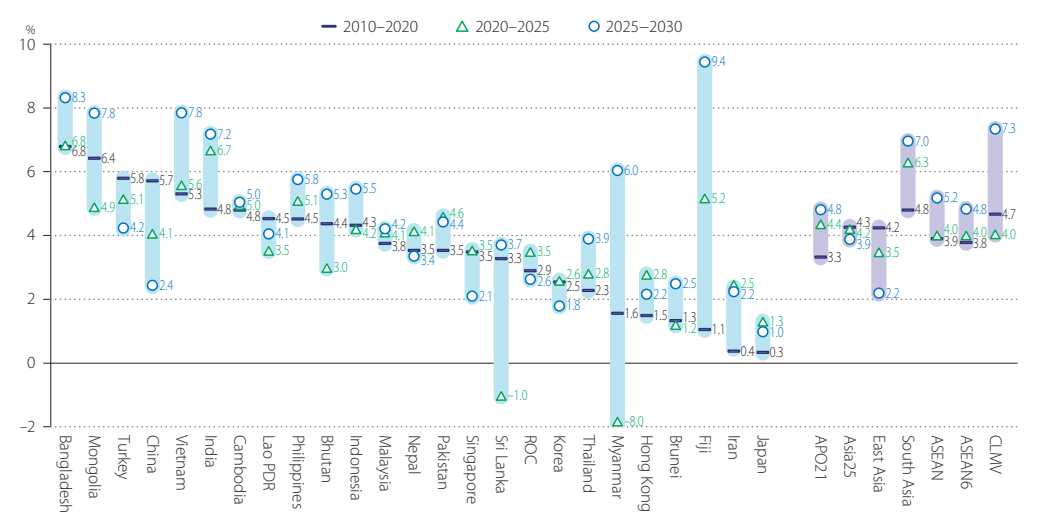

Figure B8.4 Projection of Economic Growth until 2030

Unit: Percentage (average annual growth rate). Sources: Our estimates based on APO Productivity Database 2022 and Asia QALI Database 2022.

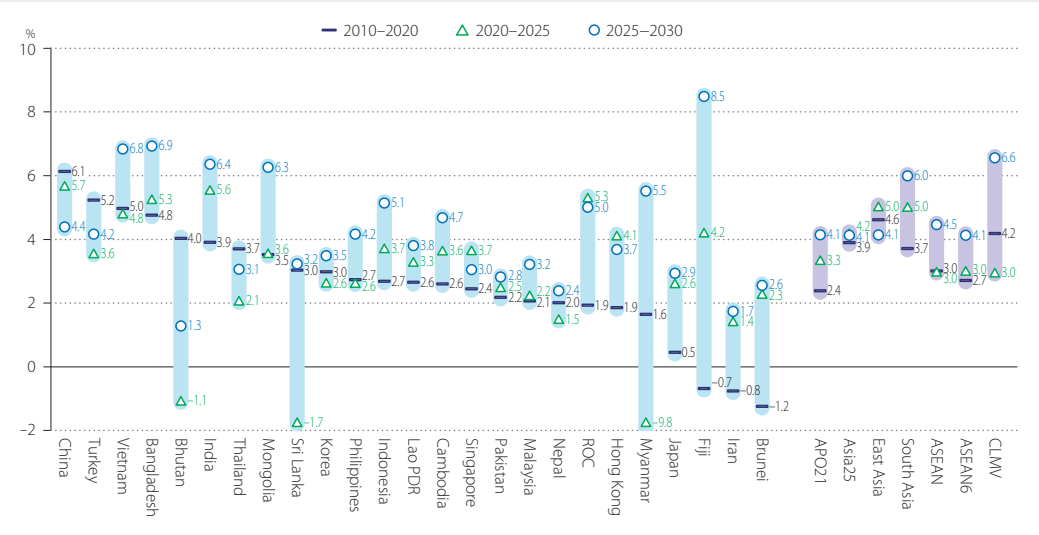

Figure B8.5 Projection of Per-Hour Labor Productivity Growth until 2030

Unit: Percentage (average annual growth rate). Sources: Our estimates based on APO Productivity Database 2022 and Asia QALI Database 2022.

8 Country Profiles

Bangladesh

Key Indicators

GDP in 2020	981	Billions of US dollars (as of 2020)
(exchange rate based)	374	Billions of US dollars (as of 2020)
Per capita GDP in 2020	5.9	Thousands of US dollars (as of 2020)
(exchange rate based)	2.2	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	13.9	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	5.9	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	11.5	US dollars (as of 2020)
Energy productivity levels in 2019	27.0	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	99.2	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	67,199	Thousands persons
Employment rate in 2020	40.1	%
Female employment share in 2020	30.4	%
Average schooling years of workers in 2020	6.3	Years
Investment share in 2020	31.3	%
ICT investment share in GFCF in 2020	5.4	%
Agriculture share in GDP in 2020	12.4	%
Manufacturing share in GDP in 2020	21.4	%
Agriculture share in employment in 2020	37.7	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–20	2015–20	2017–18	2018–19	2019–20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	−0.7	3.8	4.1	6.6	6.8	6.4	7.9	5.9	3.4	6.7	4.7	7.3	6.9
Labor input growth	4.0	3.8	2.4	3.3	3.7	2.7	1.9	1.9	1.8	2.9	3.4	3.3	3.3
Labor quality growth	1.2	1.1	0.6	0.8	1.7	1.2	0.5	0.6	0.5	1.3	1.7	1.7	1.7
Hours worked growth	2.8	2.6	1.8	2.5	2.0	1.5	1.4	1.3	1.3	1.6	1.6	1.6	1.6
College labor input growth	12.2	11.4	7.2	2.7	7.4	4.3	3.0	3.0	2.9	5.2	4.9	4.7	4.6
Non-college labor input growth	3.7	3.2	1.8	3.3	3.1	2.4	1.7	1.7	1.6	2.4	3.0	3.0	3.0
IT capital input growth	7.8	16.4	15.2	27.9	13.8	11.5	12.3	6.4	3.5	7.6	8.3	6.8	7.2
Non-IT capital input growth	1.7	4.6	6.4	7.8	8.6	8.7	8.9	8.9	8.4	8.1	8.5	8.3	8.4
Per-worker labor productivity growth	−3.4	1.8	1.9	4.0	5.4	5.1	6.6	4.6	2.2	5.0	3.0	5.7	5.2
Per-hour labor productivity growth	−3.5	1.2	2.3	4.1	4.8	4.9	6.5	4.6	2.1	5.1	3.1	5.7	5.3
Capital productivity growth	−1.7	−4.7	−6.5	−8.4	−8.8	−8.8	−9.0	−8.7	−8.1	−1.3	−3.8	−0.9	−1.5
TFP growth	−3.3	−0.5	−0.4	0.2	−0.3	−0.3	1.3	−0.5	−2.7	0.4	−2.0	0.8	0.2

Production

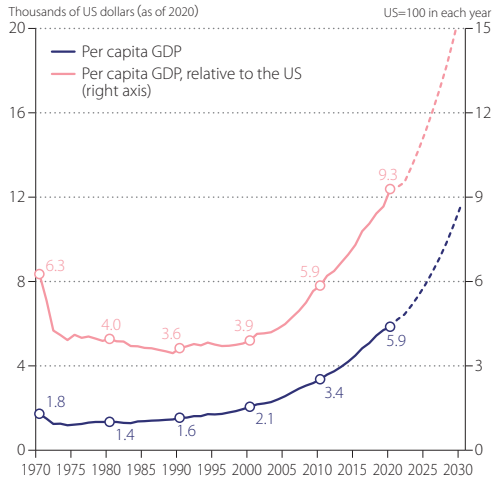

Figure 1 Per Capita GDP

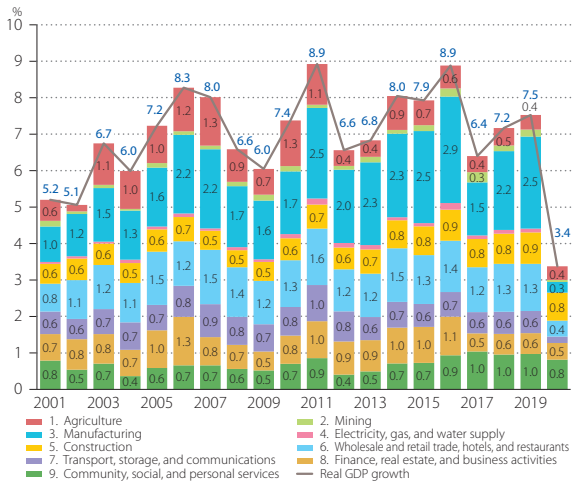

Figure 2 Industry Origins of Economic Growth

Labor

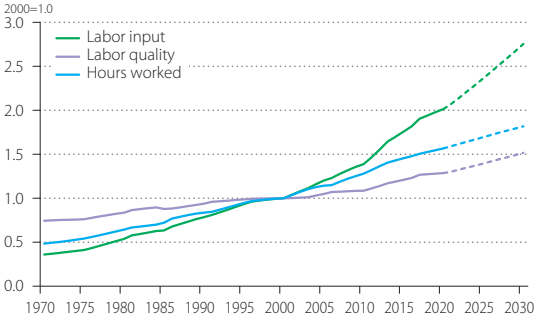

Figure 3 Labor Inputs

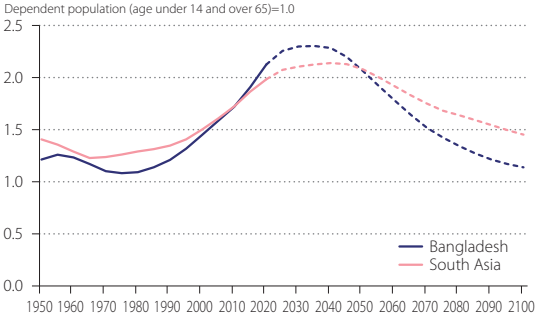

Figure 4 Demographic Dividend

Productivity

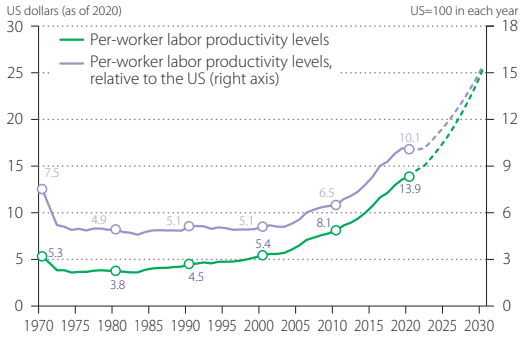

Figure 5 Per-Worker Labor Productivity Level

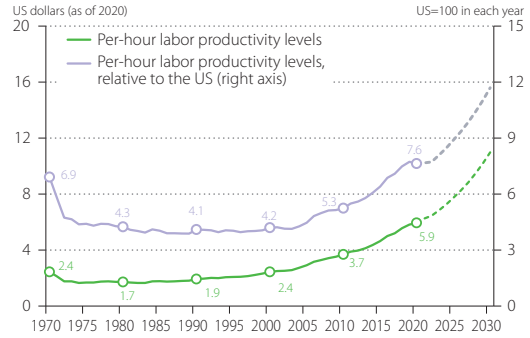

Figure 6 Per-Hour Labor Productivity Level

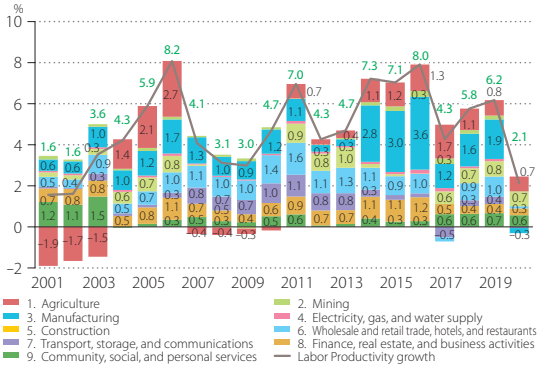

Figure 7 Industry Origins of Labor Productivity Growth

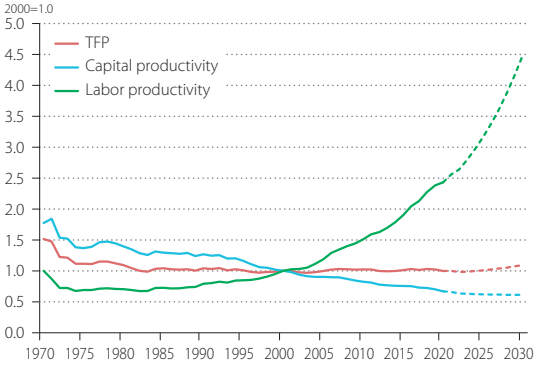

Figure 8 Productivity Indicators

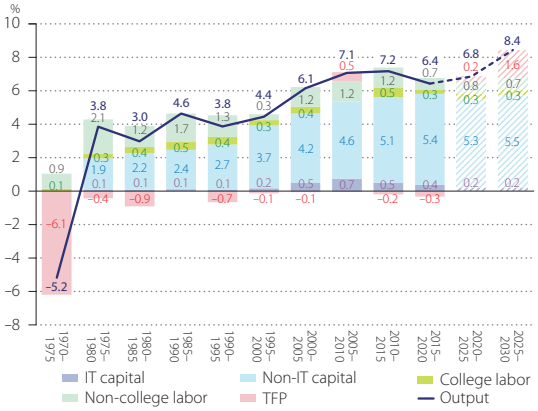

Figure 9 Decomposition of Economic Growth

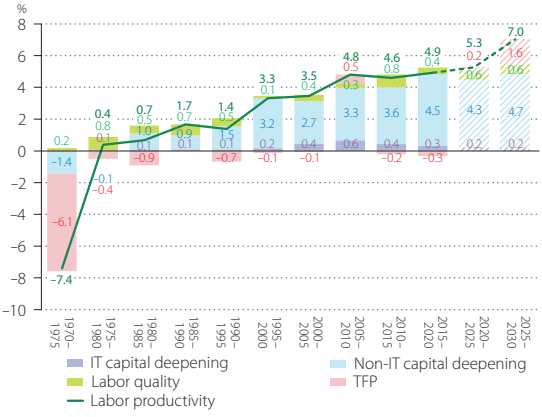

Figure 10 Decomposition of Labor Productivity Growth

Cambodia

Key Indicators

GDP in 2020	76	Billions of US dollars (as of 2020)
(exchange rate based)	25	Billions of US dollars (as of 2020)
Per capita GDP in 2020	4.8	Thousands of US dollars (as of 2020)
(exchange rate based)	1.6	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	7.3	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	3.0	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	5.6	US dollars (as of 2020)
Energy productivity levels in 2019	10.7	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	176.2	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	9,624	Thousands persons
Employment rate in 2020	61.0	%
Female employment share in 2020	49.7	%
Average schooling years of workers in 2020	5.4	Years
Investment share in 2020	25.6	%
ICT investment share in GFCF in 2020	1.1	%
Agriculture share in GDP in 2020	24.4	%
Manufacturing share in GDP in 2020	17.6	%
Agriculture share in employment in 2020	32.7	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	–5.1	4.2	6.4	7.7	4.8	5.0	9.8	6.7	–4.3	4.6	5.0	5.1	5.1
Labor input growth	1.3	2.9	5.3	4.6	4.0	2.7	3.6	1.6	–2.2	4.4	4.3	4.4	3.9
Labor quality growth	0.9	0.5	1.1	1.0	1.8	0.4	0.9	–0.8	–0.6	3.7	2.6	2.5	2.4
Hours worked growth	0.5	2.5	4.2	3.7	2.2	2.3	2.7	2.5	–1.6	0.7	1.6	1.8	1.5
College labor input growth	6.9	4.6	6.1	14.1	8.1	8.4	5.7	4.8	–0.1	4.1	4.6	4.5	4.1
Non-college labor input growth	1.3	2.9	5.3	4.2	3.7	2.2	3.4	1.4	–2.3	4.4	4.2	4.3	3.9
IT capital input growth	11.0	5.4	26.2	15.4	15.3	8.5	5.7	3.7	–2.9	0.0	2.4	5.0	5.6
Non-IT capital input growth	1.8	0.2	3.7	8.2	7.1	7.3	7.5	7.4	7.4	6.8	6.5	6.4	6.3
Per-worker labor productivity growth	–5.4	1.7	2.7	4.4	2.7	3.4	7.5	4.3	–1.7	3.2	3.2	3.2	3.4
Per-hour labor productivity growth	–5.5	1.7	2.2	4.0	2.6	2.7	7.1	4.2	–2.7	3.9	3.4	3.3	3.6
Capital productivity growth	–0.1	0.0	–3.5	–8.1	–7.1	–7.3	–7.4	–7.3	–7.3	–2.2	–1.4	–1.2	–1.3
TFP growth	–6.7	2.9	2.0	1.2	–0.7	0.3	4.5	2.4	–6.3	–0.8	–0.2	–0.1	0.1

Production

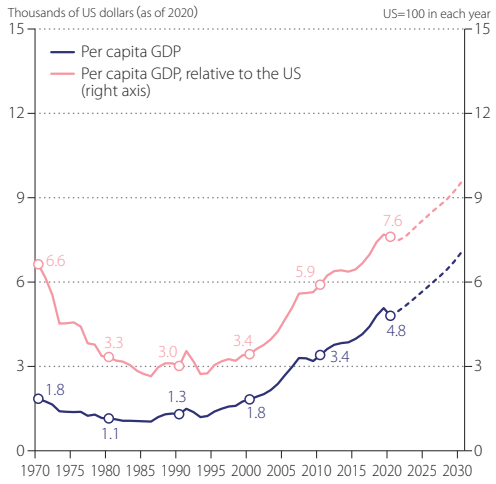

Figure 1 Per Capita GDP

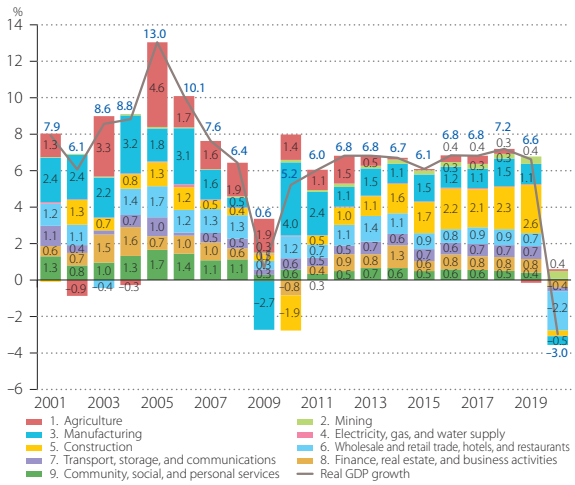

Figure 2 Industry Origins of Economic Growth

Labor

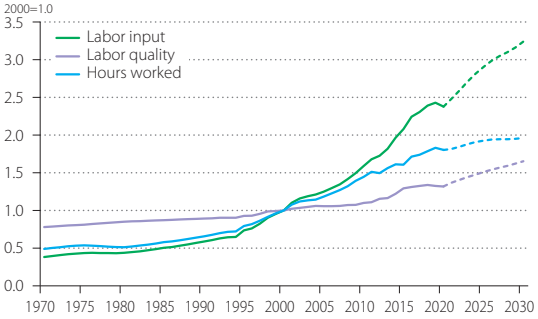

Figure 3 Labor Inputs

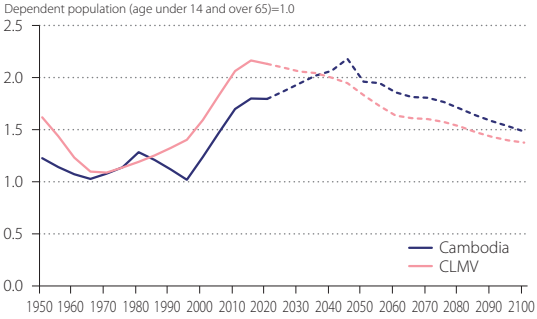

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

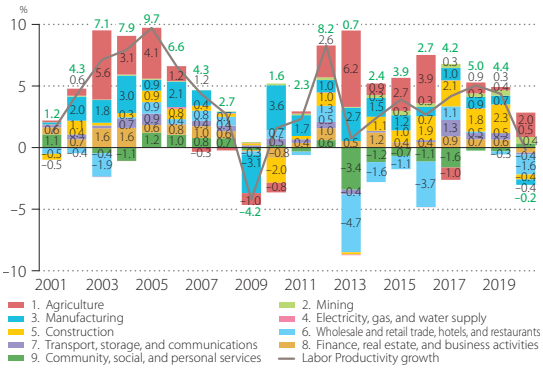

Figure 7 Industry Origins of Labor Productivity Growth

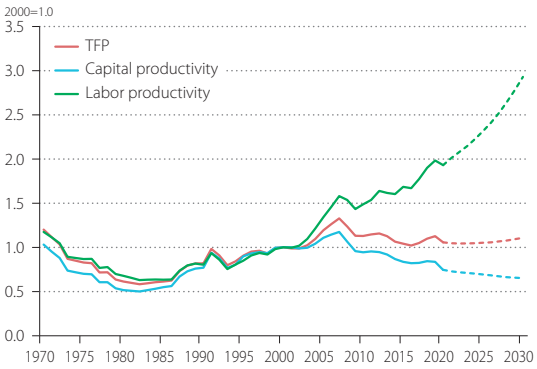

Figure 8 Productivity Indicators

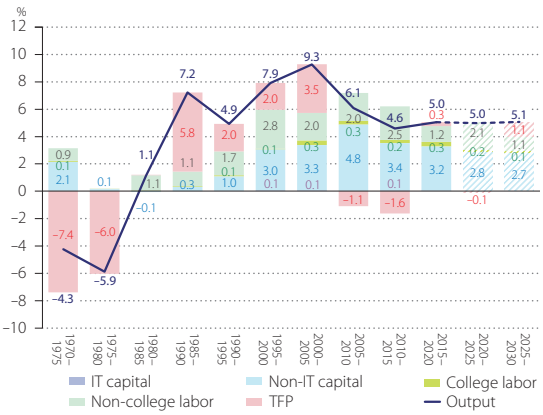

Figure 9 Decomposition of Economic Growth

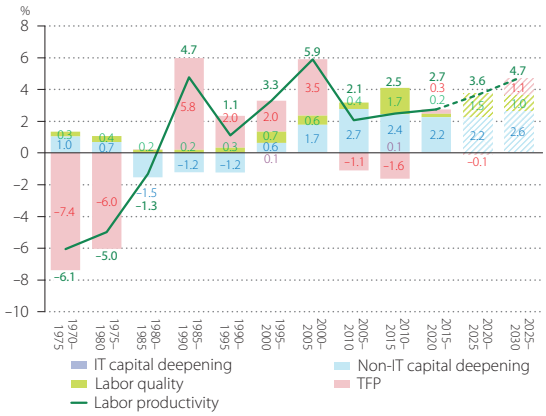

Figure 10 Decomposition of Labor Productivity Growth

ROC

Key Indicators

GDP in 2020	1,320	Billions of US dollars (as of 2020)
(exchange rate based)	669	Billions of US dollars (as of 2020)
Per capita GDP in 2020	56.0	Thousands of US dollars (as of 2020)
(exchange rate based)	28.4	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	109.0	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	52.4	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	94.3	US dollars (as of 2020)
Energy productivity levels in 2019	17.8	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	205.5	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	11,794	Thousands persons
Employment rate in 2020	50.1	%
Female employment share in 2020	43.0	%
Average schooling years of workers in 2020	13.3	Years
Investment share in 2020	24.2	%
ICT investment share in GFCF in 2020	8.4	%
Agriculture share in GDP in 2020	1.6	%
Manufacturing share in GDP in 2020	33.0	%
Agriculture share in employment in 2020	4.8	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	10.5	8.6	6.8	4.1	2.9	2.9	2.6	3.2	3.1	6.4	3.2	2.6	2.8
Labor input growth	4.4	2.9	2.2	2.1	2.0	0.6	1.4	0.9	0.7	–0.1	–1.2	–1.3	–1.3
Labor quality growth	1.1	0.9	1.1	1.7	1.0	0.8	0.6	0.3	1.4	0.6	0.7	0.8	0.8
Hours worked growth	3.3	2.0	1.1	0.3	1.0	–0.2	0.8	0.6	–0.7	–0.7	–1.9	–2.1	–2.1
College labor input growth	12.9	12.4	11.5	8.3	5.3	3.5	3.5	2.7	6.0	1.7	0.6	0.5	0.4
Non-college labor input growth	3.5	1.4	0.1	–0.5	–0.3	–1.6	–0.3	–0.5	–3.8	–1.7	–3.0	–3.1	–3.2
IT capital input growth	18.6	19.5	20.5	4.6	3.0	3.2	2.0	2.9	4.6	11.6	8.6	6.9	6.6
Non-IT capital input growth	9.8	7.7	6.9	2.9	1.7	1.8	1.6	1.9	2.2	1.6	1.6	1.6	1.6
Per-worker labor productivity growth	7.3	6.3	5.5	3.2	2.0	2.4	1.9	2.7	3.1	7.9	4.9	4.5	4.6
Per-hour labor productivity growth	7.2	6.6	5.7	3.8	1.9	3.1	1.8	2.6	3.9	7.0	5.1	4.7	4.9
Capital productivity growth	–9.9	–8.1	–7.5	–3.0	–1.7	–1.8	–1.6	–1.9	–2.2	4.4	1.3	0.8	1.0
TFP growth	3.5	3.5	2.3	1.6	1.0	1.6	1.1	1.8	1.7	5.4	2.8	2.4	2.5

Production

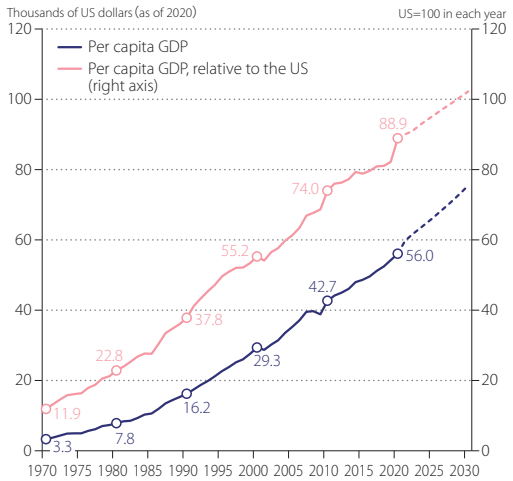

Figure 1 Per Capita GDP

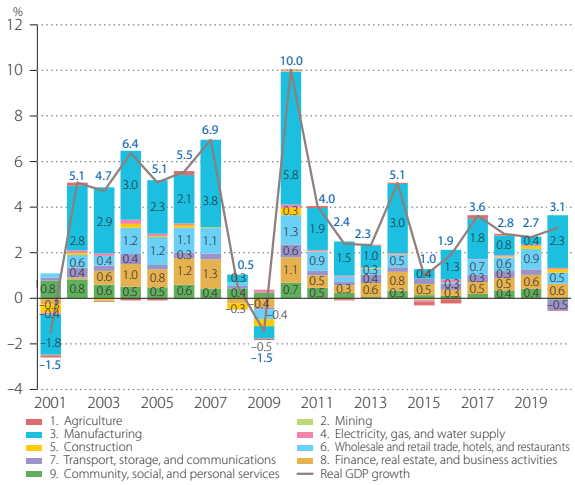

Figure 2 Industry Origins of Economic Growth

Labor

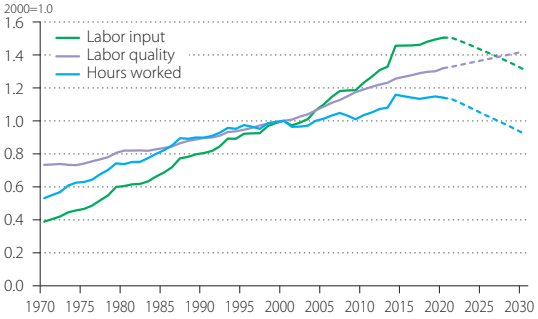

Figure 3 Labor Inputs

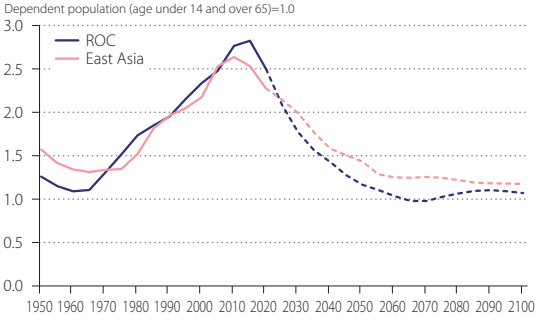

Figure 4 Demographic Dividend

Productivity

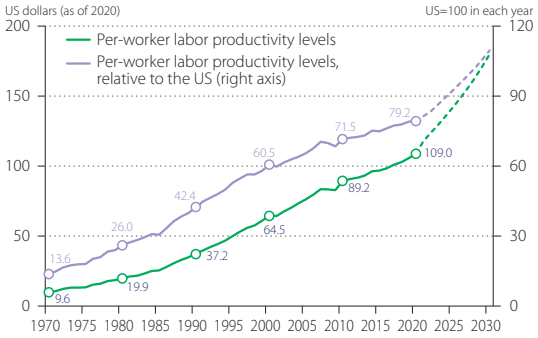

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

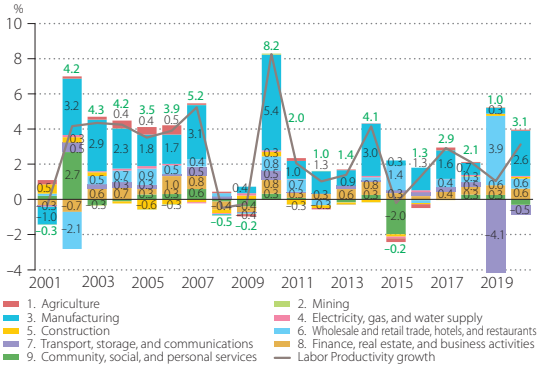

Figure 7 Industry Origins of Labor Productivity Growth

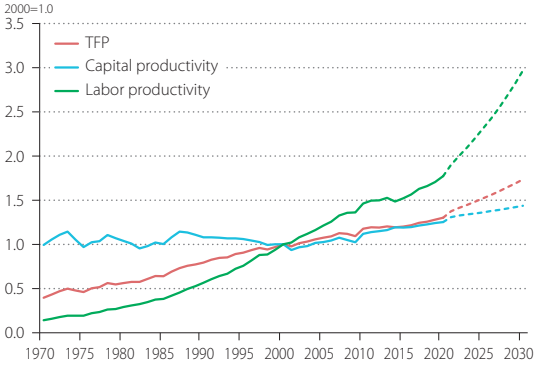

Figure 8 Productivity Indicators

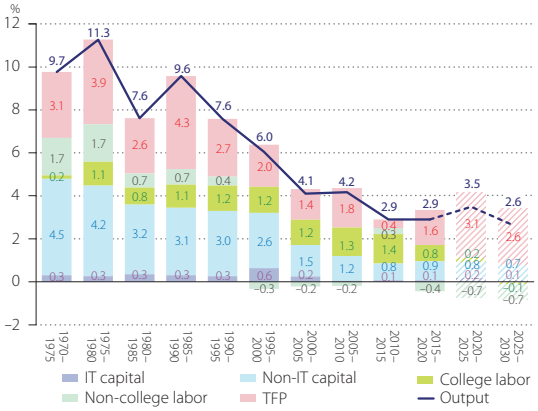

Figure 9 Decomposition of Economic Growth

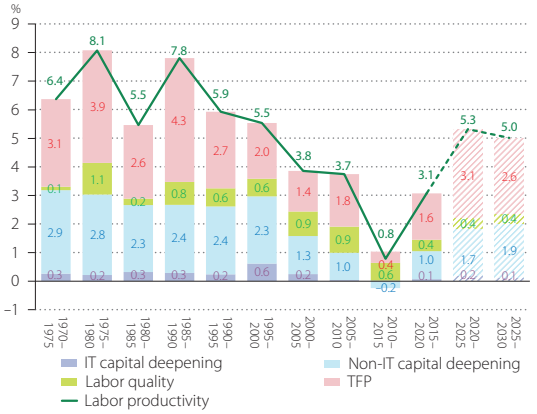

Figure 10 Decomposition of Labor Productivity Growth

Fiji

Key Indicators

GDP in 2020	11	Billions of US dollars (as of 2020)
(exchange rate based)	4	Billions of US dollars (as of 2020)
Per capita GDP in 2020	11.9	Thousands of US dollars (as of 2020)
(exchange rate based)	5.0	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	24.5	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	12.9	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	36.7	US dollars (as of 2020)
Energy productivity levels in 2019	n.a.	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	161.1	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	356	Thousands persons
Employment rate in 2020	39.7	%
Female employment share in 2020	31.7	%
Average schooling years of workers in 2020	12.3	Years
Investment share in 2020	12.0	%
ICT investment share in GFCF in 2020	11.8	%
Agriculture share in GDP in 2020	21.3	%
Manufacturing share in GDP in 2020	14.0	%
Agriculture share in employment in 2020	7.1	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	4.7	2.2	2.3	1.3	1.1	−1.6	3.7	−0.6	−18.8	−2.8	4.5	7.6	7.1
Labor input growth	5.5	4.3	4.0	1.7	2.1	2.0	1.9	1.3	1.2	1.0	1.4	1.4	1.4
Labor quality growth	2.3	2.2	2.0	0.9	0.3	0.5	0.0	0.0	0.0	0.2	0.4	0.4	0.4
Hours worked growth	3.2	2.1	2.0	0.8	1.7	1.5	1.9	1.3	1.2	0.8	1.0	1.0	1.0
College labor input growth	6.1	7.4	5.3	3.8	1.3	1.4	1.8	1.1	1.1	1.5	1.8	1.9	1.8
Non-college labor input growth	5.4	3.3	3.4	0.5	2.5	2.4	1.9	1.4	1.3	0.8	1.1	1.1	1.1
IT capital input growth	7.1	16.6	2.8	4.1	6.4	6.4	9.2	7.2	0.4	−0.6	6.1	6.9	8.0
Non-IT capital input growth	5.6	2.1	2.9	0.5	1.0	1.5	2.7	2.3	0.2	−0.7	0.0	0.2	0.4
Per-worker labor productivity growth	1.5	−0.3	0.6	0.3	−0.2	−2.9	1.9	−1.8	−20.0	−3.5	3.8	6.9	6.4
Per-hour labor productivity growth	1.4	0.1	0.4	0.5	−0.7	−3.1	1.8	−1.8	−20.0	−3.6	3.6	6.6	6.2
Capital productivity growth	−5.5	−2.3	−2.8	−0.6	−1.2	−1.7	−3.0	−2.6	−0.4	−2.1	4.3	7.1	6.4
TFP growth	−0.9	−1.2	−1.0	0.2	−0.5	−3.4	1.2	−2.6	−19.5	−2.8	3.8	6.8	6.1

Production

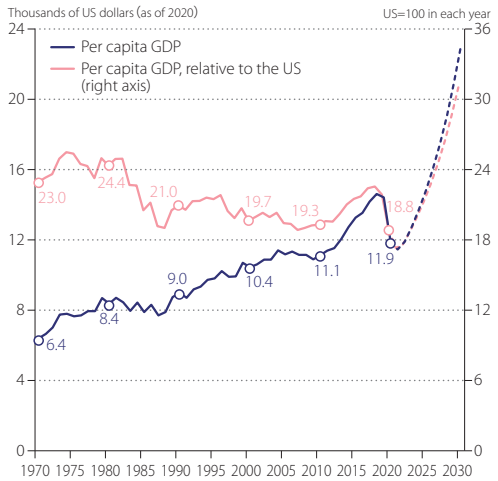

Figure 1 Per Capita GDP

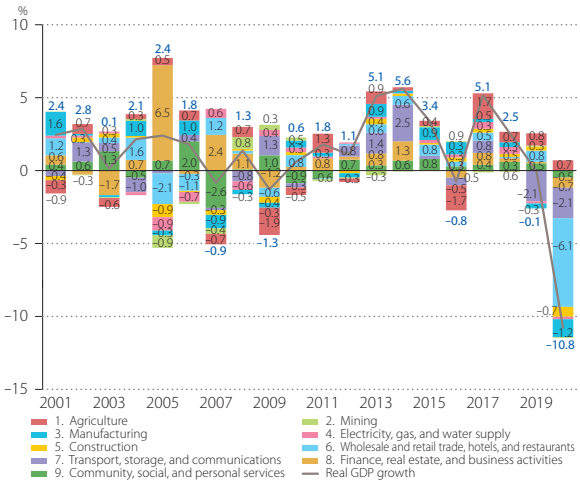

Figure 2 Industry Origins of Economic Growth

Labor

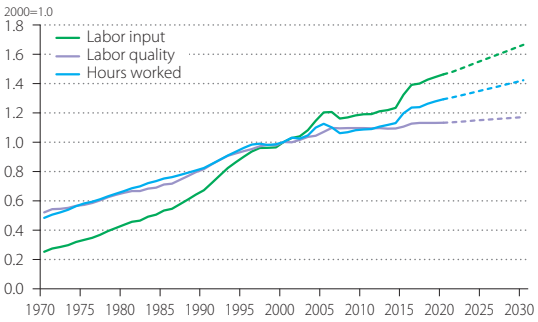

Figure 3 Labor Inputs

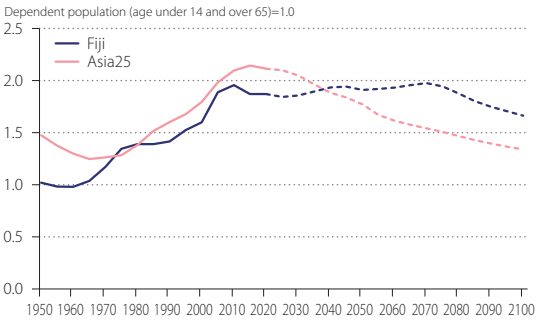

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

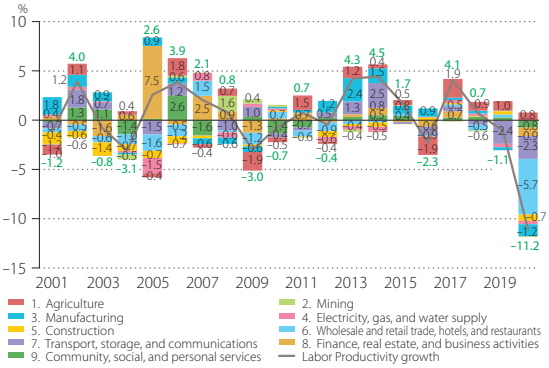

Figure 7 Industry Origins of Labor Productivity Growth

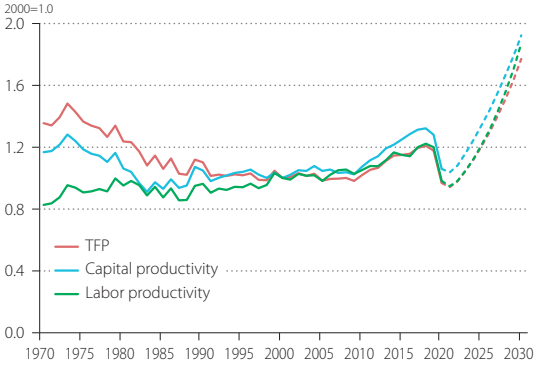

Figure 8 Productivity Indicators

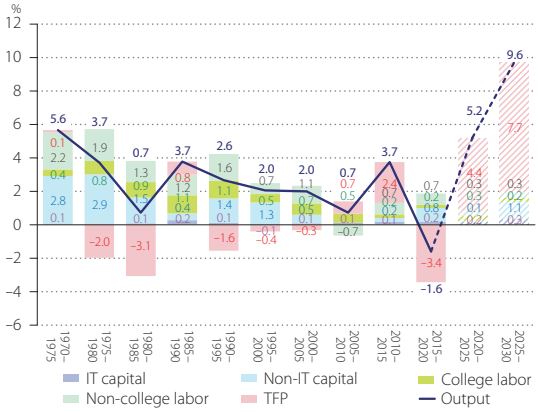

Figure 9 Decomposition of Economic Growth

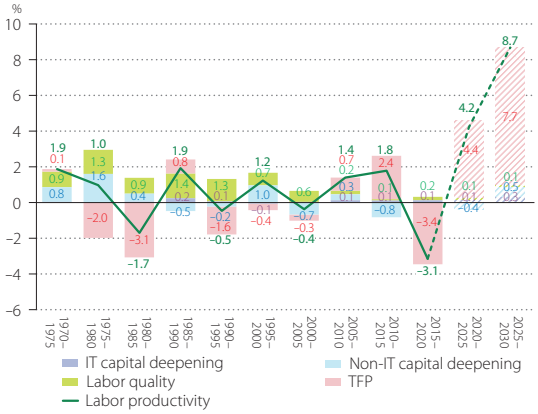

Figure 10 Decomposition of Labor Productivity Growth

Hong Kong

Key Indicators

GDP in 2020	444	Billions of US dollars (as of 2020)
(exchange rate based)	347	Billions of US dollars (as of 2020)
Per capita GDP in 2020	59.3	Thousands of US dollars (as of 2020)
(exchange rate based)	46.3	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	117.7	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	55.3	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	151.5	US dollars (as of 2020)
Energy productivity levels in 2019	55.6	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	94.2	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	3,612	Thousands persons
Employment rate in 2020	48.3	%
Female employment share in 2020	50.8	%
Average schooling years of workers in 2020	12.5	Years
Investment share in 2020	19.0	%
ICT investment share in GFCF in 2020	14.2	%
Agriculture share in GDP in 2020	0.1	%
Manufacturing share in GDP in 2020	1.0	%
Agriculture share in employment in 2020	0.2	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	8.9	6.6	4.3	3.9	1.5	0.2	2.8	−1.7	−6.2	6.1	0.7	2.3	1.9
Labor input growth	4.5	2.6	3.3	1.2	0.6	−0.4	2.7	−0.2	−5.6	−0.1	−1.1	−1.1	−1.1
Labor quality growth	0.8	1.6	1.3	0.5	1.0	0.9	0.6	0.2	1.6	0.3	0.5	0.5	0.5
Hours worked growth	3.7	1.0	2.0	0.7	−0.4	−1.3	2.1	−0.4	−7.2	−0.4	−1.6	−1.6	−1.6
College labor input growth	9.7	11.4	10.8	6.0	4.6	2.6	5.6	2.7	−1.9	0.3	0.3	0.3	0.2
Non-college labor input growth	4.1	1.5	1.5	−1.0	−2.0	−2.7	0.5	−2.4	−8.6	−0.5	−2.3	−2.2	−2.3
IT capital input growth	17.1	19.1	18.4	8.8	6.6	4.0	5.2	3.8	1.8	6.3	13.0	11.1	11.4
Non-IT capital input growth	7.5	5.6	4.8	2.4	0.8	0.1	1.1	−0.2	−1.2	−0.6	0.2	0.1	0.2
Per-worker labor productivity growth	5.0	4.8	2.6	3.1	1.1	0.9	1.7	−1.1	−0.9	7.3	1.9	3.5	3.1
Per-hour labor productivity growth	5.2	5.6	2.4	3.3	1.9	1.4	0.7	−1.2	1.1	6.5	2.3	3.9	3.5
Capital productivity growth	−7.7	−6.0	−5.5	−2.8	−1.2	−0.4	−1.3	0.0	0.9	6.2	−0.3	1.5	1.0
TFP growth	2.8	2.4	−0.1	2.0	0.6	0.2	0.7	−1.5	−2.5	6.2	0.9	2.5	2.1

Production

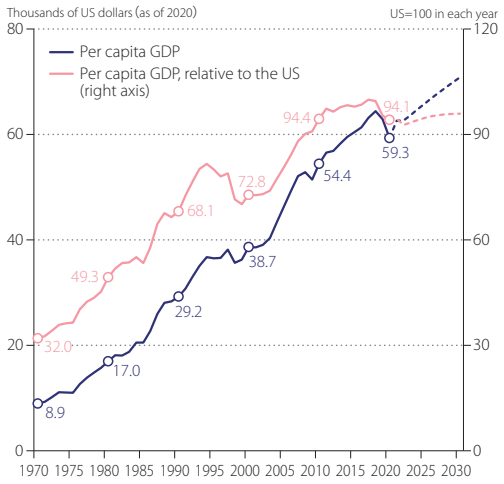

Figure 1 Per Capita GDP

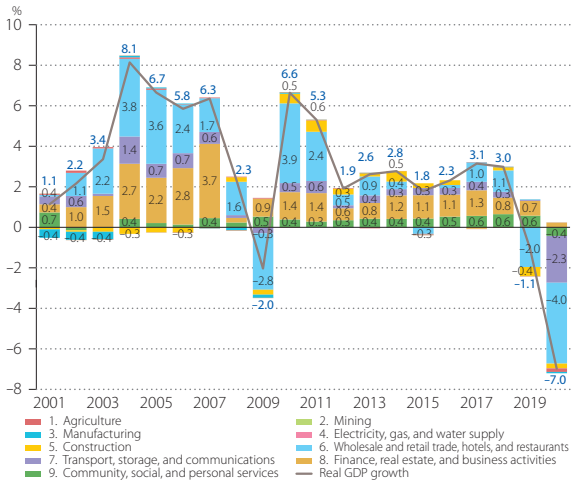

Figure 2 Industry Origins of Economic Growth

Labor

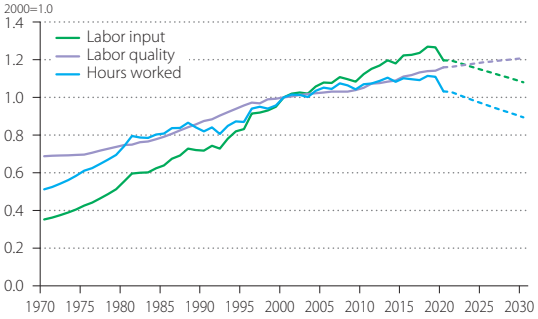

Figure 3 Labor Inputs

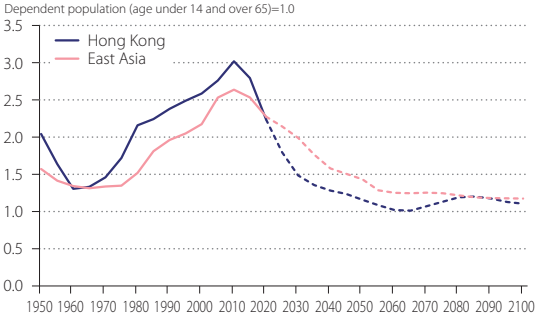

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

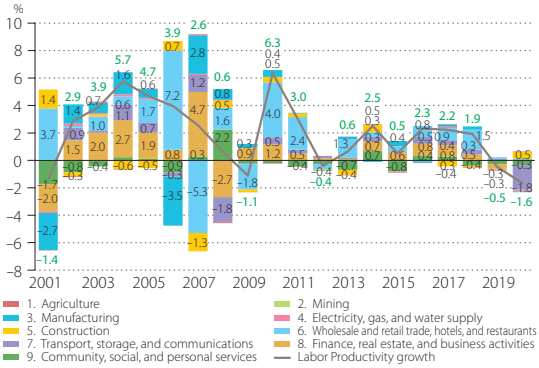

Figure 7 Industry Origins of Labor Productivity Growth

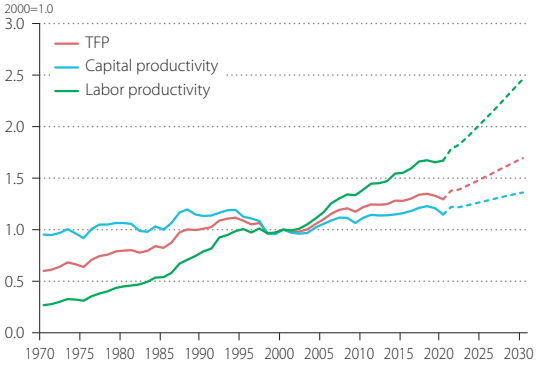

Figure 8 Productivity Indicators

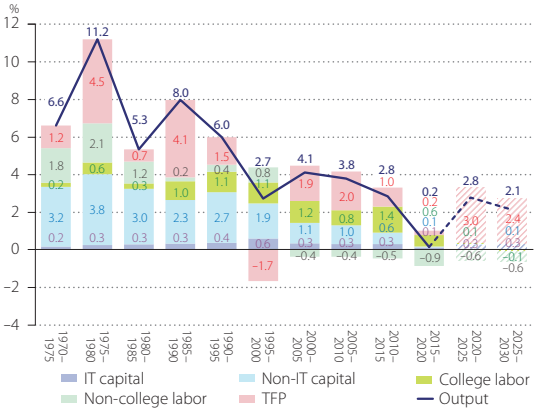

Figure 9 Decomposition of Economic Growth

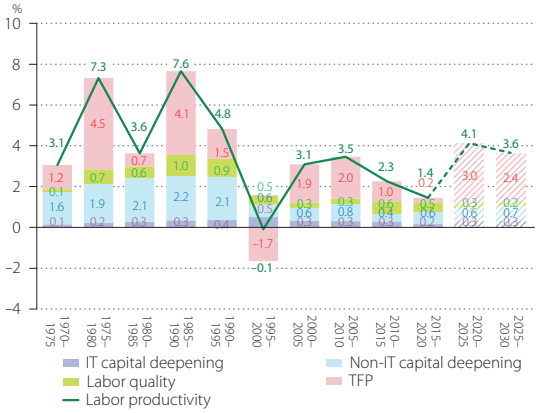

Figure 10 Decomposition of Labor Productivity Growth

India

Key Indicators

GDP in 2020	8,885	Billions of US dollars (as of 2020)
(exchange rate based)	2,646	Billions of US dollars (as of 2020)
Per capita GDP in 2020	6.4	Thousands of US dollars (as of 2020)
(exchange rate based)	1.9	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	15.4	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	7.2	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	19.5	US dollars (as of 2020)
Energy productivity levels in 2019	13.8	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	266.4	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	524,355	Thousands persons
Employment rate in 2020	38.0	%
Female employment share in 2020	25.6	%
Average schooling years of workers in 2020	6.3	Years
Investment share in 2020	27.2	%
ICT investment share in GFCF in 2020	6.6	%
Agriculture share in GDP in 2020	19.1	%
Manufacturing share in GDP in 2020	12.8	%
Agriculture share in employment in 2020	45.0	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	3.0	4.9	5.0	7.5	4.8	3.2	6.9	1.5	–5.8	8.2	6.0	6.1	6.3
Labor input growth	3.0	3.1	2.7	2.9	1.9	1.4	1.5	1.5	1.4	2.6	2.9	2.9	2.9
Labor quality growth	0.6	1.1	1.0	1.5	0.9	0.6	0.5	0.5	0.5	1.5	1.8	1.8	1.7
Hours worked growth	2.4	2.0	1.7	1.4	0.9	0.8	1.0	1.0	0.9	1.1	1.2	1.2	1.1
College labor input growth	12.0	8.2	5.8	6.2	2.6	2.2	2.4	2.4	2.4	3.3	3.8	3.8	3.7
Non-college labor input growth	2.2	2.3	1.9	1.7	1.5	1.0	1.1	1.0	1.0	2.2	2.5	2.5	2.4
IT capital input growth	11.7	17.7	17.0	16.6	13.7	13.8	14.8	14.7	11.7	14.4	16.8	14.1	13.8
Non-IT capital input growth	4.4	5.0	5.3	6.9	7.4	6.8	7.1	6.8	6.0	4.1	5.4	5.5	5.6
Per-worker labor productivity growth	0.5	3.5	3.7	5.9	4.0	2.6	5.2	2.9	–8.1	7.1	4.8	4.9	5.2
Per-hour labor productivity growth	0.5	3.4	3.6	5.7	3.9	2.6	5.2	2.9	–8.1	7.1	4.8	4.9	5.2
Capital productivity growth	–4.4	–5.0	–5.5	–7.2	–7.6	–7.1	–7.4	–7.1	–6.4	3.6	0.0	0.1	0.3
TFP growth	–0.4	1.8	1.7	2.5	0.8	–0.2	2.4	0.3	–10.4	4.9	1.9	2.0	2.2

Production

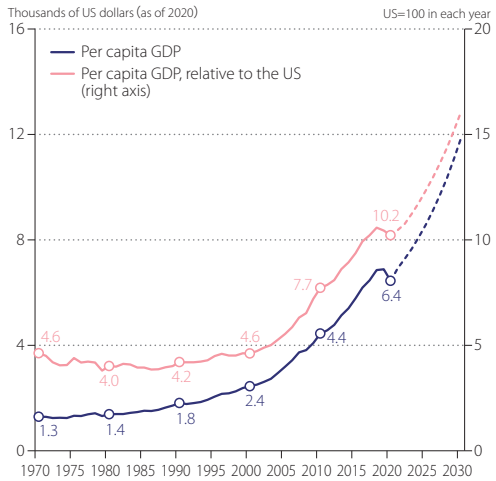

Figure 1 Per Capita GDP

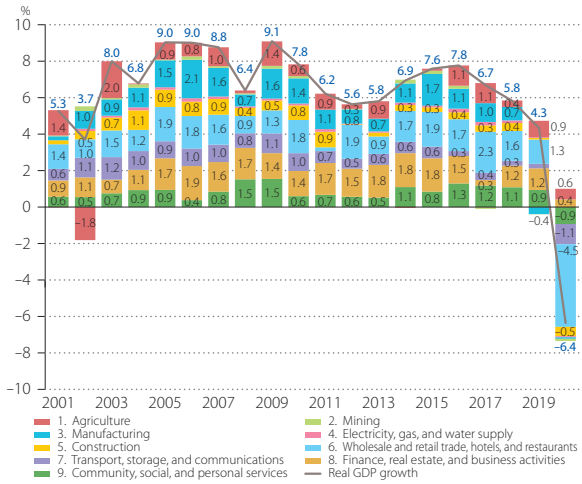

Figure 2 Industry Origins of Economic Growth

Labor

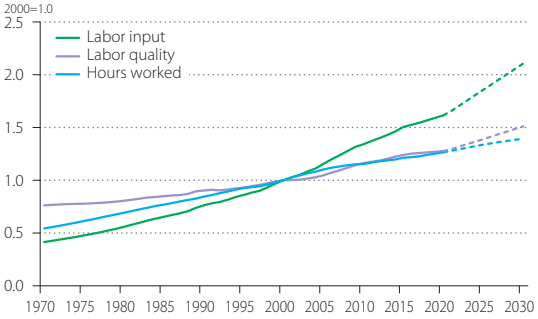

Figure 3 Labor Inputs

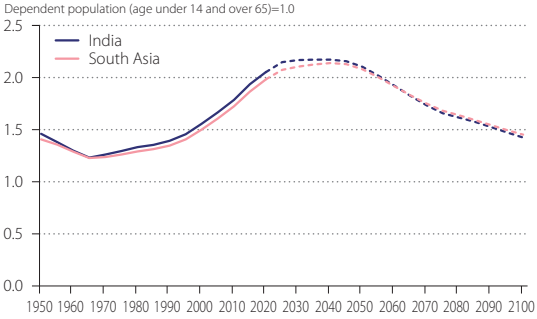

Figure 4 Demographic Dividend

Productivity

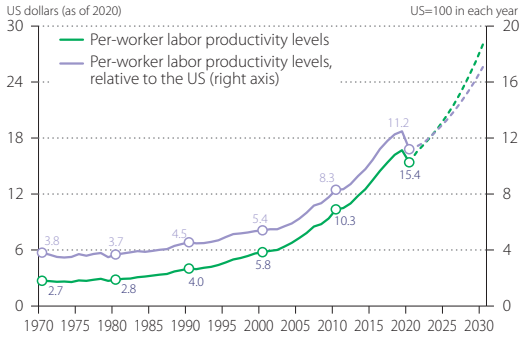

Figure 5 Per-Worker Labor Productivity Level

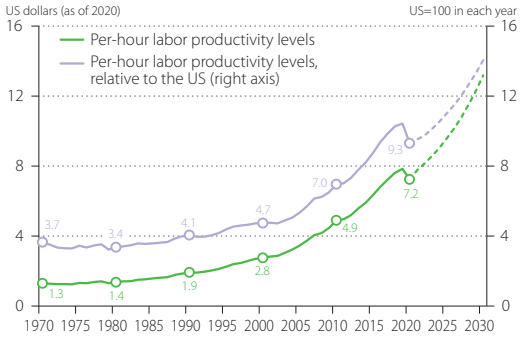

Figure 6 Per-Hour Labor Productivity Level

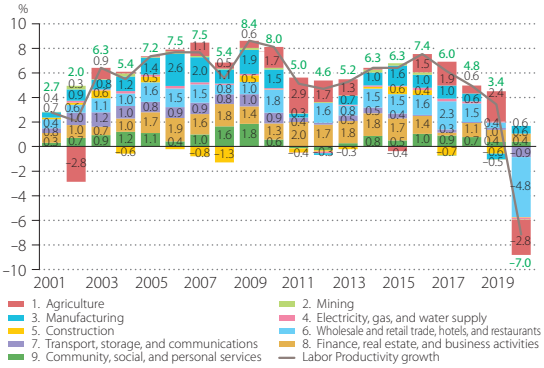

Figure 7 Industry Origins of Labor Productivity Growth

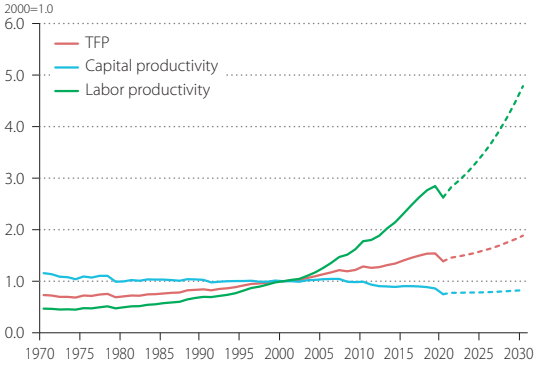

Figure 8 Productivity Indicators

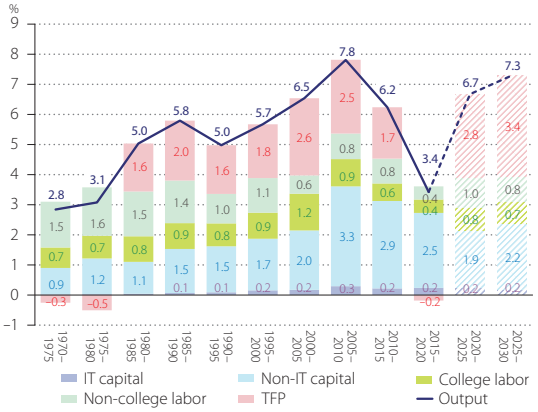

Figure 9 Decomposition of Economic Growth

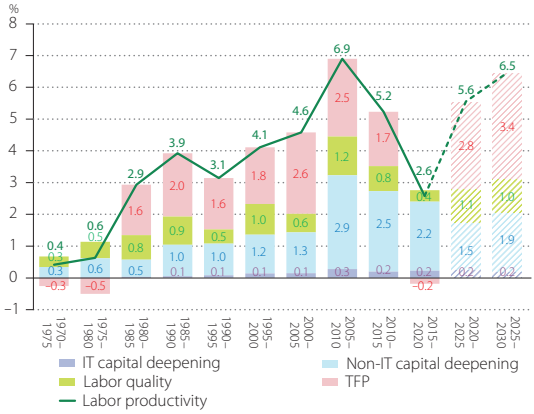

Figure 10 Decomposition of Labor Productivity Growth

Indonesia

Key Indicators

GDP in 2020	3,296	Billions of US dollars (as of 2020)
(exchange rate based)	1,063	Billions of US dollars (as of 2020)
Per capita GDP in 2020	12.3	Thousands of US dollars (as of 2020)
(exchange rate based)	4.0	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	24.4	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	12.0	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	44.4	US dollars (as of 2020)
Energy productivity levels in 2019	20.2	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	179.9	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	130,045	Thousands persons
Employment rate in 2020	48.4	%
Female employment share in 2020	39.7	%
Average schooling years of workers in 2020	9.1	Years
Investment share in 2020	32.7	%
ICT investment share in GFCF in 2020	3.6	%
Agriculture share in GDP in 2020	14.2	%
Manufacturing share in GDP in 2020	20.6	%
Agriculture share in employment in 2020	28.1	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	8.0	6.1	4.1	5.0	4.3	3.4	4.8	4.7	–2.3	3.6	5.7	3.5	4.3
Labor input growth	5.9	5.8	6.4	5.1	5.8	5.0	2.4	7.5	4.0	2.8	3.8	3.6	3.6
Labor quality growth	1.9	2.4	4.3	2.8	4.2	2.6	1.3	3.0	3.7	2.6	3.2	3.1	3.0
Hours worked growth	4.0	3.4	2.1	2.3	1.6	2.5	1.2	4.5	0.3	0.3	0.6	0.5	0.5
College labor input growth	22.7	11.4	21.3	11.9	11.8	8.7	1.0	11.9	7.6	2.6	4.1	3.9	3.9
Non-college labor input growth	5.6	5.6	5.2	3.9	3.7	3.6	3.0	5.7	2.6	3.0	3.7	3.5	3.4
IT capital input growth	23.3	20.8	13.2	13.7	14.7	12.9	13.2	11.7	8.5	11.2	10.1	9.4	8.8
Non-IT capital input growth	7.7	7.6	6.7	4.7	6.3	6.1	6.1	5.9	5.6	4.7	4.8	4.8	4.7
Per-worker labor productivity growth	4.2	2.8	2.4	3.1	2.5	0.9	1.7	1.5	–1.8	2.8	5.0	2.9	3.7
Per-hour labor productivity growth	4.0	2.7	2.0	2.7	2.7	0.9	3.7	0.2	–2.6	3.4	5.1	3.0	3.8
Capital productivity growth	–7.7	–7.7	–6.8	–4.8	–6.4	–6.2	–6.2	–6.0	–5.7	–1.3	0.8	–1.4	–0.4
TFP growth	0.9	–1.0	–2.6	0.0	–1.8	–2.4	0.3	–2.0	–7.2	–0.3	1.3	–0.8	0.1

Production

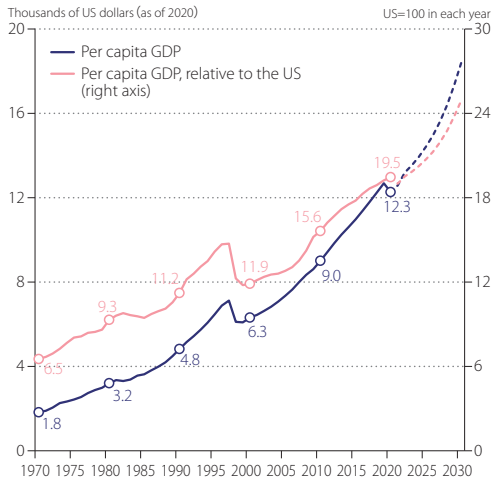

Figure 1 Per Capita GDP

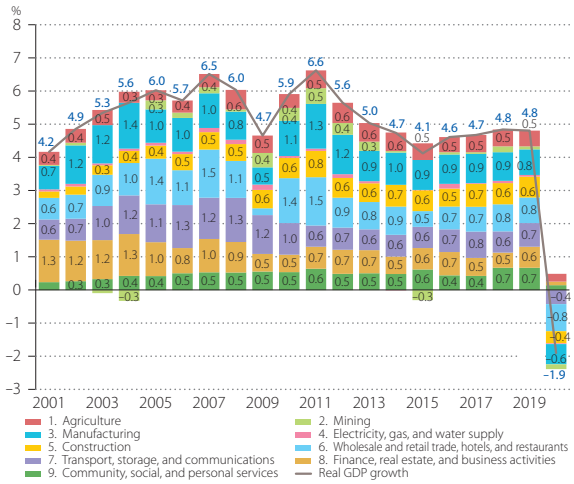

Figure 2 Industry Origins of Economic Growth

Labor

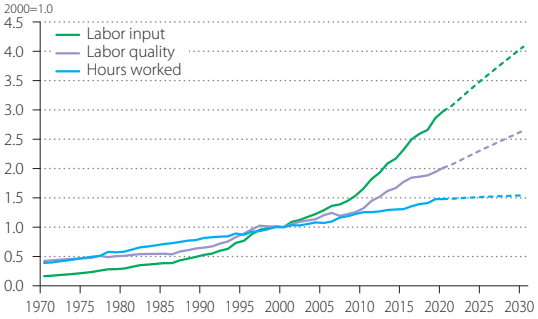

Figure 3 Labor Inputs

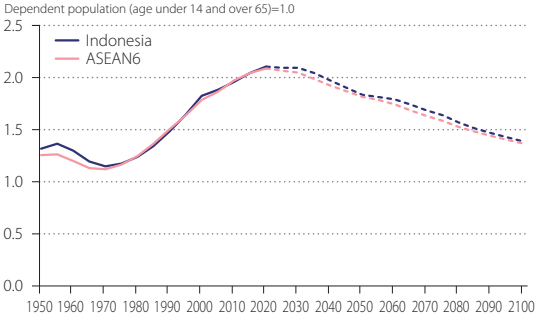

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

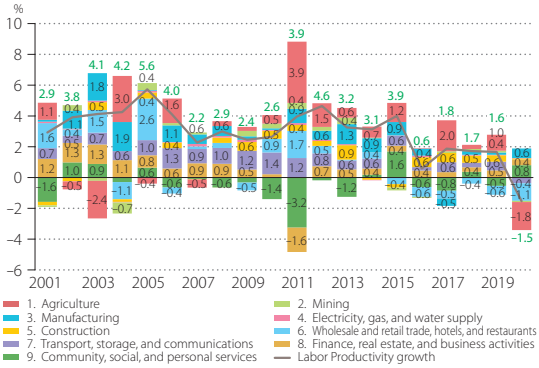

Figure 7 Industry Origins of Labor Productivity Growth

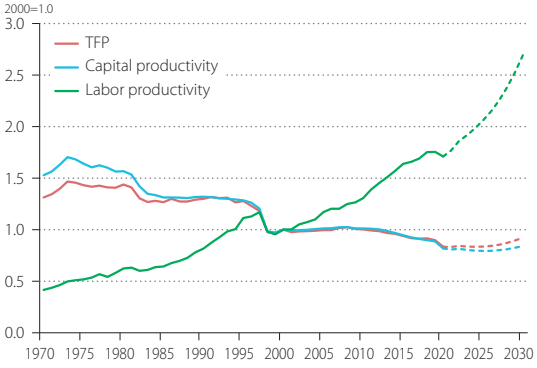

Figure 8 Productivity Indicators

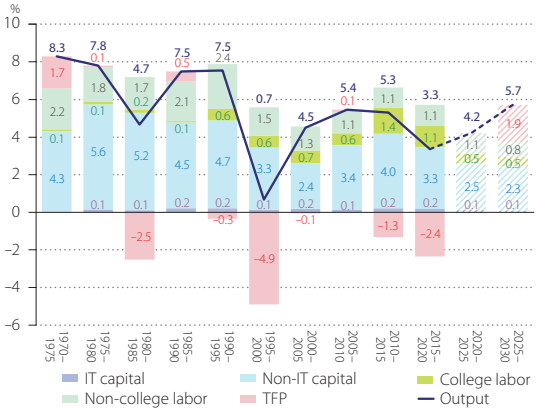

Figure 9 Decomposition of Economic Growth

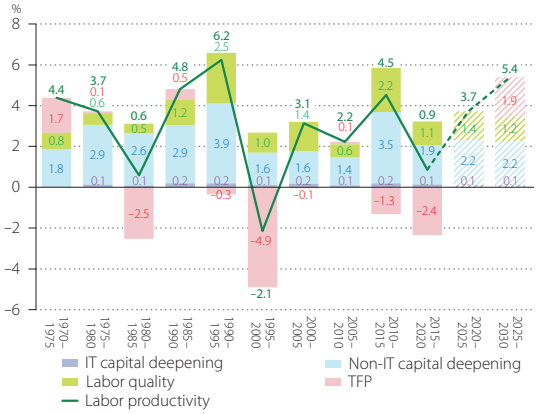

Figure 10 Decomposition of Labor Productivity Growth

Iran

Key Indicators

GDP in 2020	1,314	Billions of US dollars (as of 2020)
(exchange rate based)	1,181	Billions of US dollars (as of 2020)
Per capita GDP in 2020	15.5	Thousands of US dollars (as of 2020)
(exchange rate based)	14.0	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	54.5	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	23.7	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	59.5	US dollars (as of 2020)
Energy productivity levels in 2019	6.3	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	458.2	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	23,946	Thousands persons
Employment rate in 2020	28.3	%
Female employment share in 2020	13.8	%
Average schooling years of workers in 2020	9.7	Years
Investment share in 2020	31.6	%
ICT investment share in GFCF in 2020	3.5	%
Agriculture share in GDP in 2020	7.2	%
Manufacturing share in GDP in 2020	19.9	%
Agriculture share in employment in 2020	17.1	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–20	2015–20	2017–18	2018–19	2019–20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	3.0	2.3	3.7	6.1	0.4	1.2	−4.8	−8.0	2.5	5.0	1.0	2.0	1.8
Labor input growth	3.8	3.7	4.5	3.3	2.1	1.5	−2.9	2.9	0.4	2.7	2.2	2.2	2.1
Labor quality growth	1.2	1.1	1.7	1.9	1.0	0.3	−0.8	0.8	1.0	0.6	1.3	1.3	1.3
Hours worked growth	2.6	2.6	2.8	1.4	1.1	1.2	−2.0	2.1	−0.6	2.0	0.9	0.8	0.8
College labor input growth	5.0	7.2	9.9	6.5	3.2	1.4	−2.4	2.0	−1.2	4.1	2.9	2.8	2.7
Non-college labor input growth	3.6	2.9	2.5	1.1	1.0	1.6	−3.5	3.9	2.2	0.9	1.3	1.3	1.3
IT capital input growth	6.9	11.8	9.7	18.7	4.2	−0.4	1.5	−2.5	−3.7	0.6	−2.7	−1.2	−0.5
Non-IT capital input growth	5.9	1.3	0.1	3.1	2.2	1.8	2.3	1.5	1.4	1.9	1.0	0.9	0.9
Per-worker labor productivity growth	0.4	−0.2	0.8	4.2	−1.1	−0.5	−6.6	−10.0	3.6	4.3	−0.1	1.0	0.8
Per-hour labor productivity growth	0.4	−0.3	0.9	4.8	−0.8	0.0	−2.8	−10.2	3.1	2.9	0.2	1.2	1.0
Capital productivity growth	−5.9	−1.4	−0.2	−3.3	−2.2	−1.8	−2.3	−1.6	−1.3	3.1	0.1	1.2	0.9
TFP growth	−2.4	0.0	2.4	2.8	−1.8	−0.5	−5.9	−9.9	1.4	2.9	−0.2	0.8	0.6

Production

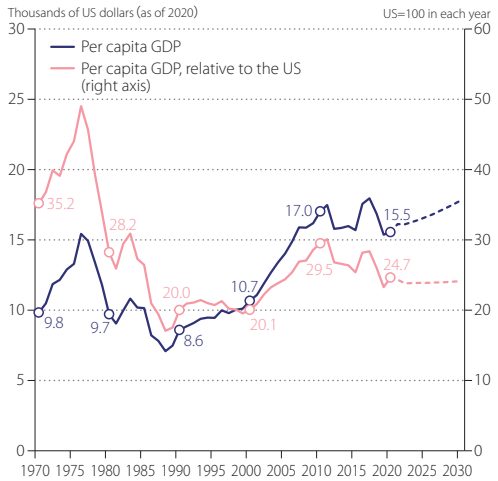

Figure 1 Per Capita GDP

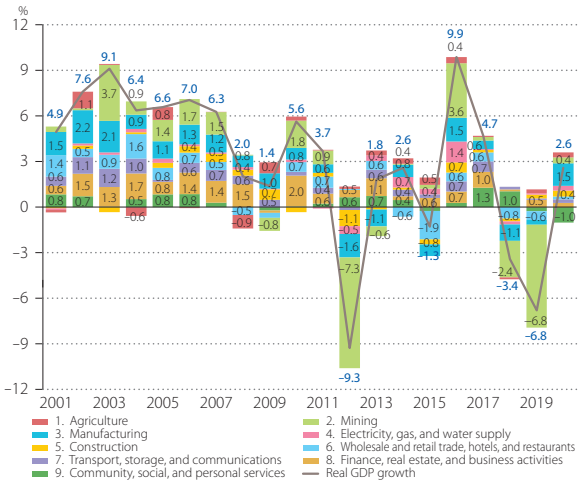

Figure 2 Industry Origins of Economic Growth

Labor

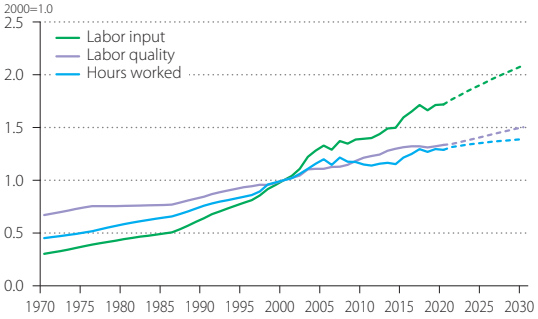

Figure 3 Labor Inputs

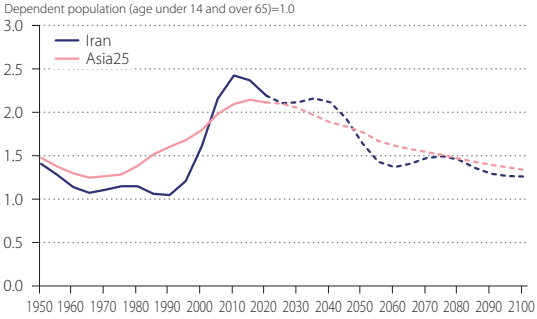

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

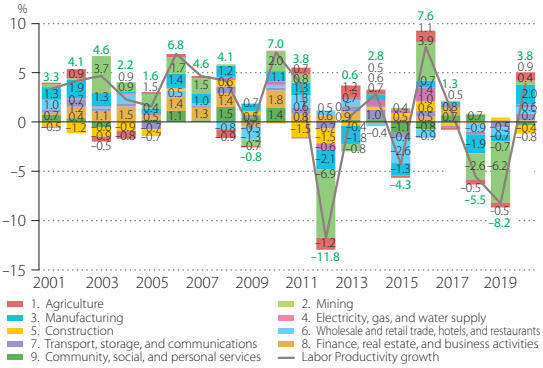

Figure 7 Industry Origins of Labor Productivity Growth

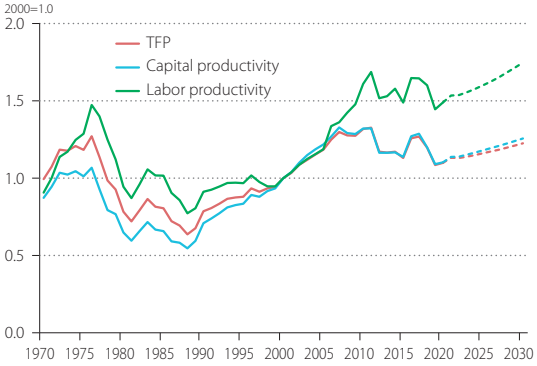

Figure 8 Productivity Indicators

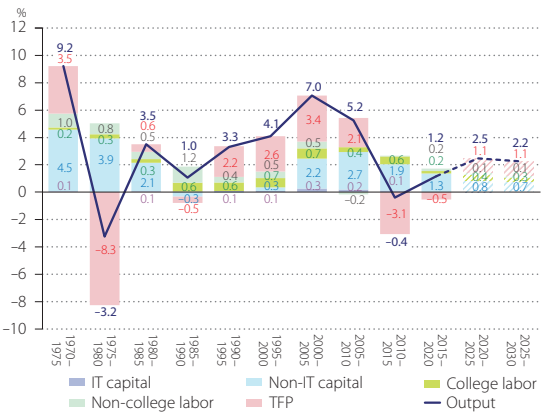

Figure 9 Decomposition of Economic Growth

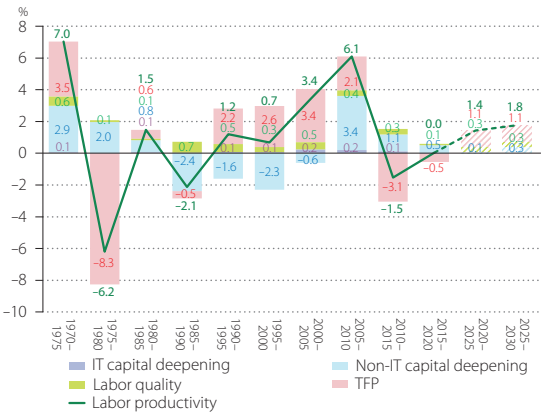

Figure 10 Decomposition of Labor Productivity Growth

Japan

Key Indicators

GDP in 2020	5,323	Billions of US dollars (as of 2020)
(exchange rate based)	5,040	Billions of US dollars (as of 2020)
Per capita GDP in 2020	42.2	Thousands of US dollars (as of 2020)
(exchange rate based)	39.9	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	76.6	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	45.0	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	146.1	US dollars (as of 2020)
Energy productivity levels in 2019	18.9	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	200.7	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	65,601	Thousands persons
Employment rate in 2020	52.0	%
Female employment share in 2020	44.3	%
Average schooling years of workers in 2020	13.3	Years
Investment share in 2020	25.4	%
ICT investment share in GFCF in 2020	13.1	%
Agriculture share in GDP in 2020	1.0	%
Manufacturing share in GDP in 2020	19.8	%
Agriculture share in employment in 2020	3.7	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	5.0	4.5	1.3	0.6	0.4	–0.3	0.6	–0.2	–4.7	1.7	1.8	1.0	1.2
Labor input growth	1.8	1.8	0.0	0.2	0.3	0.2	0.8	–2.0	0.2	0.4	–1.1	–1.1	–1.2
Labor quality growth	1.6	1.0	0.7	0.8	0.4	0.4	0.0	–0.1	1.3	0.1	0.6	0.6	0.5
Hours worked growth	0.2	0.7	–0.7	–0.6	–0.1	–0.2	0.8	–1.9	–1.1	0.3	–1.6	–1.7	–1.7
College labor input growth	7.7	6.2	3.6	3.1	2.0	2.0	2.1	–2.6	3.8	1.2	0.9	0.8	0.7
Non-college labor input growth	0.7	0.5	–1.4	–1.4	–0.9	–1.0	–0.1	–1.5	–2.4	–0.3	–2.6	–2.7	–2.8
IT capital input growth	12.0	17.7	8.9	4.8	2.8	2.5	2.0	2.5	2.3	7.0	5.6	4.8	4.5
Non-IT capital input growth	5.6	4.1	2.0	0.3	0.0	0.3	0.5	0.4	0.1	–0.1	0.0	0.1	0.1
Per-worker labor productivity growth	3.9	3.6	0.9	0.7	–0.1	–1.0	–1.1	–0.8	–4.1	3.0	3.2	2.5	2.7
Per-hour labor productivity growth	4.4	3.8	1.9	1.2	0.5	–0.2	–0.3	1.7	–3.5	1.4	3.5	2.7	2.9
Capital productivity growth	–5.8	–4.9	–2.5	–0.7	–0.2	–0.5	–0.6	–0.6	–0.3	1.2	1.4	0.5	0.7
TFP growth	1.1	1.5	0.1	0.2	0.1	–0.7	–0.2	0.6	–4.9	1.2	2.2	1.4	1.7

Production

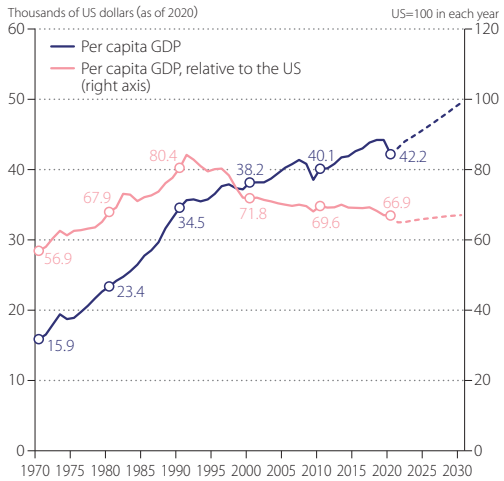

Figure 1 Per Capita GDP

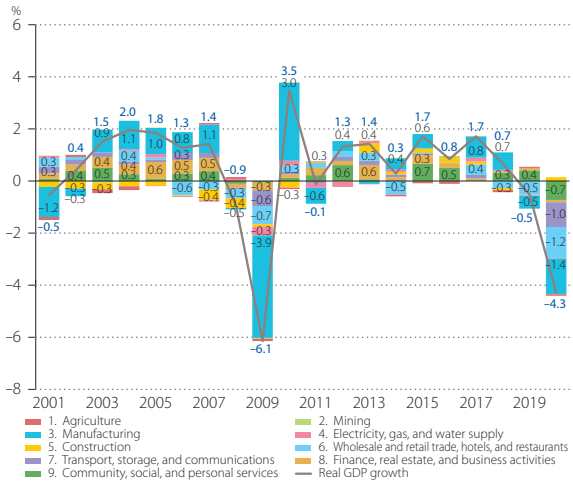

Figure 2 Industry Origins of Economic Growth

Labor

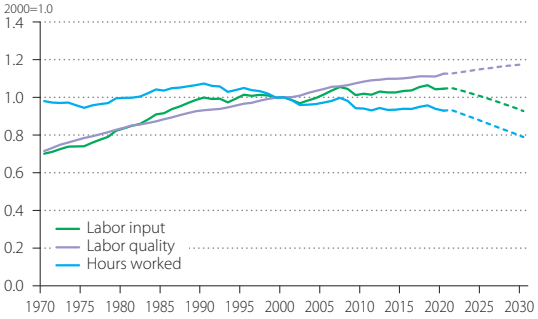

Figure 3 Labor Inputs

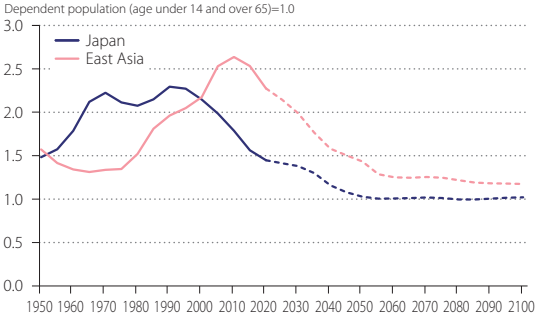

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

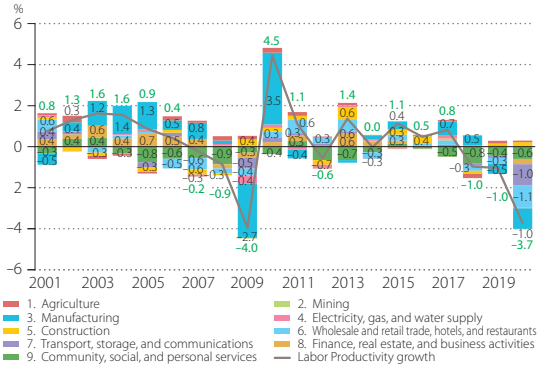

Figure 7 Industry Origins of Labor Productivity Growth

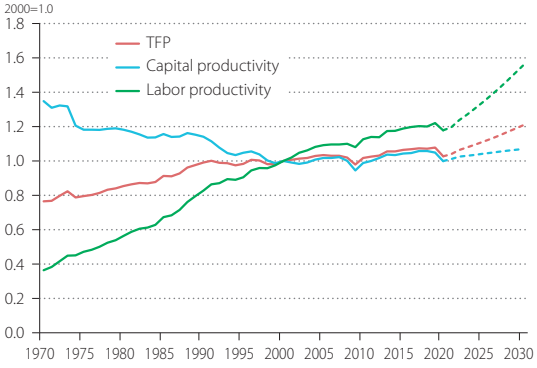

Figure 8 Productivity Indicators

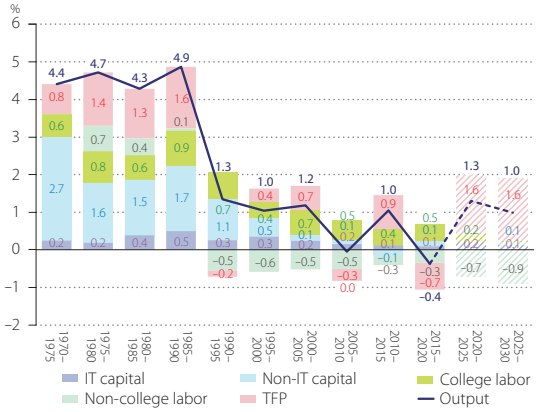

Figure 9 Decomposition of Economic Growth

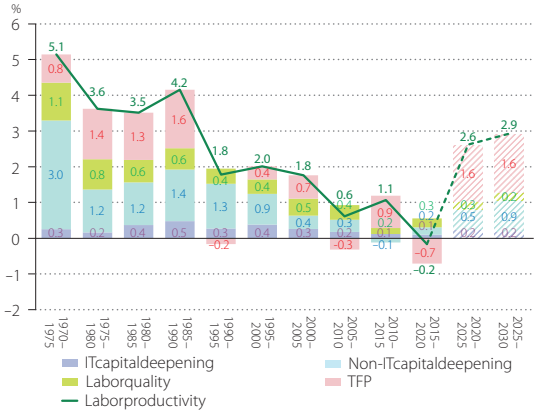

Figure 10 Decomposition of Labor Productivity Growth

Korea

Key Indicators

GDP in 2020	2,326	Billions of US dollars (as of 2020)
(exchange rate based)	1,638	Billions of US dollars (as of 2020)
Per capita GDP in 2020	44.9	Thousands of US dollars (as of 2020)
(exchange rate based)	31.6	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	77.3	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	40.0	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	159.3	US dollars (as of 2020)
Energy productivity levels in 2019	11.8	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	273.1	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	27,505	Thousands persons
Employment rate in 2020	53.1	%
Female employment share in 2020	41.9	%
Average schooling years of workers in 2020	13.3	Years
Investment share in 2020	31.9	%
ICT investment share in GFCF in 2020	9.2	%
Agriculture share in GDP in 2020	2.0	%
Manufacturing share in GDP in 2020	27.1	%
Agriculture share in employment in 2020	5.4	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–20	2015–20	2017–18	2018–19	2019–20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	9.1	9.9	6.9	4.8	2.4	2.1	3.0	2.6	−1.0	4.0	2.4	2.2	2.2
Labor input growth	4.1	5.7	3.1	2.2	0.6	−1.3	−1.8	0.0	−4.5	5.6	−0.6	−0.7	−0.7
Labor quality growth	0.9	3.1	2.1	2.2	1.0	0.9	1.0	0.5	0.7	−0.4	0.8	0.9	0.9
Hours worked growth	3.3	2.7	0.9	0.1	−0.4	−2.1	−2.8	−0.5	−5.2	6.0	−1.4	−1.6	−1.6
College labor input growth	3.6	10.9	7.2	5.6	2.5	0.7	0.0	2.0	−2.3	5.9	0.7	0.6	0.6
Non-college labor input growth	4.3	4.1	1.0	−0.9	−2.4	−4.7	−4.8	−3.5	−8.7	5.2	−3.2	−3.4	−3.5
IT capital input growth	23.4	22.4	18.3	6.8	3.2	4.1	3.8	4.8	5.9	12.0	7.7	6.1	5.9
Non-IT capital input growth	9.9	8.4	7.2	5.1	3.3	3.2	3.7	3.0	2.7	2.4	2.0	1.9	1.9
Per-worker labor productivity growth	5.3	6.7	5.4	3.5	1.5	1.6	2.7	1.3	−0.1	5.2	3.8	3.7	3.7
Per-hour labor productivity growth	5.3	6.7	6.0	4.6	3.0	4.2	5.8	2.9	4.3	−2.0	3.9	3.8	3.8
Capital productivity growth	−10.1	−8.9	−7.8	−5.2	−3.2	−3.2	−3.7	−3.1	−2.9	1.1	0.1	0.0	0.1
TFP growth	1.2	2.1	1.6	1.0	0.7	1.2	2.1	0.9	0.2	−0.3	1.6	1.5	1.6

Production

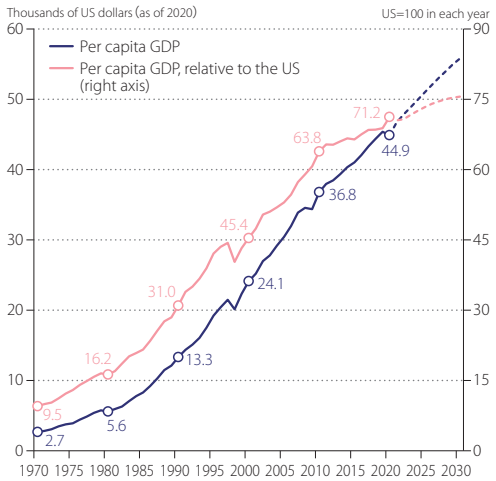

Figure 1 Per Capita GDP

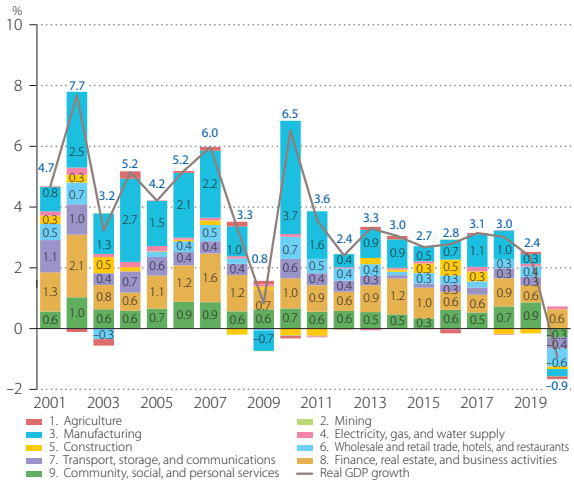

Figure 2 Industry Origins of Economic Growth

Labor

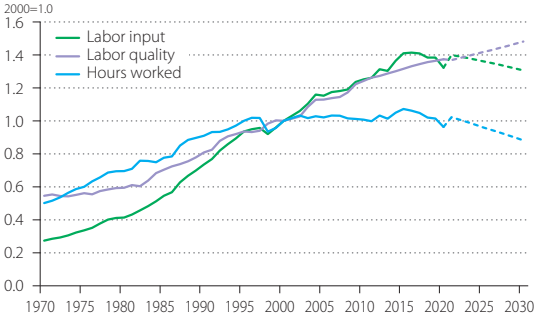

Figure 3 Labor Inputs

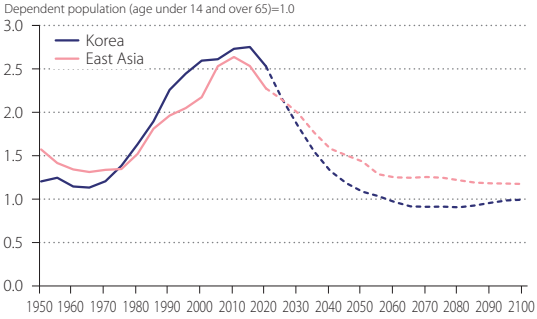

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

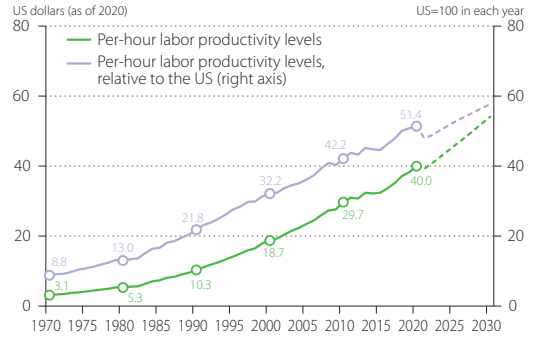

Figure 6 Per-Hour Labor Productivity Level

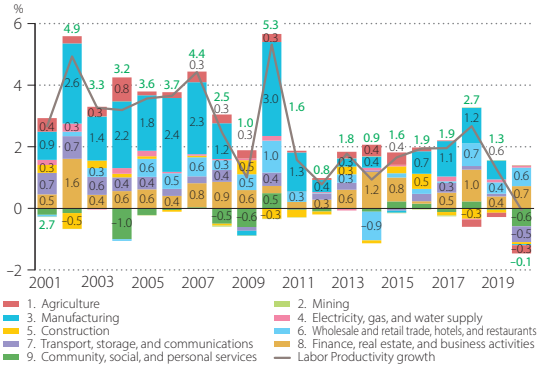

Figure 7 Industry Origins of Labor Productivity Growth

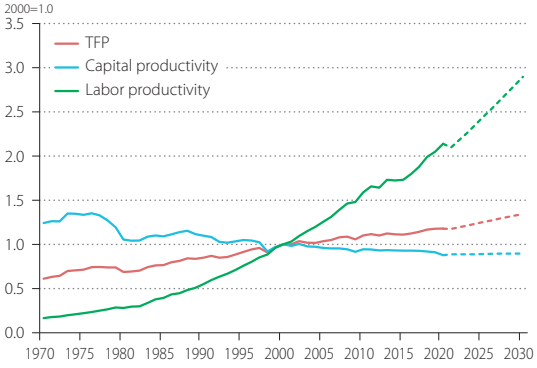

Figure 8 Productivity Indicators

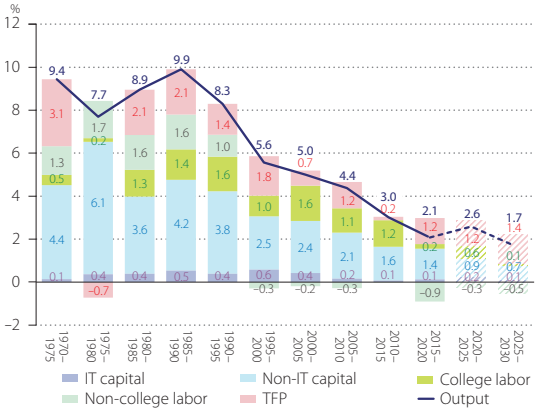

Figure 9 Decomposition of Economic Growth

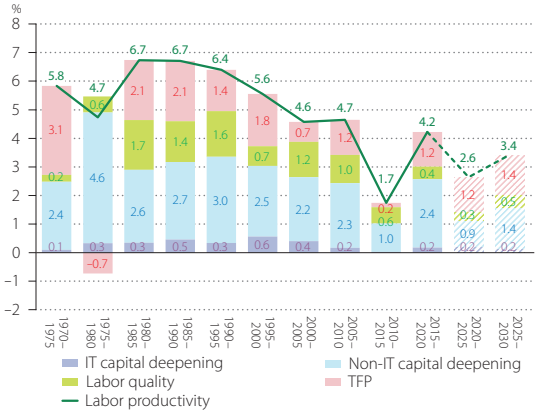

Figure 10 Decomposition of Labor Productivity Growth

Lao PDR

Key Indicators

GDP in 2020	62	Billions of US dollars (as of 2020)
(exchange rate based)	19	Billions of US dollars (as of 2020)
Per capita GDP in 2020	8.4	Thousands of US dollars (as of 2020)
(exchange rate based)	2.6	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	14.8	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	6.1	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	13.6	US dollars (as of 2020)
Energy productivity levels in 2019	n.a.	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	n.a.	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	3,768	Thousands persons
Employment rate in 2020	51.2	%
Female employment share in 2020	47.9	%
Average schooling years of workers in 2020	5.9	Years
Investment share in 2020	41.8	%
ICT investment share in GFCF in 2020	1.9	%
Agriculture share in GDP in 2020	24.1	%
Manufacturing share in GDP in 2020	9.1	%
Agriculture share in employment in 2020	68.3	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	2.7	3.9	5.9	6.3	4.5	5.6	5.1	5.8	3.1	3.8	4.2	3.1	3.4
Labor input growth	1.2	3.0	3.6	4.0	2.7	2.1	2.4	2.3	2.3	1.5	1.4	1.4	1.3
Labor quality growth	0.3	0.4	0.7	1.5	0.8	0.1	0.2	0.2	0.1	1.2	1.1	1.1	1.1
Hours worked growth	0.9	2.7	2.9	2.4	1.9	2.0	2.2	2.2	2.2	0.3	0.3	0.3	0.2
College labor input growth	8.4	7.7	8.5	8.7	1.3	0.7	2.2	2.2	2.1	4.4	4.3	4.2	4.2
Non-college labor input growth	1.0	2.8	3.1	3.0	3.1	2.4	2.4	2.4	2.3	0.7	0.7	0.6	0.6
IT capital input growth	4.1	16.0	14.4	16.7	7.8	5.3	18.1	13.6	–0.8	5.2	2.5	2.2	1.9
Non-IT capital input growth	2.7	4.6	7.4	5.9	9.1	9.7	8.7	10.0	11.2	11.3	9.6	9.0	8.7
Per-worker labor productivity growth	1.7	1.3	3.0	3.8	2.6	3.6	2.8	3.6	0.9	3.3	3.7	2.6	3.0
Per-hour labor productivity growth	1.8	1.2	2.9	3.9	2.6	3.6	2.8	3.6	0.9	3.5	3.9	2.8	3.2
Capital productivity growth	–2.7	–4.6	–7.5	–6.1	–9.0	–9.5	–8.8	–10.0	–10.9	–7.3	–5.2	–5.8	–5.1
TFP growth	0.7	0.0	0.1	1.0	–2.3	–1.4	–1.7	–1.7	–5.0	–4.1	–2.6	–3.3	–2.7

Production

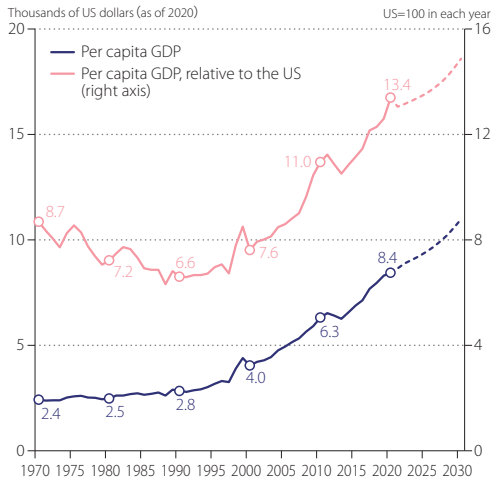

Figure 1 Per Capita GDP

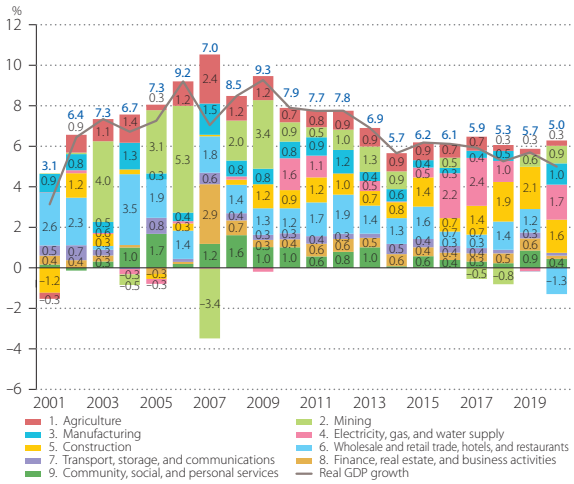

Figure 2 Industry Origins of Economic Growth

Labor

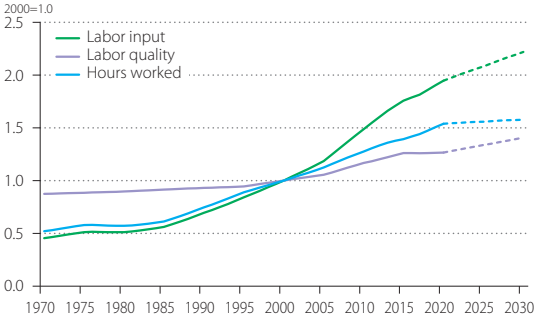

Figure 3 Labor Inputs

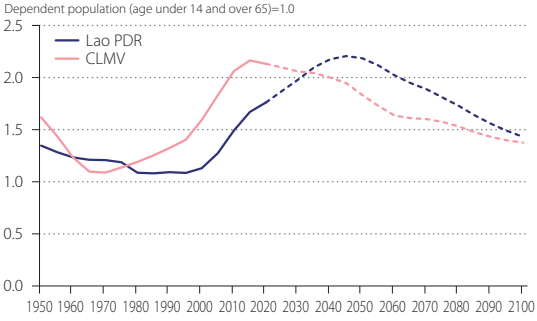

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

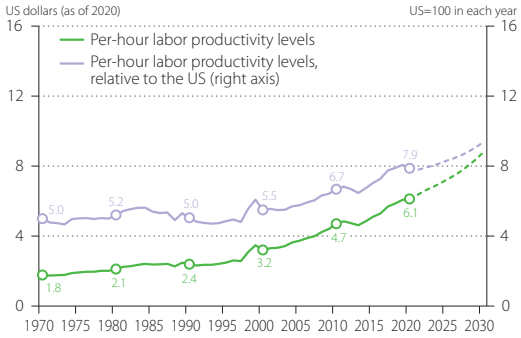

Figure 6 Per-Hour Labor Productivity Level

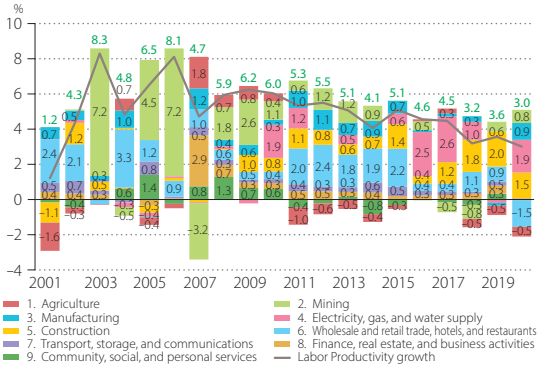

Figure 7 Industry Origins of Labor Productivity Growth

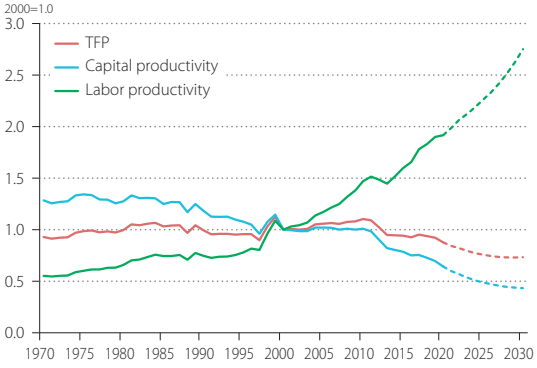

Figure 8 Productivity Indicators

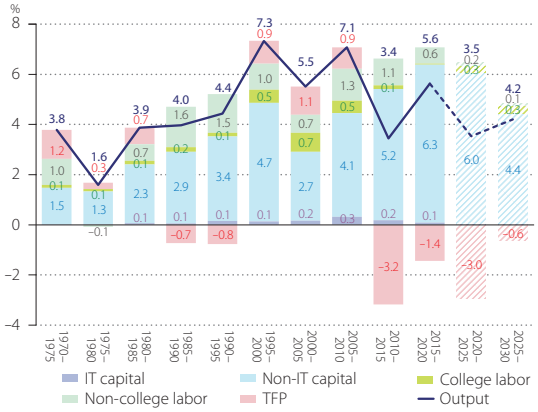

Figure 9 Decomposition of Economic Growth

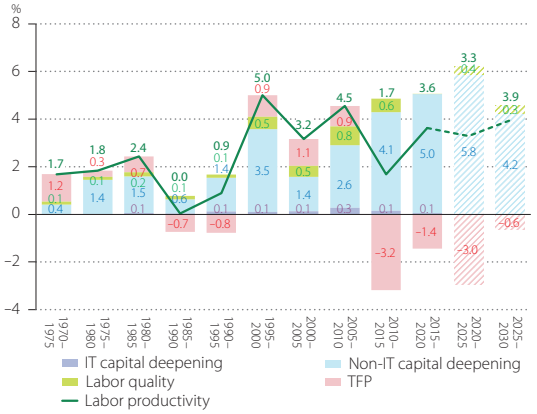

Figure 10 Decomposition of Labor Productivity Growth

Malaysia

Key Indicators

GDP in 2020	894	Billions of US dollars (as of 2020)
(exchange rate based)	337	Billions of US dollars (as of 2020)
Per capita GDP in 2020	27.4	Thousands of US dollars (as of 2020)
(exchange rate based)	10.3	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	54.4	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	26.0	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	59.7	US dollars (as of 2020)
Energy productivity levels in 2019	13.6	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	267.9	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	15,450	Thousands persons
Employment rate in 2020	47.3	%
Female employment share in 2020	38.6	%
Average schooling years of workers in 2020	11.7	Years
Investment share in 2020	19.7	%
ICT investment share in GFCF in 2020	16.0	%
Agriculture share in GDP in 2020	8.3	%
Manufacturing share in GDP in 2020	22.5	%
Agriculture share in employment in 2020	9.9	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	7.8	5.9	6.9	5.1	3.8	2.3	4.1	3.1	–5.0	3.1	5.4	4.0	4.4
Labor input growth	4.7	5.3	5.7	4.4	3.1	2.2	1.9	5.0	0.3	4.8	2.8	2.7	2.7
Labor quality growth	1.5	2.0	2.4	2.0	1.4	1.6	–0.4	2.5	5.4	0.2	1.5	1.5	1.5
Hours worked growth	3.2	3.3	3.3	2.4	1.7	0.5	2.3	2.5	–5.0	4.6	1.3	1.2	1.2
College labor input growth	8.5	11.5	8.7	7.8	4.9	3.7	3.8	6.3	4.2	7.1	4.1	3.9	3.8
Non-college labor input growth	4.3	4.0	4.5	2.2	1.4	0.6	0.0	3.8	–3.5	2.3	1.3	1.3	1.3
IT capital input growth	17.2	20.5	21.8	16.3	7.9	5.2	3.5	4.5	4.2	8.2	9.5	8.5	7.9
Non-IT capital input growth	7.3	7.1	8.3	2.5	4.4	4.0	4.5	3.6	2.6	1.7	2.1	2.2	2.2
Per-worker labor productivity growth	4.7	2.6	3.6	2.6	1.4	1.1	1.8	1.2	–4.4	1.5	3.8	2.5	3.0
Per-hour labor productivity growth	4.6	2.6	3.6	2.7	2.1	1.8	1.8	0.5	0.0	–1.5	4.1	2.7	3.2
Capital productivity growth	–7.3	–7.3	–8.7	–3.4	–4.6	–4.1	–4.4	–3.6	–2.7	0.9	2.6	1.2	1.7
TFP growth	1.5	–0.7	–0.7	1.3	–0.2	–1.0	0.7	–1.1	–6.7	–0.2	2.6	1.2	1.7

Production

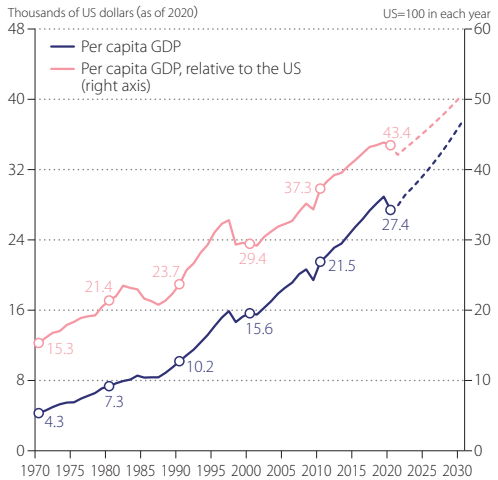

Figure 1 Per Capita GDP

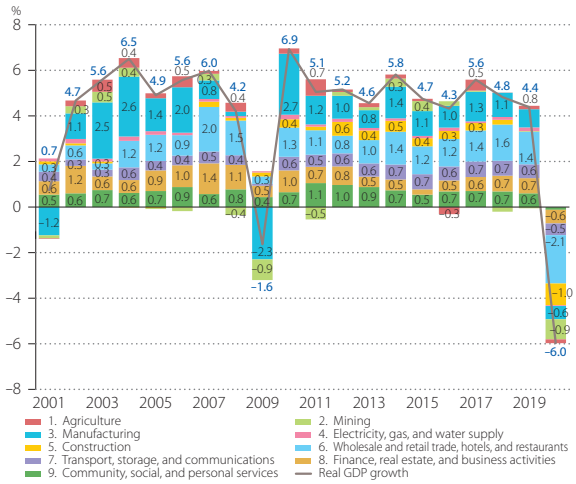

Figure 2 Industry Origins of Economic Growth

Labor

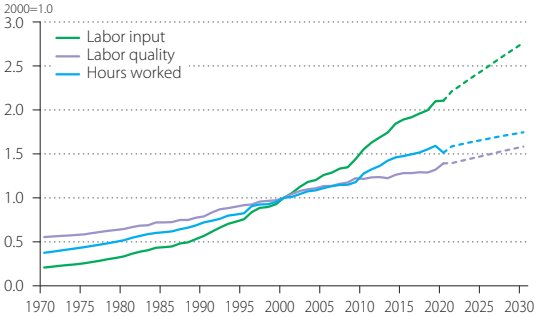

Figure 3 Labor Inputs

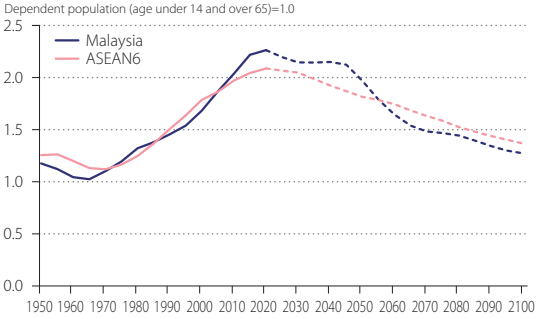

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

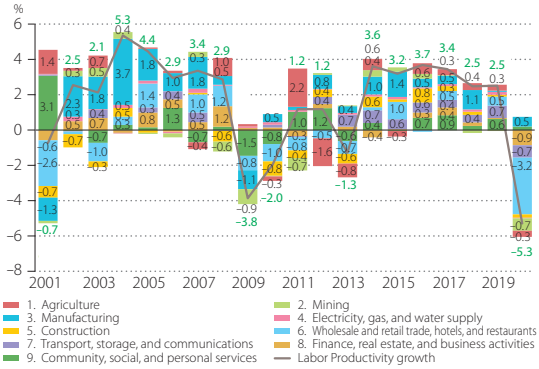

Figure 7 Industry Origins of Labor Productivity Growth

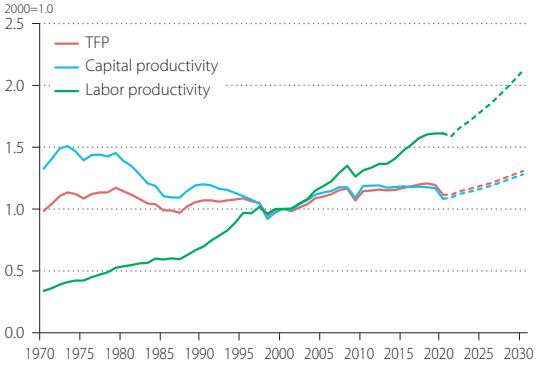

Figure 8 Productivity Indicators

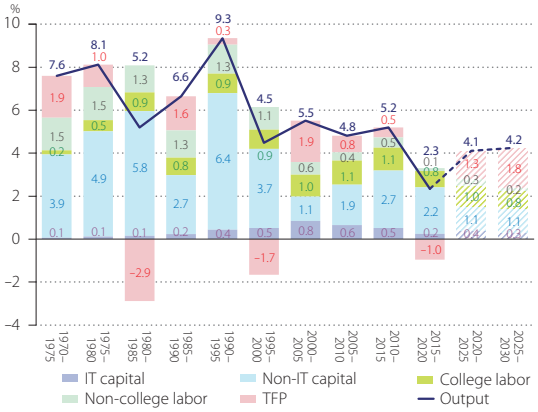

Figure 9 Decomposition of Economic Growth

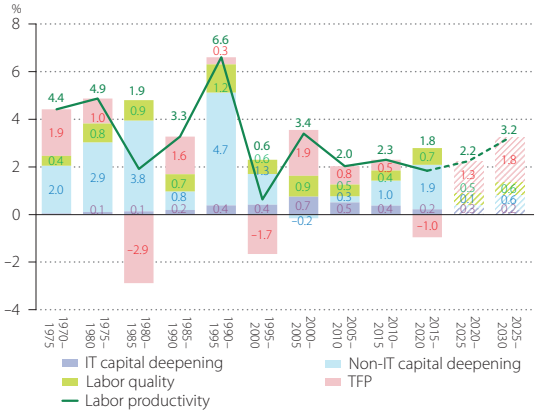

Figure 10 Decomposition of Labor Productivity Growth

Mongolia

Key Indicators

GDP in 2020	41	Billions of US dollars (as of 2020)
(exchange rate based)	13	Billions of US dollars (as of 2020)
Per capita GDP in 2020	12.2	Thousands of US dollars (as of 2020)
(exchange rate based)	4.1	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	31.7	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	15.8	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	32.9	US dollars (as of 2020)
Energy productivity levels in 2019	8.7	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	588.0	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	1,163	Thousands persons
Employment rate in 2020	35.0	%
Female employment share in 2020	47.4	%
Average schooling years of workers in 2020	12.1	Years
Investment share in 2020	22.1	%
ICT investment share in GFCF in 2020	5.4	%
Agriculture share in GDP in 2020	14.3	%
Manufacturing share in GDP in 2020	8.6	%
Agriculture share in employment in 2020	23.9	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–20	2015–20	2017–18	2018–19	2019–20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	5.9	5.2	0.9	6.3	6.4	3.0	7.3	5.3	−4.5	1.4	3.5	6.1	5.8
Labor input growth	6.1	4.7	−2.3	4.5	5.9	4.6	6.6	8.6	−1.5	−1.2	3.5	3.3	3.3
Labor quality growth	4.3	1.1	−1.8	3.2	3.0	2.4	1.5	9.1	−1.1	−1.5	1.8	1.7	1.7
Hours worked growth	1.8	3.6	−0.5	1.3	2.9	2.1	5.1	−0.5	−0.4	0.3	1.7	1.6	1.6
College labor input growth	20.9	14.7	1.8	11.8	11.3	5.7	8.8	10.5	−5.1	3.4	3.7	3.5	3.5
Non-college labor input growth	3.5	2.4	−3.4	1.2	−0.9	3.0	3.6	5.9	3.3	−7.7	3.2	3.0	3.0
IT capital input growth	25.3	15.4	9.1	19.8	9.2	15.7	23.9	21.9	11.2	7.7	13.4	13.8	14.7
Non-IT capital input growth	6.1	6.1	−0.1	3.7	5.6	3.1	3.9	6.1	4.9	3.1	3.9	3.8	3.9
Per-worker labor productivity growth	4.1	1.6	0.6	3.9	5.2	2.8	6.1	14.2	−5.9	−3.4	2.4	5.1	4.7
Per-hour labor productivity growth	4.1	1.6	1.4	5.0	3.5	0.9	2.2	5.8	−4.1	1.1	1.8	4.6	4.2
Capital productivity growth	−6.2	−6.1	0.0	−4.0	−5.6	−3.4	−4.3	−6.5	−5.2	−1.8	−0.7	2.1	1.6
TFP growth	−0.2	−0.5	1.6	2.3	0.7	−0.8	2.2	−1.9	−7.4	−0.4	−0.5	2.3	1.9

Production

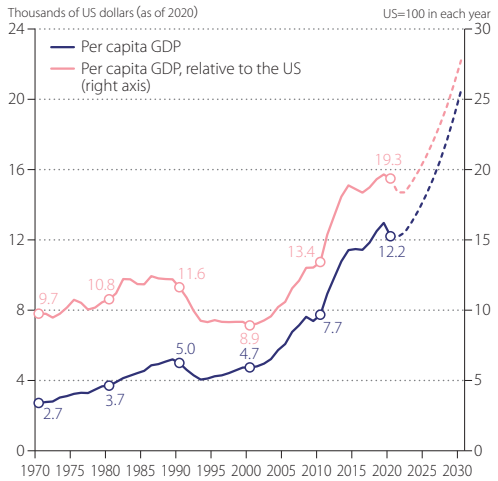

Figure 1 Per Capita GDP

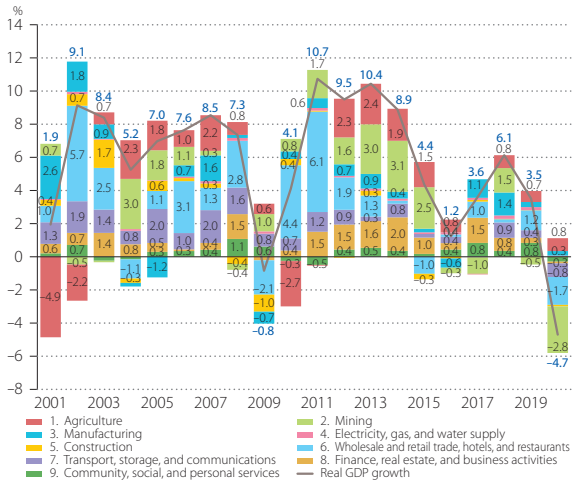

Figure 2 Industry Origins of Economic Growth

Labor

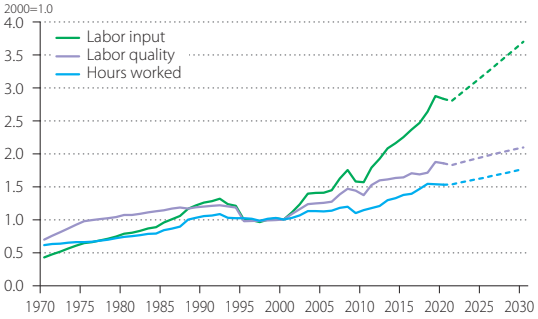

Figure 3 Labor Inputs

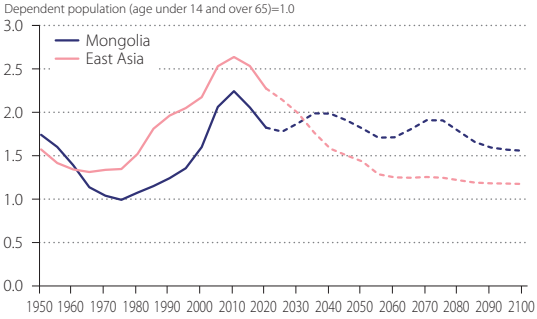

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

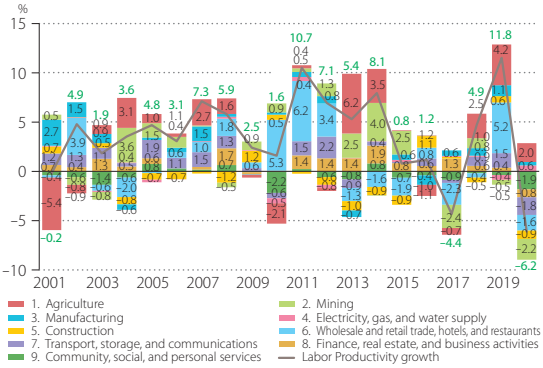

Figure 7 Industry Origins of Labor Productivity Growth

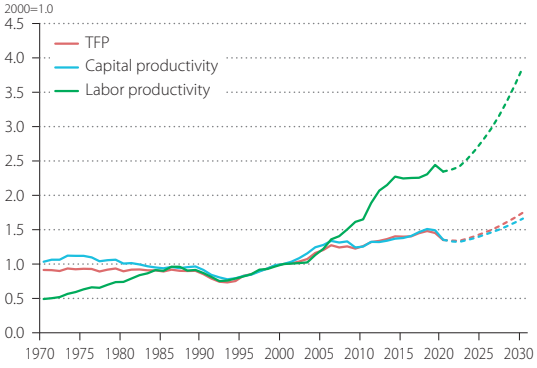

Figure 8 Productivity Indicators

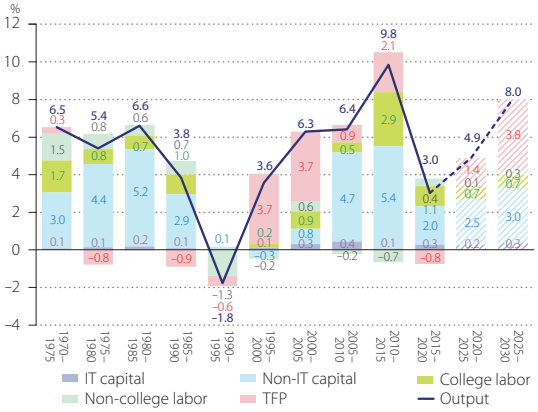

Figure 9 Decomposition of Economic Growth

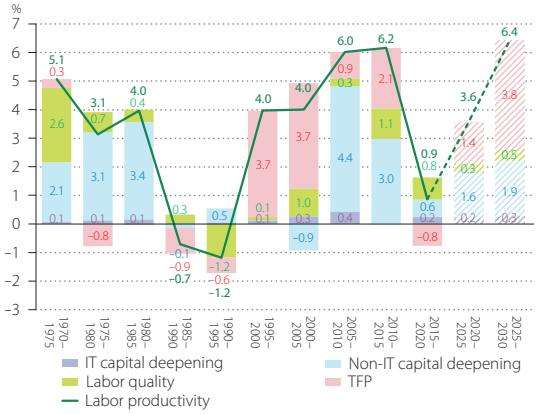

Figure 10 Decomposition of Labor Productivity Growth

Nepal

Key Indicators

GDP in 2020	126	Billions of US dollars (as of 2020)
(exchange rate based)	34	Billions of US dollars (as of 2020)
Per capita GDP in 2020	4.4	Thousands of US dollars (as of 2020)
(exchange rate based)	1.2	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	10.1	"Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	5.6	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	16.1	US dollars (as of 2020)
Energy productivity levels in 2019	8.1	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	89.2	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	11,844	Thousands persons
Employment rate in 2020	41.5	%
Female employment share in 2020	48.1	%
Average schooling years of workers in 2020	4.8	Years
Investment share in 2020	37.8	%
ICT investment share in GFCF in 2020	0.9	%
Agriculture share in GDP in 2020	24.9	%
Manufacturing share in GDP in 2020	5.4	%
Agriculture share in employment in 2020	65.4	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	3.3	4.6	4.8	3.8	3.5	5.5	10.3	–0.5	6.1	5.7	3.8	3.8	3.8
Labor input growth	3.6	4.7	5.5	2.9	1.2	3.5	3.8	4.1	4.2	6.5	6.4	6.1	5.8
Labor quality growth	0.4	3.3	3.2	1.8	–0.3	0.2	0.2	0.3	0.4	3.5	3.5	3.4	3.3
Hours worked growth	3.1	1.4	2.3	1.2	1.5	3.4	3.6	3.8	3.7	3.0	2.9	2.7	2.6
College labor input growth	8.8	8.8	16.7	8.6	1.4	4.0	4.3	4.7	4.7	9.1	8.8	8.3	7.9
Non-college labor input growth	3.4	4.4	3.9	0.9	1.1	3.3	3.6	3.8	3.8	5.0	4.9	4.7	4.6
IT capital input growth	17.9	12.2	13.1	5.6	10.5	15.3	15.7	17.4	16.6	22.2	19.2	14.9	14.4
Non-IT capital input growth	3.1	5.4	5.4	4.6	5.6	7.0	7.7	8.0	6.8	6.9	7.4	7.2	7.1
Per-worker labor productivity growth	0.1	3.6	2.5	2.7	1.9	2.3	6.9	–4.0	2.6	3.0	1.3	1.4	1.5
Per-hour labor productivity growth	0.2	3.2	2.5	2.6	2.0	2.2	6.7	–4.2	2.4	2.7	0.9	1.1	1.2
Capital productivity growth	–3.1	–5.4	–5.4	–4.6	–5.6	–7.0	–7.6	–8.0	–6.8	–1.3	–3.6	–3.4	–3.4
TFP growth	–0.1	–0.4	–0.7	0.0	0.2	0.2	4.5	–6.6	0.6	–1.1	–3.1	–2.9	–2.7

Production

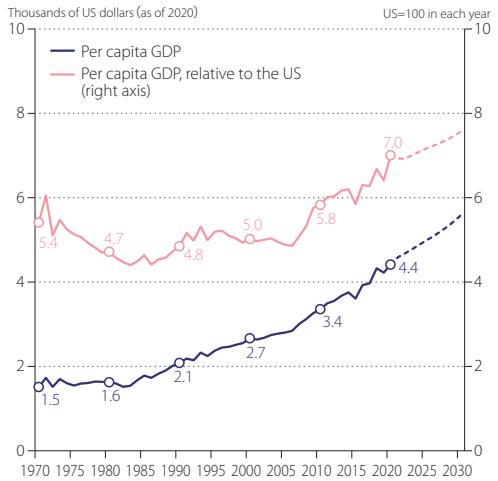

Figure 1 Per Capita GDP

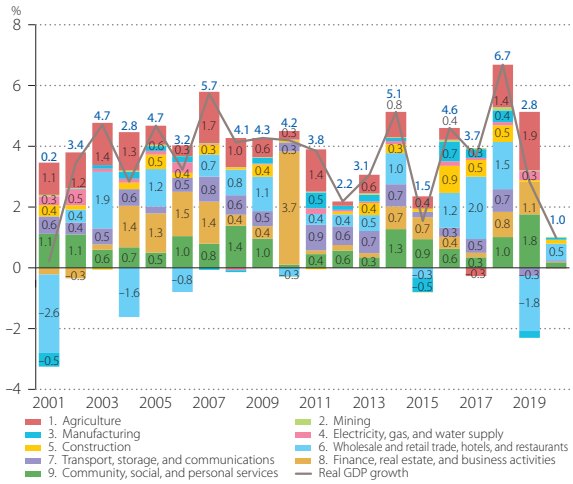

Figure 2 Industry Origins of Economic Growth

Labor

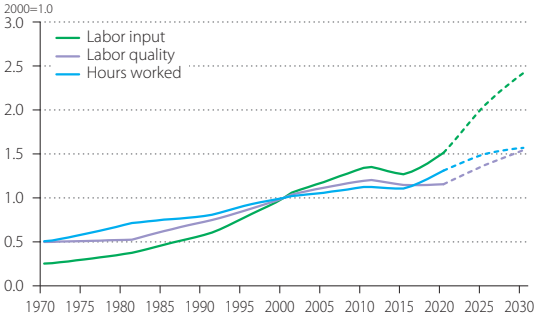

Figure 3 Labor Inputs

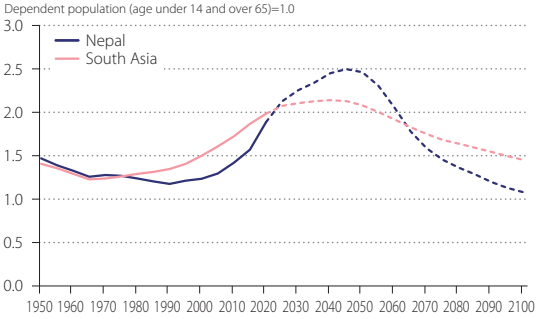

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

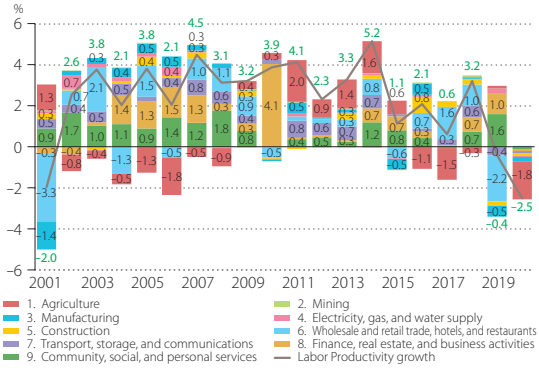

Figure 7 Industry Origins of Labor Productivity Growth

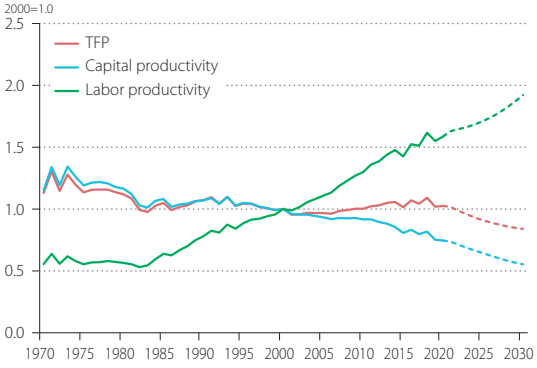

Figure 8 Productivity Indicators

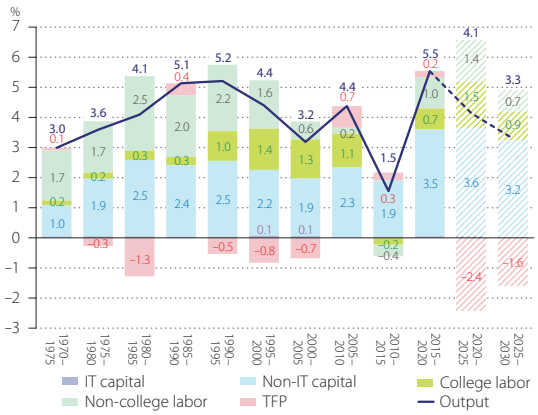

Figure 9 Decomposition of Economic Growth

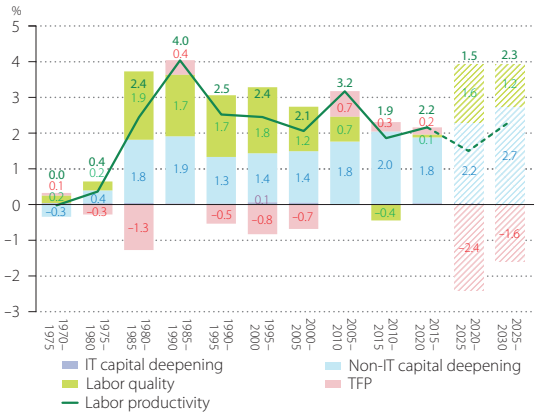

Figure 10 Decomposition of Labor Productivity Growth

Pakistan

Key Indicators

GDP in 2020	1,070	Billions of US dollars (as of 2020)
(exchange rate based)	257	Billions of US dollars (as of 2020)
Per capita GDP in 2020	5.0	Thousands of US dollars (as of 2020)
(exchange rate based)	1.2	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	15.3	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	7.9	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	10.4	US dollars (as of 2020)
Energy productivity levels in 2019	11.1	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	170.6	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	66,447	Thousands persons
Employment rate in 2020	31.1	%
Female employment share in 2020	21.0	%
Average schooling years of workers in 2020	5.2	Years
Investment share in 2020	15.3	%
ICT investment share in GFCF in 2020	7.3	%
Agriculture share in GDP in 2020	24.4	%
Manufacturing share in GDP in 2020	12.1	%
Agriculture share in employment in 2020	39.2	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	4.5	6.3	5.0	3.7	3.5	3.3	5.4	1.4	–0.4	5.6	5.8	3.7	4.3
Labor input growth	4.2	3.6	3.0	4.0	3.1	3.6	3.1	5.6	2.7	4.9	4.1	4.0	4.0
Labor quality growth	1.5	1.1	1.1	1.0	1.7	1.9	2.1	2.8	0.3	1.5	2.3	2.2	2.2
Hours worked growth	2.7	2.5	1.9	3.0	1.4	1.7	1.0	2.8	2.4	3.4	1.8	1.8	1.8
College labor input growth	5.9	6.8	8.1	5.3	4.8	5.6	5.4	8.3	2.8	6.5	5.3	5.2	5.1
Non-college labor input growth	4.1	3.2	2.1	3.6	2.4	2.8	2.2	4.6	2.6	4.2	3.6	3.5	3.5
IT capital input growth	8.2	15.6	6.8	12.3	7.7	10.4	13.9	10.2	5.7	8.6	11.9	11.3	10.7
Non-IT capital input growth	4.6	6.3	5.5	2.5	1.9	2.9	3.5	3.3	2.2	2.4	3.3	3.6	3.5
Per-worker labor productivity growth	1.7	3.7	3.1	0.5	1.2	0.7	2.9	–1.4	–2.7	3.8	4.0	1.8	2.5
Per-hour labor productivity growth	1.8	3.8	3.2	0.8	2.2	1.6	4.5	–1.4	–2.7	2.2	4.0	1.9	2.6
Capital productivity growth	–4.6	–6.3	–5.5	–2.6	–2.0	–3.1	–3.7	–3.4	–2.3	3.0	2.3	–0.1	0.6
TFP growth	0.1	1.5	0.8	0.6	1.0	0.0	2.0	–3.2	–2.8	1.8	2.0	–0.2	0.5

Production

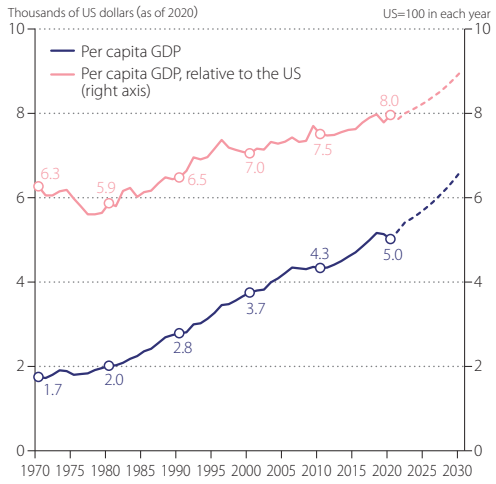

Figure 1 Per Capita GDP

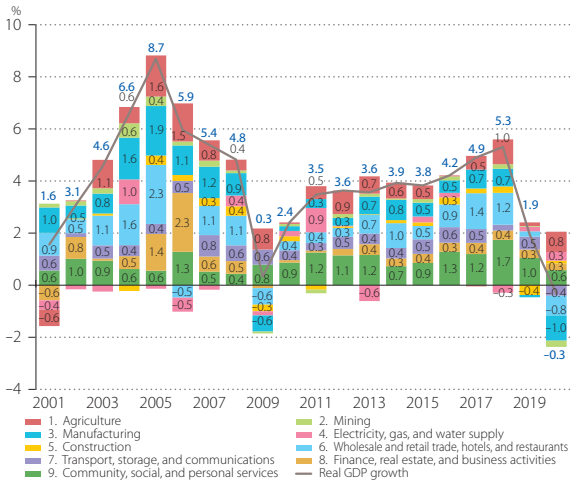

Figure 2 Industry Origins of Economic Growth

Labor

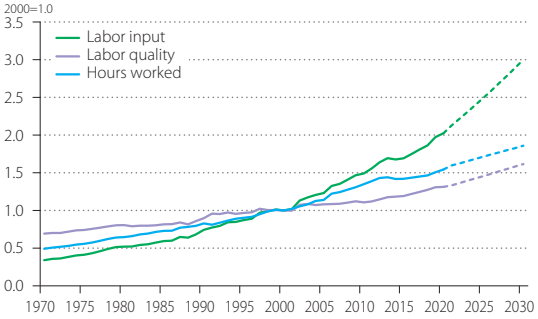

Figure 3 Labor Inputs

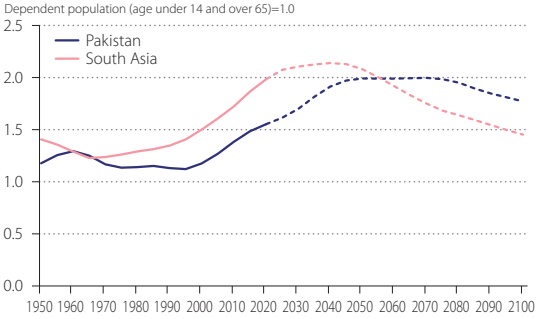

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

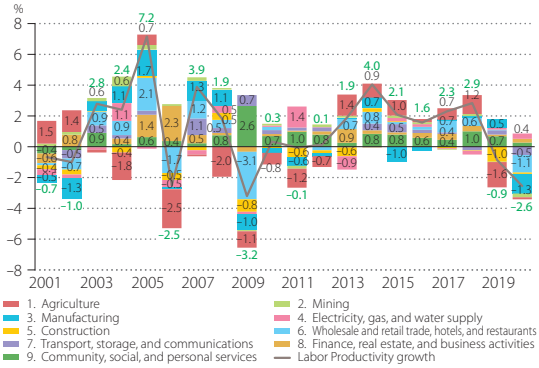

Figure 7 Industry Origins of Labor Productivity Growth

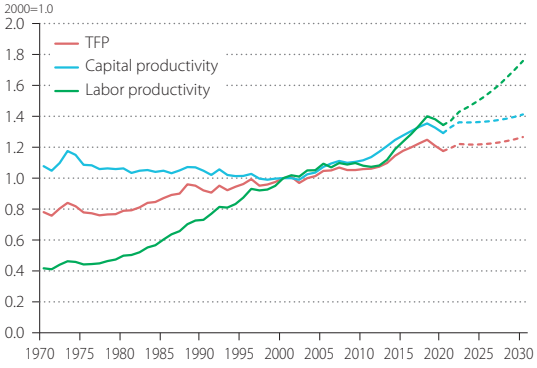

Figure 8 Productivity Indicators

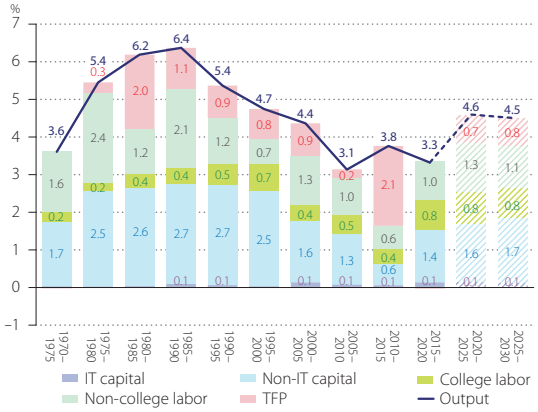

Figure 9 Decomposition of Economic Growth

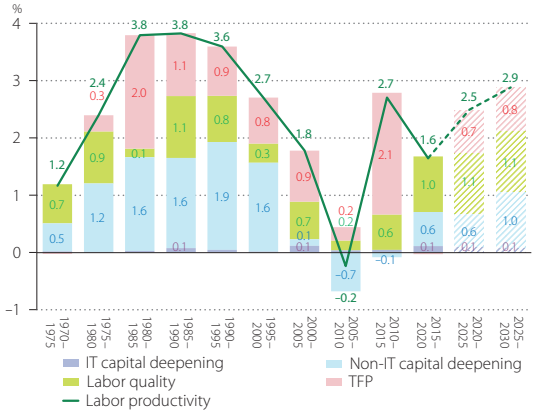

Figure 10 Decomposition of Labor Productivity Growth

Philippines

Key Indicators

GDP in 2020	922	Billions of US dollars (as of 2020)
(exchange rate based)	361	Billions of US dollars (as of 2020)
Per capita GDP in 2020	8.5	Thousands of US dollars (as of 2020)
(exchange rate based)	3.3	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	19.4	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	9.7	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	20.6	US dollars (as of 2020)
Energy productivity levels in 2019	26.2	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	142.1	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	44,742	Thousands persons
Employment rate in 2020	41.3	%
Female employment share in 2020	38.8	%
Average schooling years of workers in 2020	10.4	Years
Investment share in 2020	17.4	%
ICT investment share in GFCF in 2020	4.8	%
Agriculture share in GDP in 2020	10.2	%
Manufacturing share in GDP in 2020	17.7	%
Agriculture share in employment in 2020	23.9	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	5.9	2.6	3.8	4.8	4.5	3.4	6.5	5.2	−9.4	5.5	6.1	4.3	5.0
Labor input growth	4.6	4.1	3.3	3.3	2.9	2.9	3.6	3.5	−2.0	7.4	3.6	3.4	3.4
Labor quality growth	1.1	1.4	1.3	0.8	1.1	1.1	0.4	2.0	−1.4	2.2	1.7	1.7	1.7
Hours worked growth	3.6	2.7	2.0	2.5	1.8	1.8	3.2	1.6	−0.6	5.3	1.8	1.7	1.8
College labor input growth	7.6	7.4	5.5	5.6	4.6	4.5	4.5	7.4	−1.3	8.1	4.5	4.3	4.3
Non-college labor input growth	3.4	2.5	2.2	1.9	1.9	1.9	3.1	1.2	−2.4	7.0	3.0	2.8	2.8
IT capital input growth	8.4	10.2	11.7	7.2	10.4	11.8	13.8	12.4	7.6	9.6	15.0	12.0	11.0
Non-IT capital input growth	7.7	4.1	4.3	3.1	5.9	6.9	7.6	7.3	5.6	3.3	5.0	5.0	4.9
Per-worker labor productivity growth	2.0	−0.2	1.7	2.1	2.4	0.5	4.3	2.8	−11.4	3.5	4.2	2.5	3.2
Per-hour labor productivity growth	2.4	−0.2	1.8	2.3	2.7	1.6	3.3	3.6	−8.9	0.3	4.3	2.6	3.2
Capital productivity growth	−7.7	−4.2	−4.5	−3.2	−6.0	−7.0	−7.7	−7.4	−5.8	2.1	0.9	−1.0	−0.1
TFP growth	−0.6	−1.6	−0.2	1.5	−0.3	−2.1	0.4	−0.8	−12.1	0.6	1.5	−0.2	0.5

Production

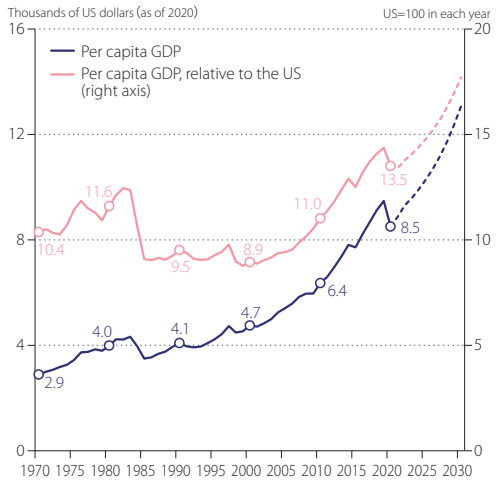

Figure 1 Per Capita GDP

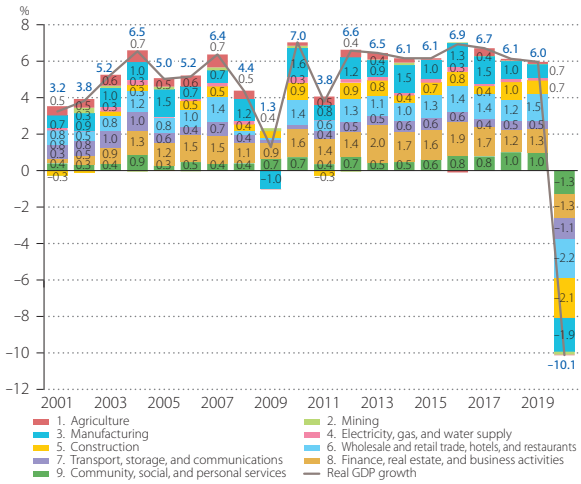

Figure 2 Industry Origins of Economic Growth

Labor

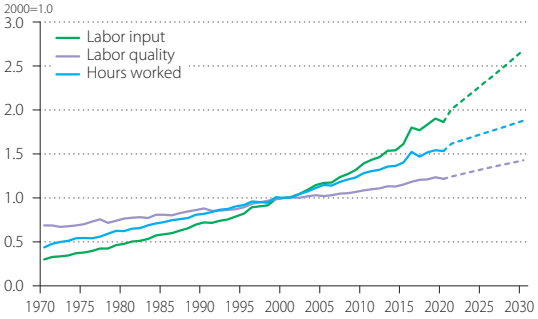

Figure 3 Labor Inputs

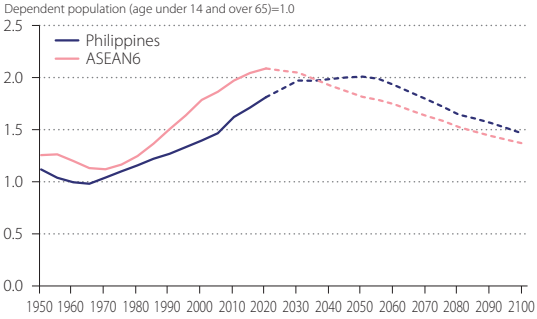

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

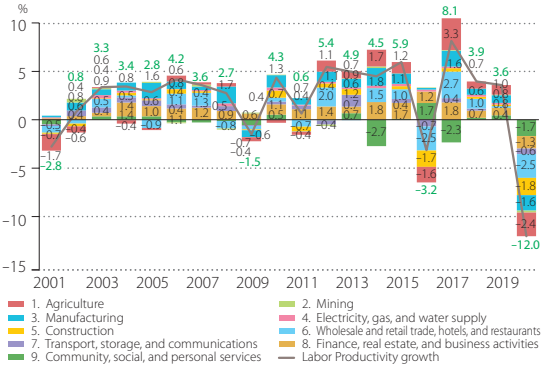

Figure 7 Industry Origins of Labor Productivity Growth

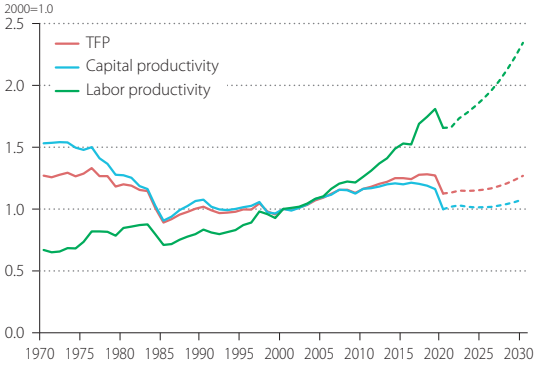

Figure 8 Productivity Indicators

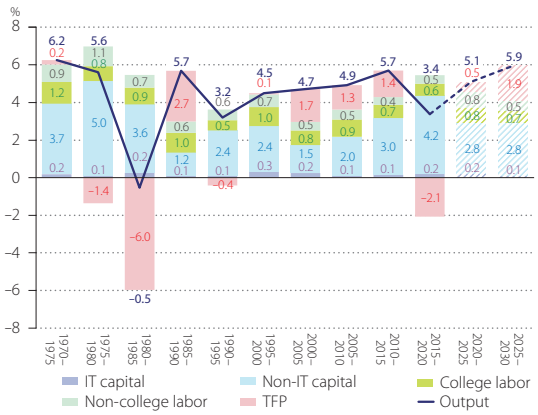

Figure 9 Decomposition of Economic Growth

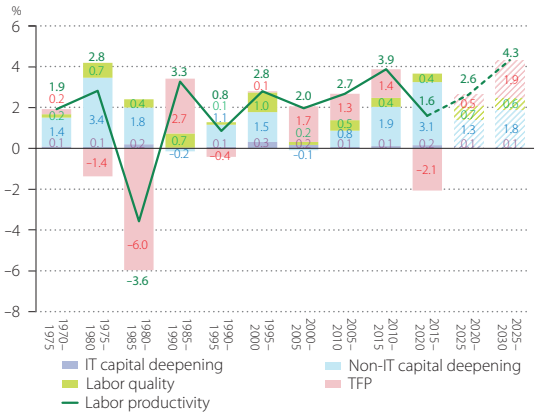

Figure 10 Decomposition of Labor Productivity Growth

Singapore

Key Indicators

GDP in 2020	572	Billions of US dollars (as of 2020)
(exchange rate based)	345	Billions of US dollars (as of 2020)
Per capita GDP in 2020	100.6	Thousands of US dollars (as of 2020)
(exchange rate based)	60.7	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	150.3	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	68.5	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	142.1	US dollars (as of 2020)
Energy productivity levels in 2019	29.1	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	85.0	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	3,574	Thousands persons
Employment rate in 2020	62.9	%
Female employment share in 2020	48.2	%
Average schooling years of workers in 2020	10.6	Years
Investment share in 2020	22.5	%
ICT investment share in GFCF in 2020	32.2	%
Agriculture share in GDP in 2020	0.0	%
Manufacturing share in GDP in 2020	20.9	%
Agriculture share in employment in 2020	0.6	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–20	2015–20	2017–18	2018–19	2019–20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	8.4	7.2	7.4	6.1	3.5	2.3	4.1	0.9	−3.7	7.3	3.6	2.3	2.6
Labor input growth	6.0	6.3	6.5	5.0	2.2	0.6	1.2	2.6	−2.5	2.6	0.0	0.1	0.0
Labor quality growth	1.1	2.2	3.0	1.6	1.2	1.1	1.0	0.8	1.4	0.6	0.6	0.6	0.6
Hours worked growth	4.9	4.1	3.6	3.4	1.0	−0.5	0.2	1.7	−3.9	2.0	−0.5	−0.6	−0.7
College labor input growth	9.6	13.5	17.8	9.5	5.2	3.5	3.0	5.3	0.8	2.9	0.8	0.9	0.8
Non-college labor input growth	5.7	5.2	2.7	2.0	−0.3	−1.9	−0.4	0.4	−5.2	2.3	−0.8	−0.8	−0.9
IT capital input growth	14.9	23.0	14.5	10.5	12.7	12.0	16.1	9.4	5.7	9.7	13.2	11.7	11.3
Non-IT capital input growth	9.0	6.7	6.3	3.4	3.1	2.3	2.3	2.1	0.9	0.0	0.4	0.4	0.3
Per-worker labor productivity growth	3.2	3.7	4.4	2.3	1.9	2.0	3.4	−0.7	−2.1	7.7	4.0	2.7	3.1
Per-hour labor productivity growth	3.5	3.1	3.8	2.7	2.4	2.8	4.0	−0.9	0.2	5.3	4.2	2.8	3.2
Capital productivity growth	−9.2	−7.6	−6.9	−4.0	−4.0	−3.2	−3.7	−2.9	−1.5	6.2	1.8	0.6	1.0
TFP growth	0.8	0.2	0.7	1.6	0.3	0.2	1.5	−1.9	−3.4	5.6	2.6	1.3	1.7

Production

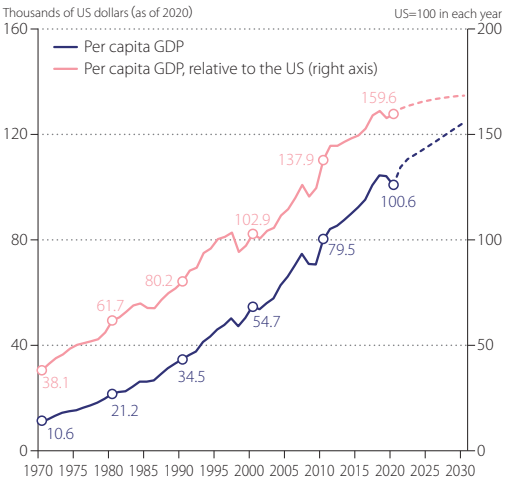

Figure 1 Per Capita GDP

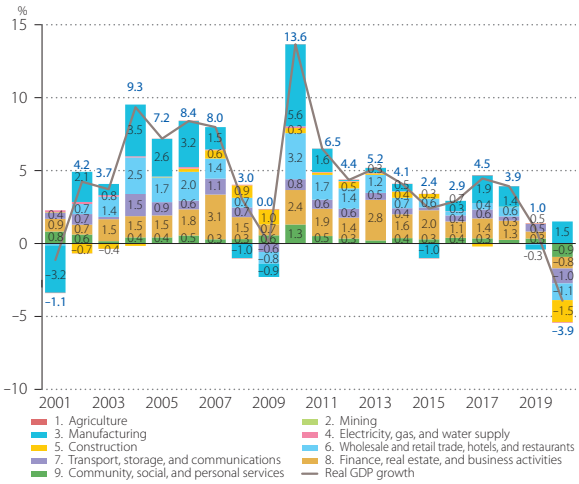

Figure 2 Industry Origins of Economic Growth

Labor

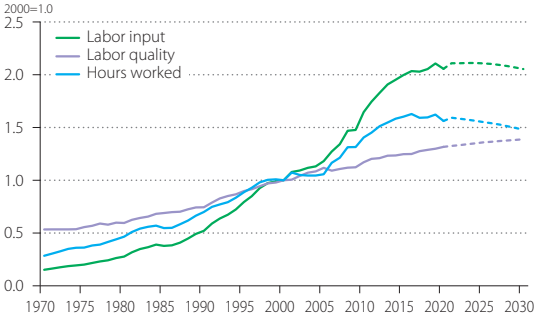

Figure 3 Labor Inputs

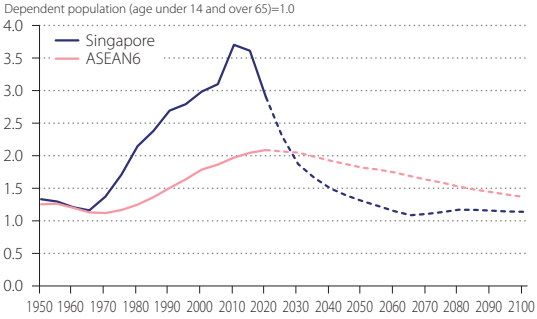

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

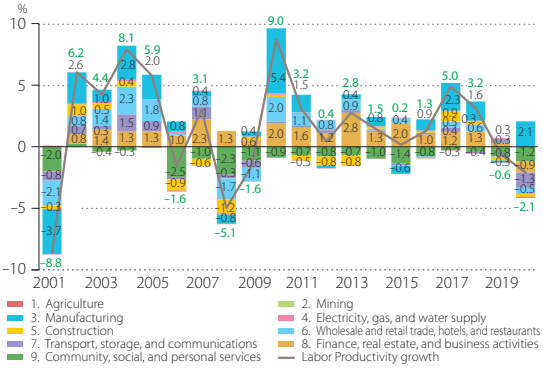

Figure 7 Industry Origins of Labor Productivity Growth

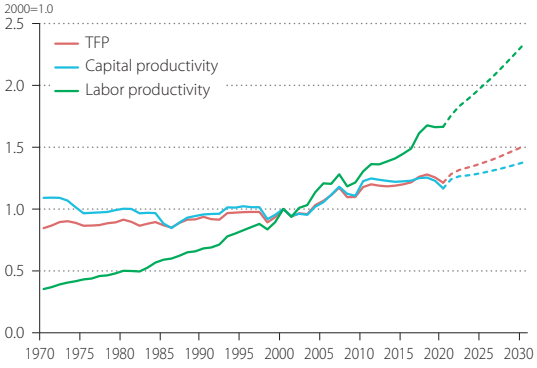

Figure 8 Productivity Indicators

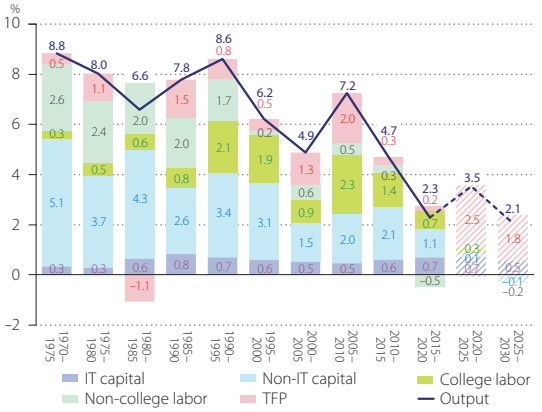

Figure 9 Decomposition of Economic Growth

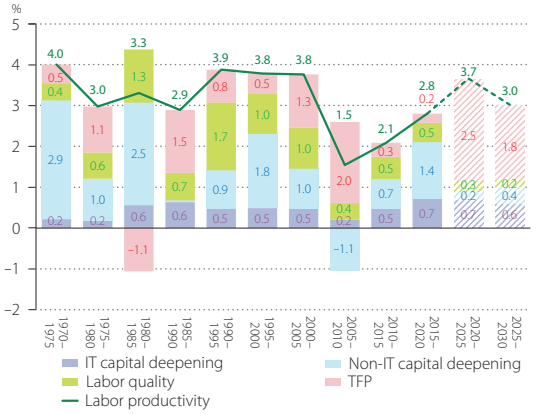

Figure 10 Decomposition of Labor Productivity Growth

Sri Lanka

Key Indicators

GDP in 2020	292	Billions of US dollars (as of 2020)
(exchange rate based)	81	Billions of US dollars (as of 2020)
Per capita GDP in 2020	13.3	Thousands of US dollars (as of 2020)
(exchange rate based)	3.7	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	33.5	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	17.4	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	34.3	US dollars (as of 2020)
Energy productivity levels in 2019	26.5	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	83.2	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	7,999	Thousands persons
Employment rate in 2020	36.5	%
Female employment share in 2020	32.8	%
Average schooling years of workers in 2020	11.6	Years
Investment share in 2020	25.1	%
ICT investment share in GFCF in 2020	2.8	%
Agriculture share in GDP in 2020	9.1	%
Manufacturing share in GDP in 2020	17.1	%
Agriculture share in employment in 2020	27.1	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	4.0	4.2	5.2	5.5	3.3	2.1	1.5	3.8	–1.7	3.2	–10.3	–4.5	–2.1
Labor input growth	2.4	2.9	3.3	1.4	1.4	2.0	–1.5	2.6	0.4	0.6	1.5	1.5	1.4
Labor quality growth	0.6	1.2	0.9	0.7	1.2	1.5	0.7	0.7	2.3	0.0	0.7	0.7	0.7
Hours worked growth	1.8	1.7	2.3	0.7	0.2	0.5	–2.2	1.9	–1.9	0.6	0.8	0.8	0.7
College labor input growth	0.6	12.1	7.0	4.3	4.1	4.8	–0.7	8.4	–0.8	1.2	2.1	2.0	2.0
Non-college labor input growth	2.5	1.7	2.3	0.2	–0.3	0.1	–2.1	–1.7	1.3	0.2	1.0	1.0	1.0
IT capital input growth	14.5	8.6	13.2	18.3	8.1	8.6	8.6	9.1	9.0	14.9	12.8	5.3	6.0
Non-IT capital input growth	4.7	3.6	2.1	5.3	5.3	4.5	4.6	4.5	4.0	3.4	3.7	2.4	2.5
Per-worker labor productivity growth	2.6	2.6	3.0	4.2	3.3	1.7	3.9	1.7	0.5	2.3	–11.3	–5.4	–3.0
Per-hour labor productivity growth	2.3	2.5	2.9	4.9	3.0	1.6	3.7	1.9	0.2	2.6	–11.1	–5.3	–2.8
Capital productivity growth	–4.6	–3.6	–2.1	–5.4	–5.3	–4.5	–4.7	–4.5	–4.1	–0.3	–14.1	–7.0	–4.6
TFP growth	0.5	0.9	2.5	1.8	–0.8	–1.5	–1.1	–0.1	–4.5	0.7	–13.3	–6.6	–4.2

Production

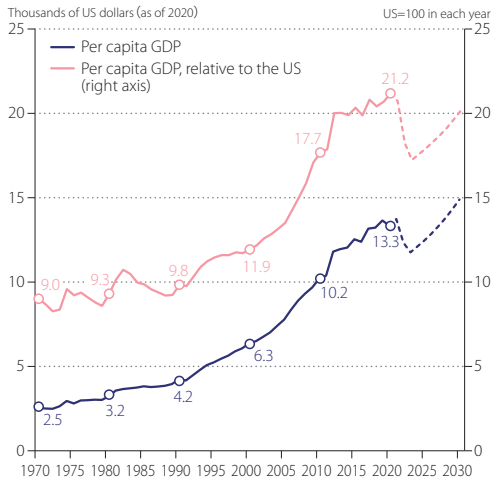

Figure 1 Per Capita GDP

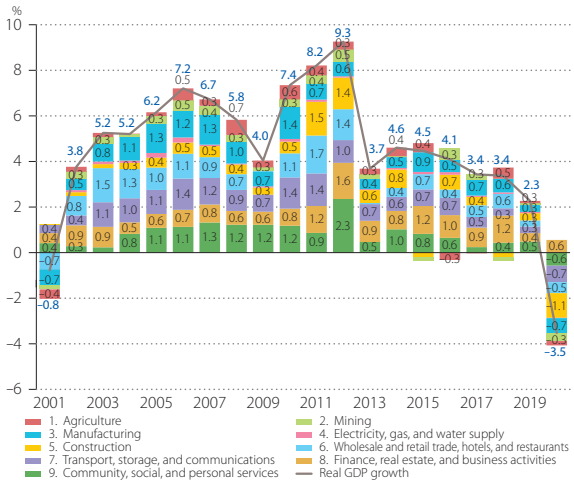

Figure 2 Industry Origins of Economic Growth

Labor

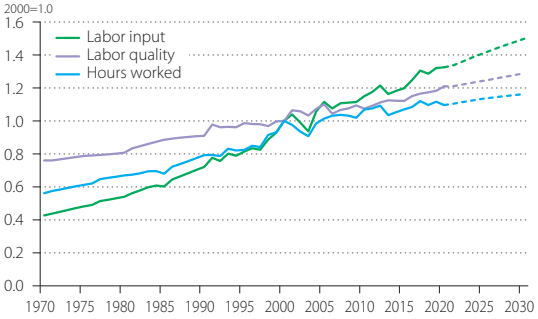

Figure 3 Labor Inputs

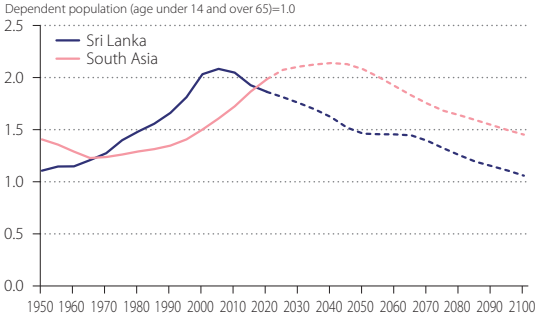

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

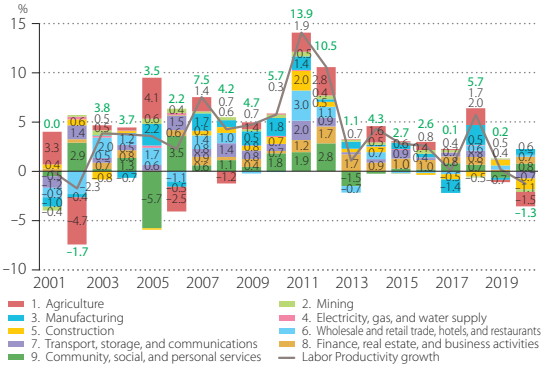

Figure 7 Industry Origins of Labor Productivity Growth

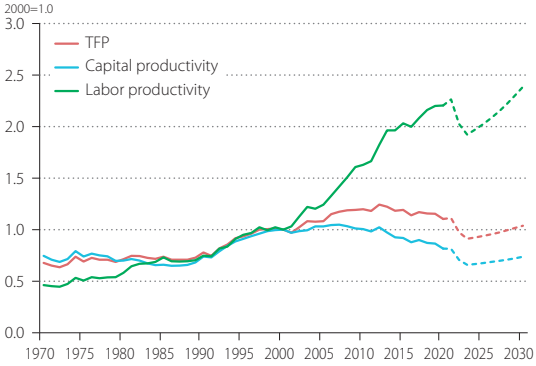

Figure 8 Productivity Indicators

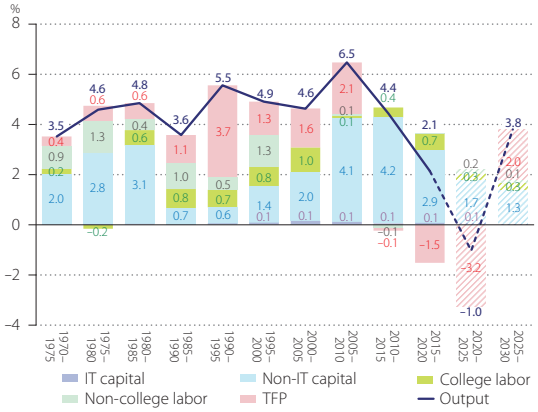

Figure 9 Decomposition of Economic Growth

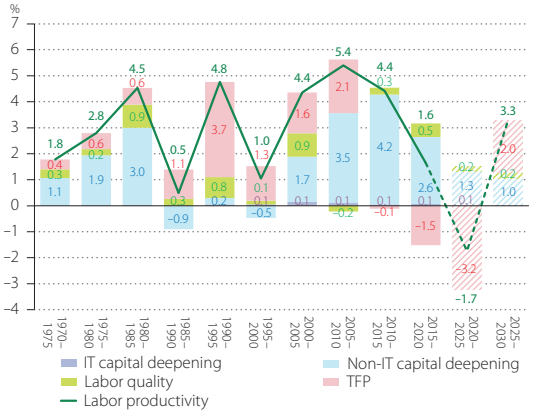

Figure 10 Decomposition of Labor Productivity Growth

Thailand

Key Indicators

GDP in 2020	1,294	Billions of US dollars (as of 2020)
(exchange rate based)	505	Billions of US dollars (as of 2020)
Per capita GDP in 2020	18.9	Thousands of US dollars (as of 2020)
(exchange rate based)	7.4	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	30.7	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	14.8	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	38.4	US dollars (as of 2020)
Energy productivity levels in 2019	12.1	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	202.6	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	37,871	Thousands persons
Employment rate in 2020	55.3	%
Female employment share in 2020	48.3	%
Average schooling years of workers in 2020	9.2	Years
Investment share in 2020	24.4	%
ICT investment share in GFCF in 2020	13.4	%
Agriculture share in GDP in 2020	8.7	%
Manufacturing share in GDP in 2020	25.5	%
Agriculture share in employment in 2020	31.5	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	7.1	7.8	4.6	4.6	2.4	1.7	3.8	2.6	–5.8	1.6	2.8	3.1	3.1
Labor input growth	7.7	7.1	5.4	4.1	1.3	0.5	0.4	–1.2	–1.1	6.5	1.8	1.7	1.6
Labor quality growth	3.2	4.2	4.6	3.3	2.8	1.5	0.1	0.5	2.5	2.2	1.8	1.8	1.7
Hours worked growth	4.5	2.8	0.7	0.7	–1.4	–1.0	0.3	–1.7	–3.6	4.3	0.0	–0.1	–0.2
College labor input growth	15.1	11.3	6.8	3.9	3.5	2.1	1.1	–0.6	2.7	7.9	3.0	2.9	2.7
Non-college labor input growth	6.2	5.0	4.1	4.4	–0.9	–1.3	–0.4	–1.8	–5.6	4.8	0.1	0.1	0.0
IT capital input growth	14.4	20.3	13.1	13.9	5.6	0.8	1.9	1.7	0.5	5.1	3.7	3.6	3.7
Non-IT capital input growth	5.1	6.5	6.7	1.9	2.6	2.8	3.0	2.9	2.2	1.6	1.5	1.5	1.5
Per-worker labor productivity growth	3.0	4.2	3.4	3.1	2.5	1.6	2.4	4.3	–7.6	1.3	2.6	3.0	3.0
Per-hour labor productivity growth	2.0	4.7	3.7	3.8	3.7	2.6	3.9	3.8	–2.8	–2.7	2.8	3.2	3.3
Capital productivity growth	–5.2	–6.9	–7.0	–2.6	–2.8	–2.6	–2.9	–2.8	–2.1	–0.3	1.1	1.5	1.4
TFP growth	0.2	0.5	–2.0	1.3	0.0	–0.2	2.2	0.8	–7.2	–2.1	1.1	1.5	1.5

Production

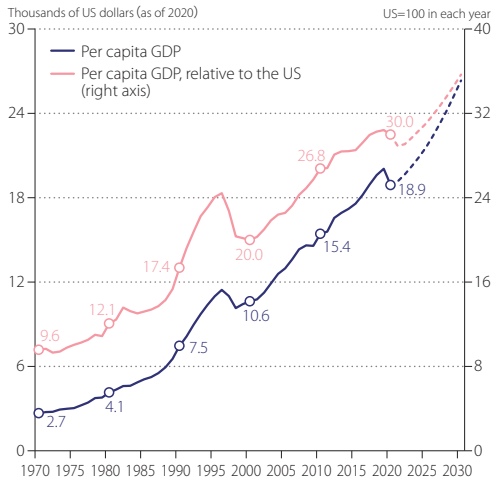

Figure 1 Per Capita GDP

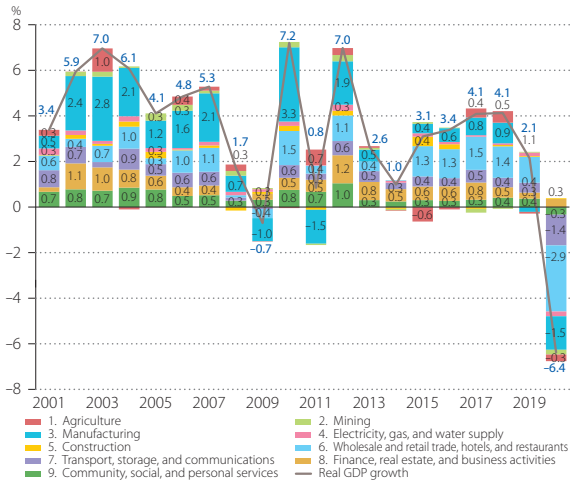

Figure 2 Industry Origins of Economic Growth

Labor

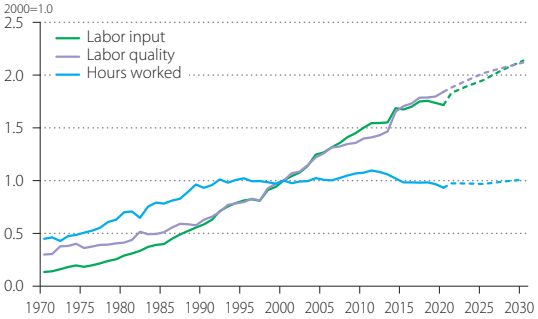

Figure 3 Labor Inputs

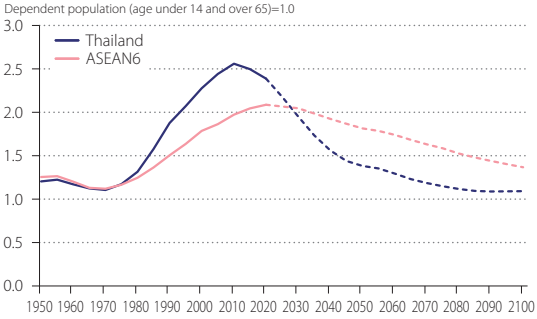

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

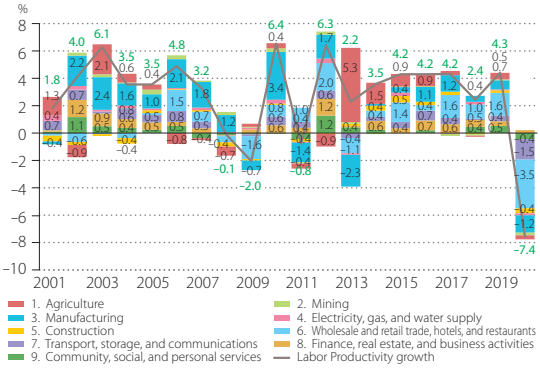

Figure 7 Industry Origins of Labor Productivity Growth

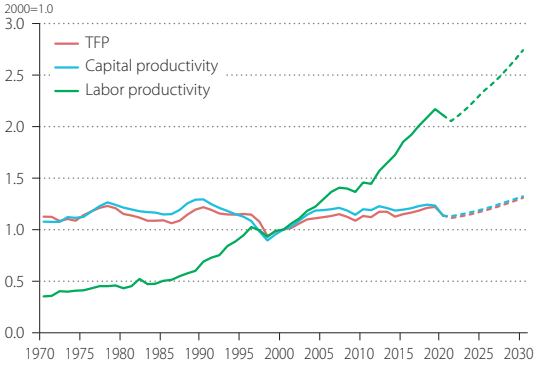

Figure 8 Productivity Indicators

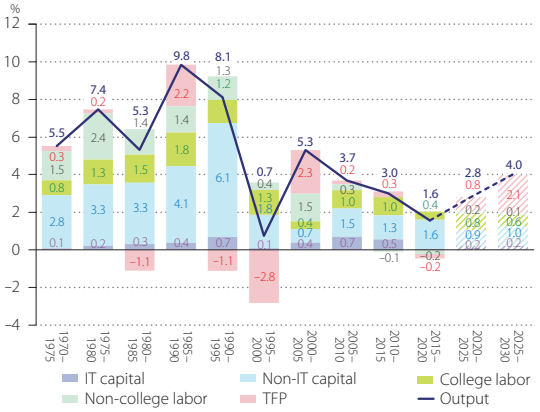

Figure 9 Decomposition of Economic Growth

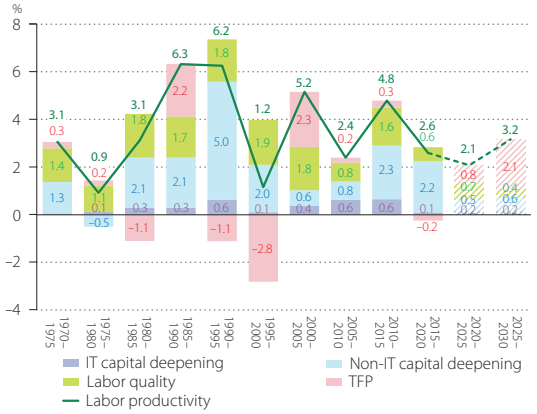

Figure 10 Decomposition of Labor Productivity Growth

Turkey

Key Indicators

GDP in 2020	2,702	Billions of US dollars (as of 2020)
(exchange rate based)	720	Billions of US dollars (as of 2020)
Per capita GDP in 2020	32.3	Thousands of US dollars (as of 2020)
(exchange rate based)	8.6	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	90.9	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	46.8	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	119.9	US dollars (as of 2020)
Energy productivity levels in 2019	23.0	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	152.3	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	26,986	Thousands persons
Employment rate in 2020	32.3	%
Female employment share in 2020	28.5	%
Average schooling years of workers in 2020	9.3	Years
Investment share in 2020	31.9	%
ICT investment share in GFCF in 2020	6.2	%
Agriculture share in GDP in 2020	7.5	%
Manufacturing share in GDP in 2020	21.5	%
Agriculture share in employment in 2020	17.6	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	3.9	5.1	3.4	4.3	5.8	4.8	7.2	3.2	1.9	10.4	4.5	3.5	3.8
Labor input growth	3.7	4.0	2.2	4.1	2.6	0.6	1.8	−0.9	−4.8	5.6	1.7	1.5	1.5
Labor quality growth	1.0	0.9	1.6	2.1	2.1	2.1	1.5	2.5	3.5	−0.6	1.1	1.0	1.0
Hours worked growth	2.8	3.1	0.6	1.9	0.6	−1.5	0.4	−3.3	−8.4	6.2	0.6	0.4	0.4
College labor input growth	13.1	6.8	5.8	9.0	6.8	4.6	3.3	5.6	1.5	6.9	3.4	3.2	3.1
Non-college labor input growth	3.1	3.7	1.6	2.6	0.2	−1.9	0.9	−5.0	−9.2	4.6	0.3	0.1	0.1
IT capital input growth	14.5	17.8	16.2	8.9	10.4	7.0	8.0	5.6	7.1	14.6	14.2	11.3	10.6
Non-IT capital input growth	7.5	4.2	4.6	5.2	5.4	5.3	5.2	5.6	4.8	3.9	4.5	4.3	4.2
Per-worker labor productivity growth	1.3	2.5	2.8	2.7	4.1	4.7	5.3	5.6	6.4	9.4	3.8	3.0	3.3
Per-hour labor productivity growth	1.1	2.0	2.8	2.4	5.2	6.3	6.8	6.5	10.3	4.2	3.9	3.0	3.4
Capital productivity growth	−7.5	−4.3	−4.8	−5.3	−5.5	−5.3	−5.2	−5.6	−4.9	6.2	−0.3	−1.1	−0.5
TFP growth	−2.6	0.8	−0.6	−0.6	1.4	1.3	3.1	0.1	0.7	5.7	0.9	0.1	0.6

Production

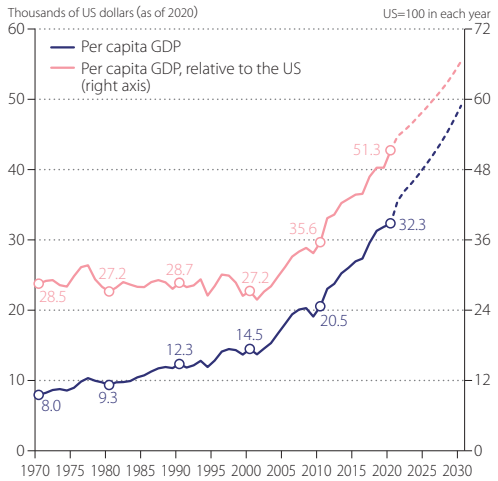

Figure 1 Per Capita GDP

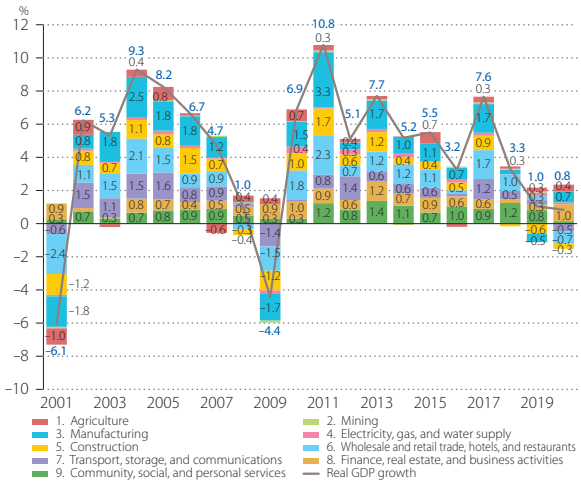

Figure 2 Industry Origins of Economic Growth

Labor

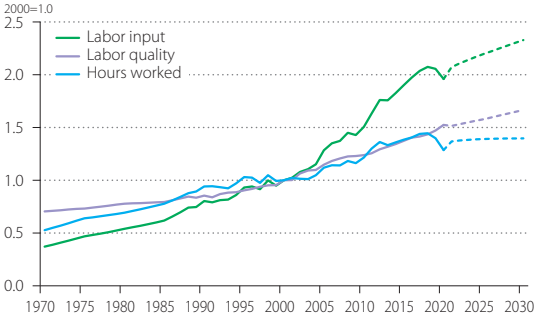

Figure 3 Labor Inputs

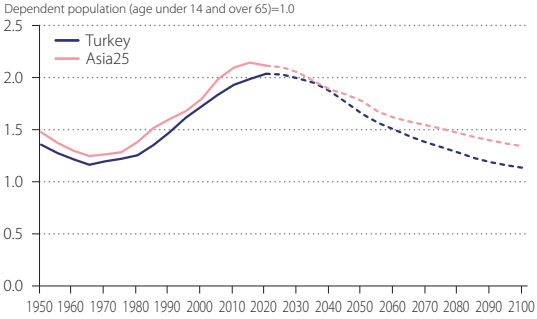

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

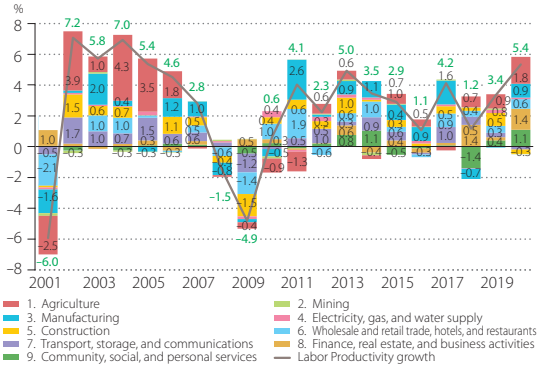

Figure 7 Industry Origins of Labor Productivity Growth

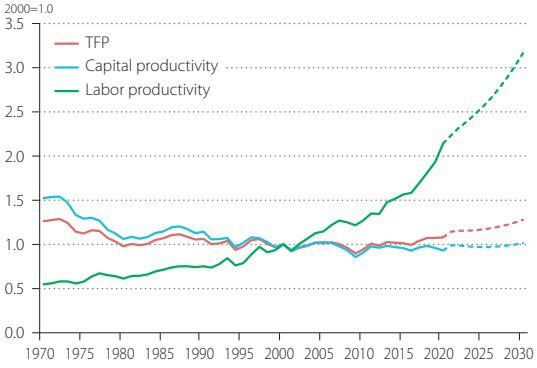

Figure 8 Productivity Indicators

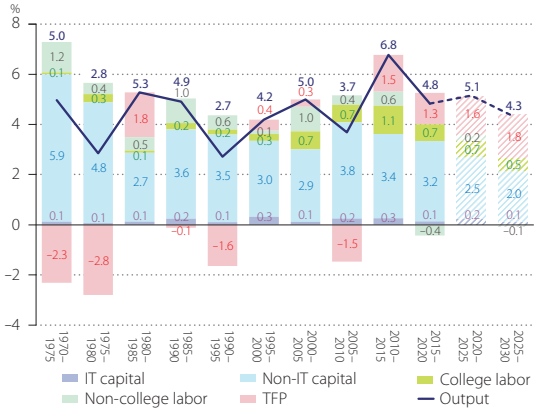

Figure 9 Decomposition of Economic Growth

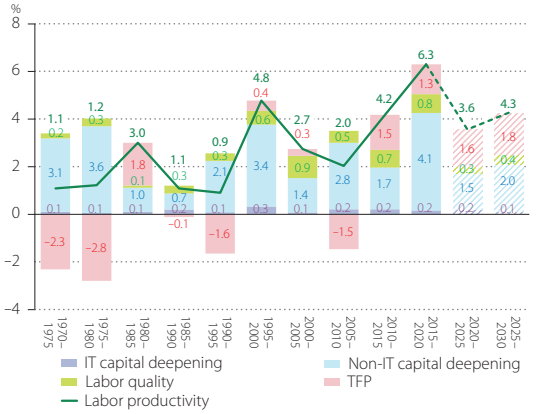

Figure 10 Decomposition of Labor Productivity Growth

Vietnam

Key Indicators

GDP in 2020	843	Billions of US dollars (as of 2020)
(exchange rate based)	273	Billions of US dollars (as of 2020)
Per capita GDP in 2020	8.6	Thousands of US dollars (as of 2020)
(exchange rate based)	2.8	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	14.1	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	6.4	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	12.9	US dollars (as of 2020)
Energy productivity levels in 2019	12.0	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	381.7	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	53,783	Thousands persons
Employment rate in 2020	55.1	%
Female employment share in 2020	46.1	%
Average schooling years of workers in 2020	9.2	Years
Investment share in 2020	27.6	%
ICT investment share in GFCF in 2020	4.6	%
Agriculture share in GDP in 2020	16.5	%
Manufacturing share in GDP in 2020	18.5	%
Agriculture share in employment in 2020	33.1	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	4.1	3.3	7.3	6.3	5.3	5.5	8.4	4.7	2.6	2.6	6.0	6.1	6.3
Labor input growth	5.2	3.5	2.7	4.6	1.7	2.1	5.8	3.8	–1.1	1.8	2.6	2.5	2.4
Labor quality growth	1.0	0.3	0.2	2.6	1.4	1.7	1.4	2.4	1.0	1.6	1.6	1.5	1.5
Hours worked growth	4.2	3.2	2.4	2.0	0.3	0.3	4.3	1.4	–2.1	0.2	1.0	1.0	0.9
College labor input growth	7.5	15.9	6.2	10.4	6.5	4.5	8.1	3.7	2.4	3.6	4.9	4.7	4.6
Non-college labor input growth	5.1	3.2	2.5	3.8	0.6	1.5	5.2	3.8	–1.9	1.3	1.9	1.8	1.8
IT capital input growth	6.9	17.8	15.0	21.5	17.6	13.8	17.4	12.1	11.0	17.6	13.4	11.7	11.6
Non-IT capital input growth	5.7	6.9	9.5	8.9	6.0	6.0	6.0	6.2	6.1	5.7	5.6	5.8	5.9
Per-worker labor productivity growth	0.0	0.1	5.1	3.9	4.5	5.2	7.4	4.0	4.5	1.4	4.8	4.9	5.2
Per-hour labor productivity growth	–0.1	0.1	4.8	4.3	5.0	5.2	4.1	3.3	4.7	2.4	5.0	5.1	5.4
Capital productivity growth	–5.6	–6.9	–9.5	–8.9	–6.2	–6.1	–6.2	–6.3	–6.2	–3.4	0.1	0.2	0.3
TFP growth	–1.3	–1.8	0.7	–0.8	1.2	1.4	2.4	–0.4	0.0	–1.4	1.7	1.9	2.1

Production

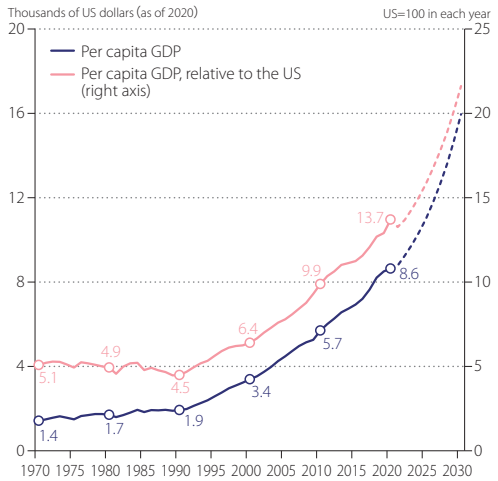

Figure 1 Per Capita GDP

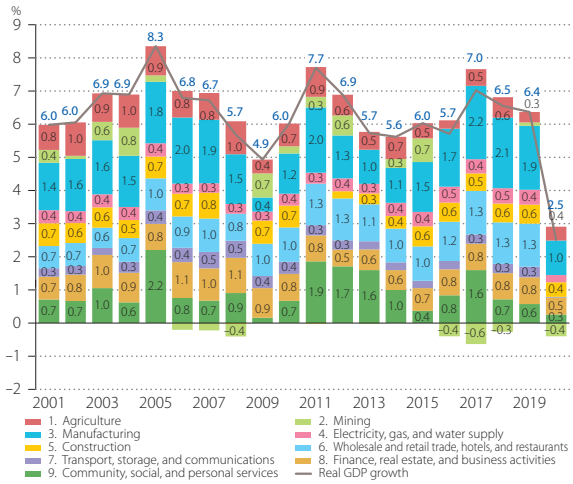

Figure 2 Industry Origins of Economic Growth

Labor

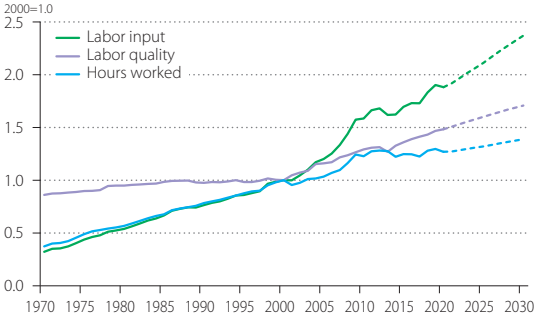

Figure 3 Labor Inputs

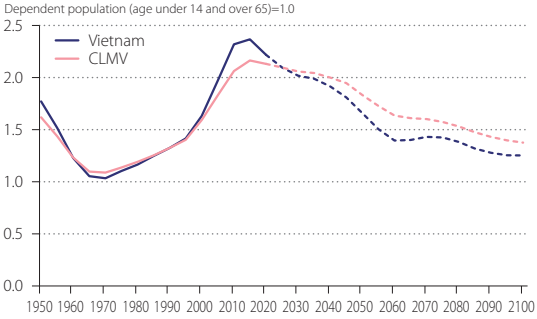

Figure 4 Demographic Dividend

Productivity

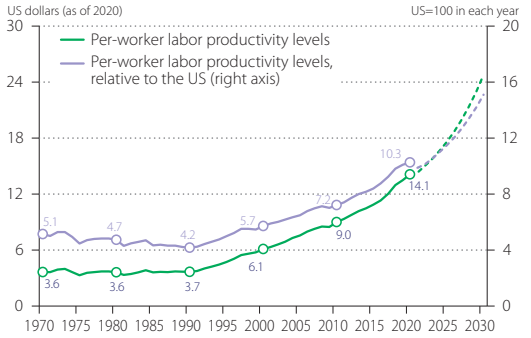

Figure 5 Per-Worker Labor Productivity Level

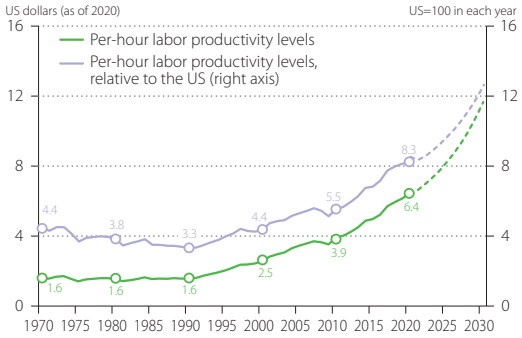

Figure 6 Per-Hour Labor Productivity Level

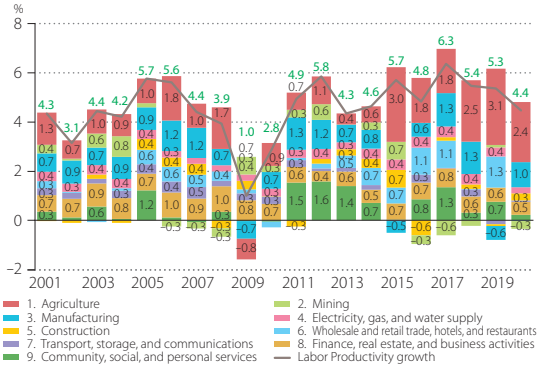

Figure 7 Industry Origins of Labor Productivity Growth

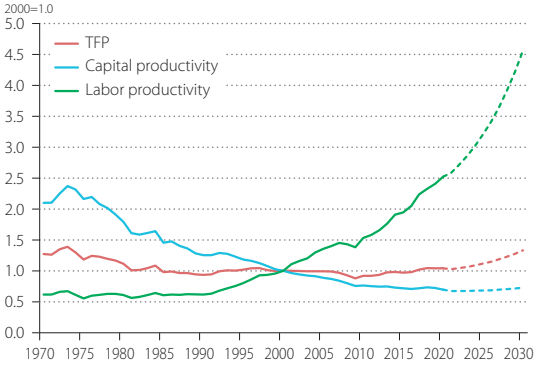

Figure 8 Productivity Indicators

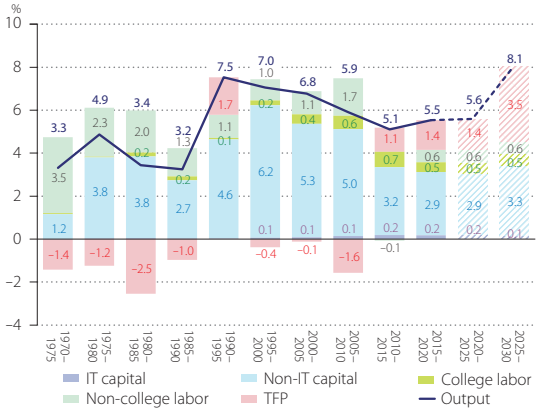

Figure 9 Decomposition of Economic Growth

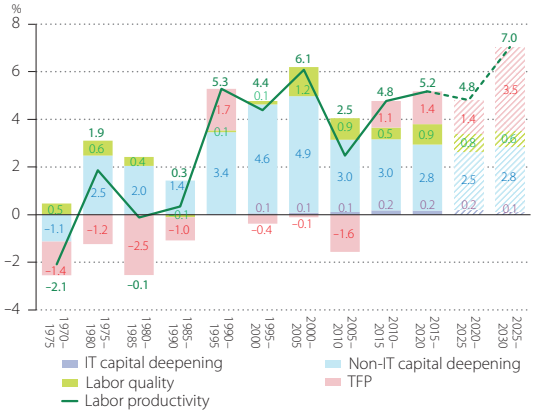

Figure 10 Decomposition of Labor Productivity Growth

APO21

Key Indicators

GDP in 2020	32,792	Billions of US dollars (as of 2020)
(exchange rate based)	15,934	Billions of US dollars (as of 2020)
Per capita GDP in 2020	11.7	Thousands of US dollars (as of 2020)
(exchange rate based)	5.7	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	28.1	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	13.5	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	36.0	US dollars (as of 2020)
Energy productivity levels in 2019	15.9	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	n.a.	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	1,137,664	Thousands persons
Employment rate in 2020	40.7	%
Female employment share in 2020	31.9	%
Average schooling years of workers in 2020	7.8	Years
Investment share in 2020	27.2	%
ICT investment share in GFCF in 2020	8.2	%
Agriculture share in GDP in 2020	10.6	%
Manufacturing share in GDP in 2020	18.8	%
Agriculture share in employment in 2020	34.7	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	4.8	5.1	3.6	4.3	3.3	2.6	4.4	1.8	–2.9	5.5	4.2	3.8	4.1
Labor input growth	3.2	3.3	2.6	2.9	2.1	1.7	1.6	2.0	0.6	3.1	2.3	2.3	2.2
Labor quality growth	0.6	1.1	1.1	1.4	1.2	0.8	0.5	0.7	0.6	1.4	1.4	1.4	1.4
Hours worked growth	2.6	2.2	1.6	1.6	0.9	0.9	1.1	1.2	0.0	1.6	0.9	0.9	0.8
College labor input growth	9.0	8.1	6.2	5.8	3.9	3.0	2.3	3.2	2.2	4.2	3.2	3.1	3.0
Non-college labor input growth	2.5	2.4	1.6	1.7	1.3	0.9	1.3	1.3	–0.3	2.4	1.8	1.8	1.8
IT capital input growth	12.4	18.0	10.9	6.6	5.5	5.3	5.5	5.4	4.7	2.7	3.1	3.2	3.2
Non-IT capital input growth	5.8	4.7	3.9	3.3	4.1	4.2	4.4	4.3	3.8	3.3	3.9	4.0	4.0
Per-worker labor productivity growth	2.0	3.0	2.0	2.6	2.2	1.5	2.7	1.2	–3.7	4.5	3.2	2.9	3.2
Per-hour labor productivity growth	2.1	2.9	2.1	2.7	2.4	1.7	3.0	1.2	–3.3	4.0	3.3	2.9	3.2
Capital productivity growth	–6.0	–5.1	–4.2	–3.5	–4.1	–4.2	–4.4	–4.3	–3.8	2.0	0.1	–0.4	–0.1
TFP growth	0.1	1.0	0.3	1.0	0.2	–0.4	1.1	–0.7	–5.5	2.6	1.4	1.0	1.3

Production

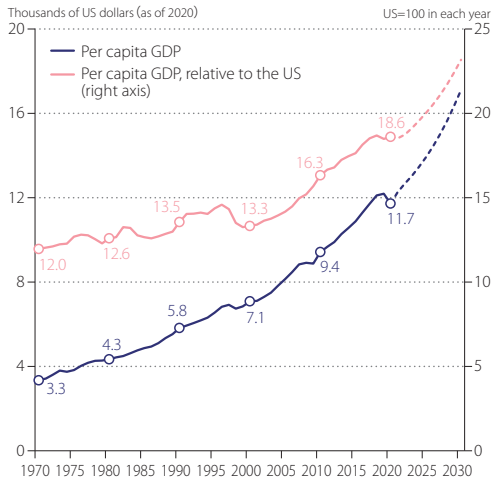

Figure 1 Per Capita GDP

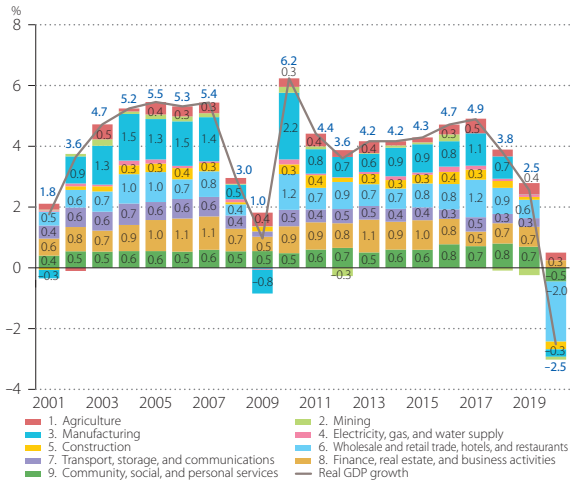

Figure 2 Industry Origins of Economic Growth

Labor

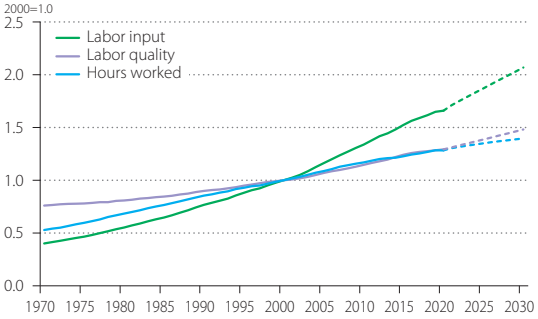

Figure 3 Labor Inputs

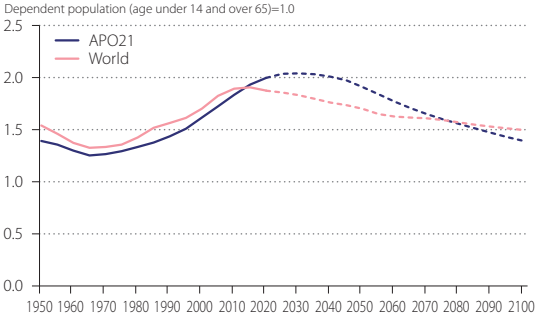

Figure 4 Demographic Dividend

Productivity

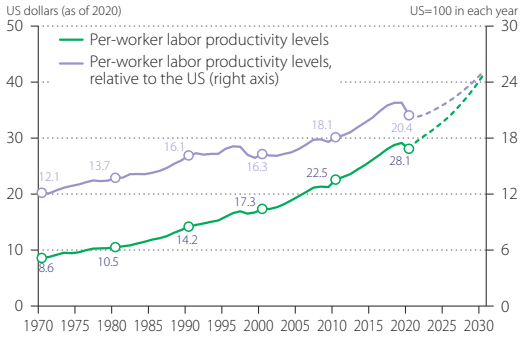

Figure 5 Per-Worker Labor Productivity Level

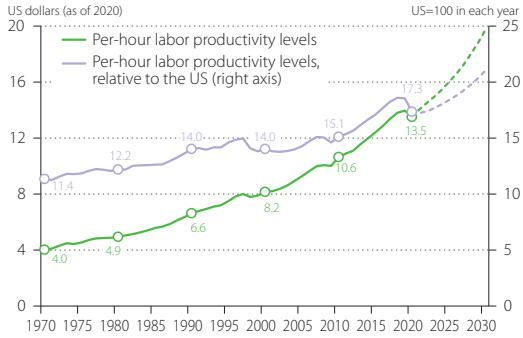

Figure 6 Per-Hour Labor Productivity Level

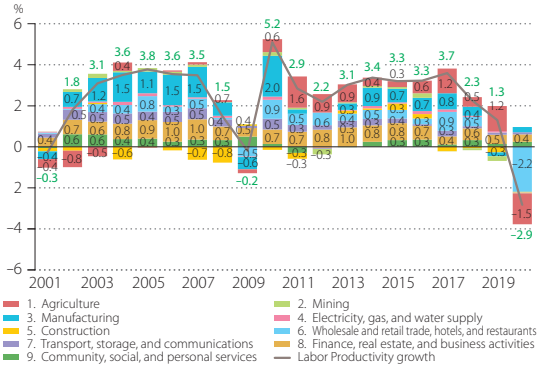

Figure 7 Industry Origins of Labor Productivity Growth

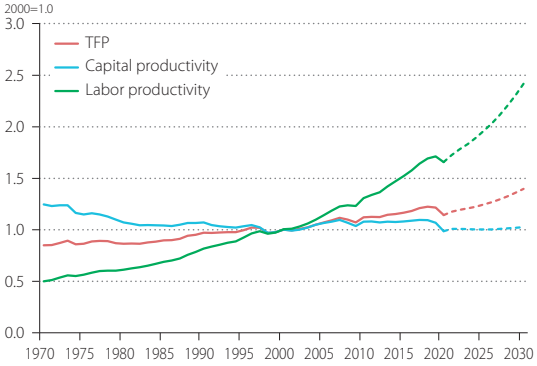

Figure 8 Productivity Indicators

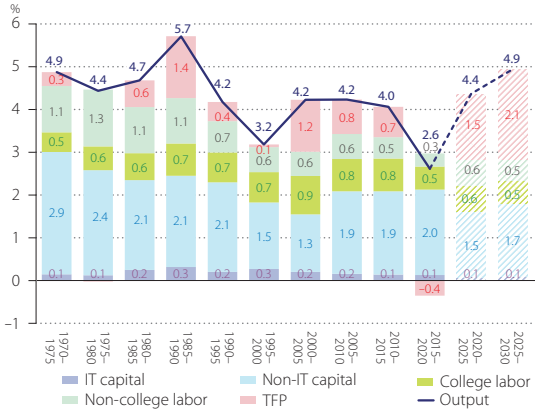

Figure 9 Decomposition of Economic Growth

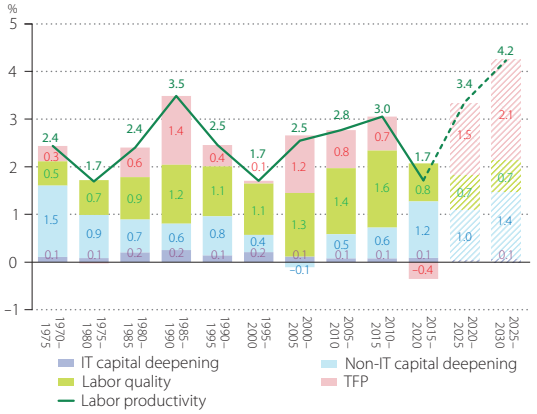

Figure 10 Decomposition of Labor Productivity Growth

Asia25

Key Indicators

GDP in 2020	56,931	Billions of US dollars (as of 2020)
(exchange rate based)	31,311	Billions of US dollars (as of 2020)
Per capita GDP in 2020	13.3	Thousands of US dollars (as of 2020)
(exchange rate based)	7.3	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	29.0	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	13.8	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	39.9	US dollars (as of 2020)
Energy productivity levels in 2019	13.5	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	n.a.	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	1,912,183	Thousands persons
Employment rate in 2020	44.8	%
Female employment share in 2020	n.a.	%
Average schooling years of workers in 2020	n.a.	Years
Investment share in 2020	33.4	%
ICT investment share in GFCF in 2020	7.6	%
Agriculture share in GDP in 2020	9.3	%
Manufacturing share in GDP in 2020	21.5	%
Agriculture share in employment in 2020	29.9	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	4.9	5.4	4.7	5.9	4.3	3.3	4.9	2.8	–1.8	6.4	3.9	3.5	3.7
Labor input growth	3.5	3.6	2.7	2.8	1.0	0.4	0.2	0.0	0.0	1.9	0.7	0.7	0.7
Labor quality growth	0.8	1.0	1.2	1.5	0.6	0.0	–0.4	–0.6	0.5	1.6	0.8	0.7	0.7
Hours worked growth	2.7	2.6	1.5	1.3	0.4	0.4	0.6	0.7	–0.5	0.3	0.0	0.0	–0.1
College labor input growth	9.4	9.2	7.9	7.9	4.7	2.4	2.7	1.8	1.3	4.4	2.9	2.8	2.7
Non-college labor input growth	3.2	3.1	2.1	1.9	0.0	–0.2	–0.6	–0.5	–0.3	1.2	0.1	0.1	0.0
IT capital input growth	12.4	18.1	11.2	9.0	9.7	8.8	9.3	8.9	6.3	4.6	4.9	4.7	4.5
Non-IT capital input growth	6.0	5.1	4.8	5.6	6.5	6.1	6.4	6.1	5.2	5.1	5.4	5.2	5.0
Per-worker labor productivity growth	2.0	2.9	3.3	4.7	3.6	2.9	4.0	2.7	–2.1	6.3	3.8	3.4	3.6
Per-hour labor productivity growth	2.0	2.9	3.1	4.6	3.9	2.9	4.2	2.5	–1.6	6.1	3.9	3.5	3.7
Capital productivity growth	–6.1	–5.5	–5.0	–5.8	–6.7	–6.3	–6.5	–6.3	–5.3	1.0	–1.8	–2.0	–1.7
TFP growth	0.0	1.0	0.8	1.5	0.4	0.0	1.3	0.0	–4.8	3.2	1.1	0.8	1.1

Production

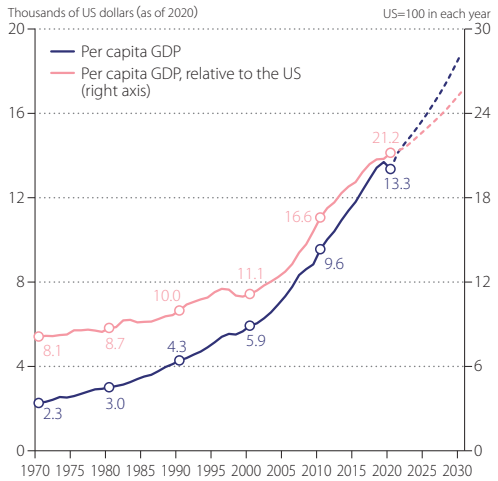

Figure 1 Per Capita GDP

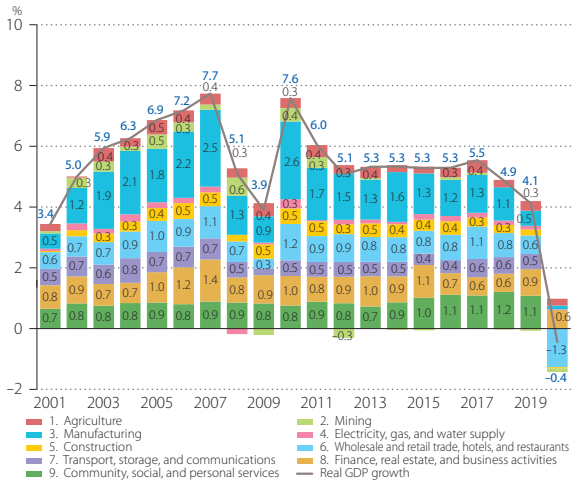

Figure 2 Industry Origins of Economic Growth

Labor

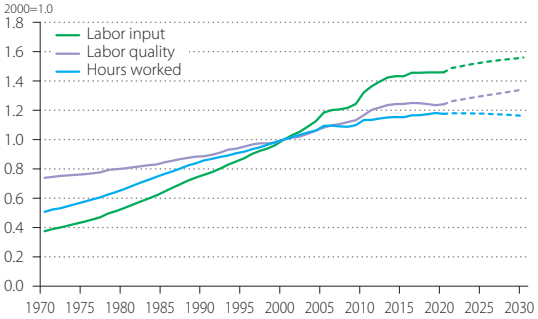

Figure 3 Labor Inputs

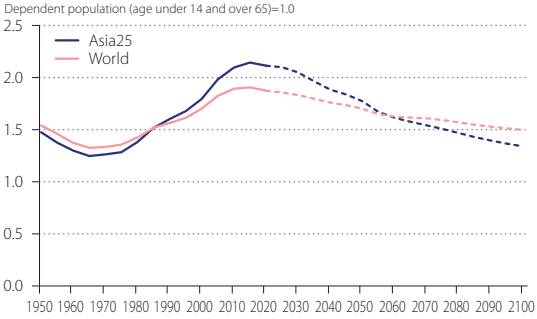

Figure 4 Demographic Dividend

Productivity

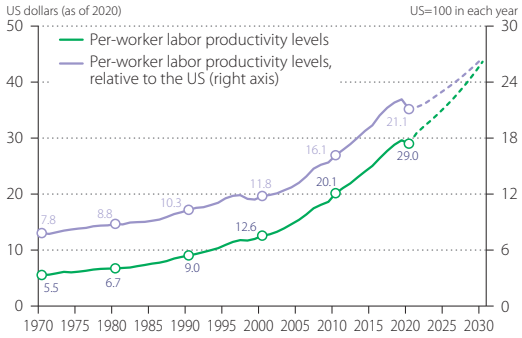

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

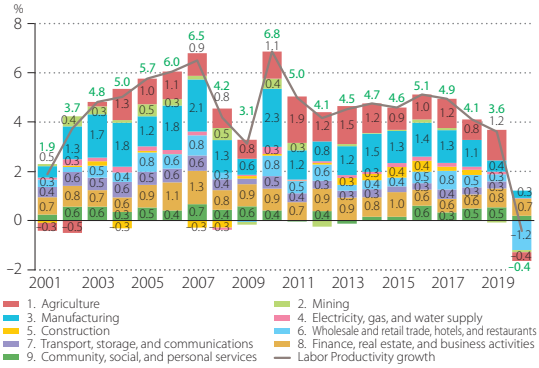

Figure 7 Industry Origins of Labor Productivity Growth

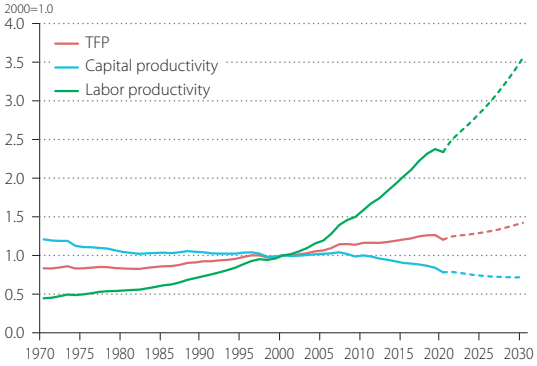

Figure 8 Productivity Indicators

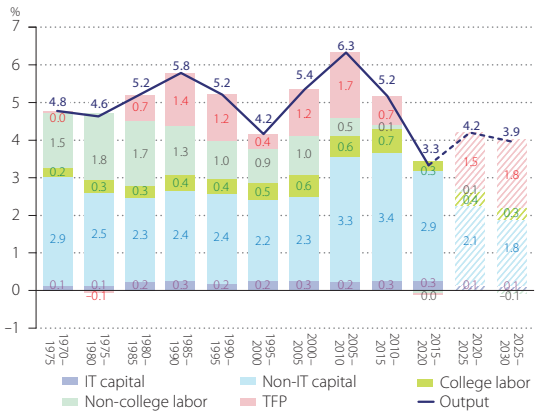

Figure 9 Decomposition of Economic Growth

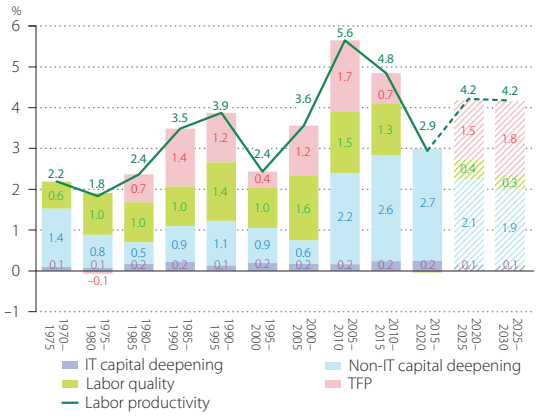

Figure 10 Decomposition of Labor Productivity Growth

East Asia

Key Indicators

GDP in 2020	33,411	Billions of US dollars (as of 2020)
(exchange rate based)	23,037	Billions of US dollars (as of 2020)
Per capita GDP in 2020	20.6	Thousands of US dollars (as of 2020)
(exchange rate based)	14.2	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	37.8	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	18.1	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	57.3	US dollars (as of 2020)
Energy productivity levels in 2019	12.5	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	n.a.	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	860,315	Thousands persons
Employment rate in 2020	53.0	%
Female employment share in 2020	42.4	%
Average schooling years of workers in 2020	10.2	Years
Investment share in 2020	37.5	%
ICT investment share in GFCF in 2020	8.0	%
Agriculture share in GDP in 2020	6.0	%
Manufacturing share in GDP in 2020	24.4	%
Agriculture share in employment in 2020	19.8	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–20	2015–20	2017–18	2018–19	2019–20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	5.4	5.8	4.7	5.9	4.2	3.3	4.4	3.3	−0.9	6.4	3.2	2.7	2.7
Labor input growth	3.5	3.5	2.5	2.4	0.0	−0.8	−1.0	−1.7	−0.6	0.9	−0.9	−0.9	−1.0
Labor quality growth	1.0	0.8	1.2	1.7	0.4	−0.5	−0.9	−1.6	0.6	2.3	0.7	0.7	0.6
Hours worked growth	2.5	2.8	1.3	0.7	−0.4	−0.3	−0.1	−0.2	−1.3	−1.4	−1.5	−1.6	−1.6
College labor input growth	8.2	9.9	9.7	10.3	5.6	0.9	3.3	−1.5	−0.5	4.1	1.3	1.2	1.1
Non-college labor input growth	3.3	3.2	2.0	1.6	−0.8	−1.1	−1.8	−1.8	−0.7	0.3	−1.3	−1.3	−1.4
IT capital input growth	12.5	18.1	10.8	8.3	9.4	8.6	8.9	8.8	6.0	4.7	4.9	4.6	4.4
Non-IT capital input growth	6.2	5.3	4.6	6.0	6.9	6.3	6.6	6.3	5.3	5.4	5.5	5.2	5.0
Per-worker labor productivity growth	2.4	3.1	3.6	5.4	4.3	3.8	4.6	3.6	−0.4	7.7	4.5	4.0	4.1
Per-hour labor productivity growth	2.5	3.1	3.4	5.2	4.6	3.6	4.5	3.5	0.3	7.9	4.7	4.3	4.3
Capital productivity growth	−6.4	−5.9	−4.9	−6.1	−7.1	−6.5	−6.8	−6.5	−5.3	0.7	−2.7	−2.9	−2.6
TFP growth	0.3	1.3	1.0	1.6	0.7	0.5	1.5	0.9	−3.3	3.6	1.1	0.8	1.0

Production

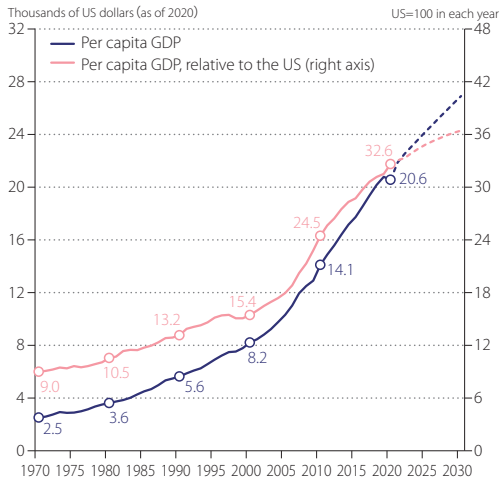

Figure 1 Per Capita GDP

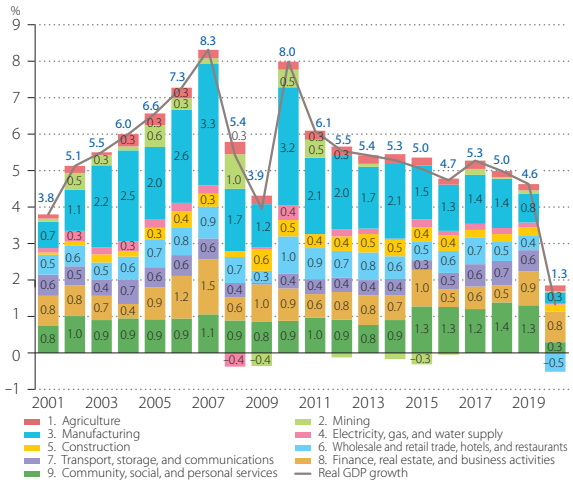

Figure 2 Industry Origins of Economic Growth

Labor

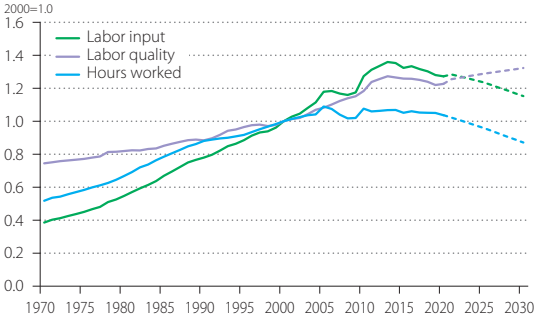

Figure 3 Labor Inputs

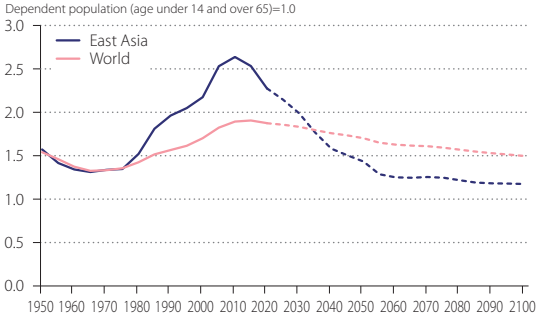

Figure 4 Demographic Dividend

Productivity

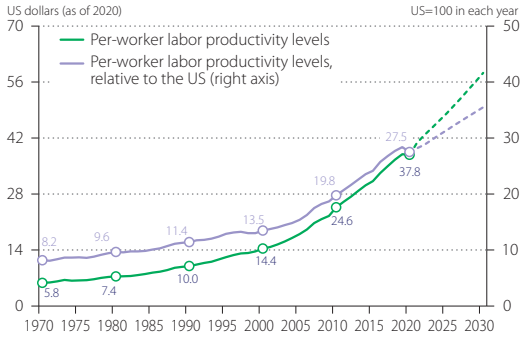

Figure 5 Per-Worker Labor Productivity Level

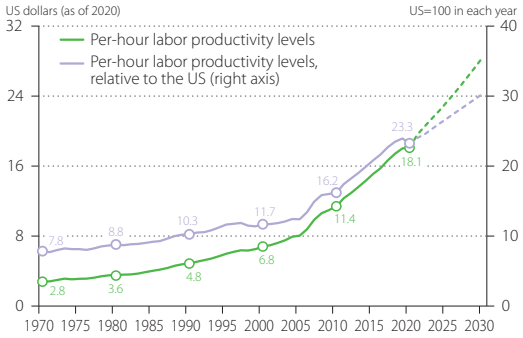

Figure 6 Per-Hour Labor Productivity Level

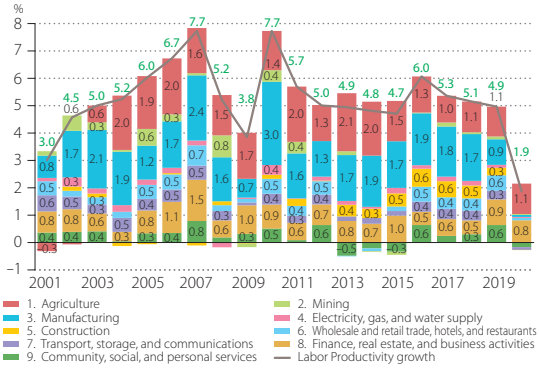

Figure 7 Industry Origins of Labor Productivity Growth

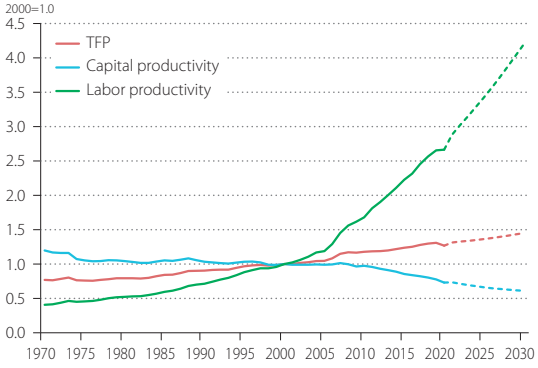

Figure 8 Productivity Indicators

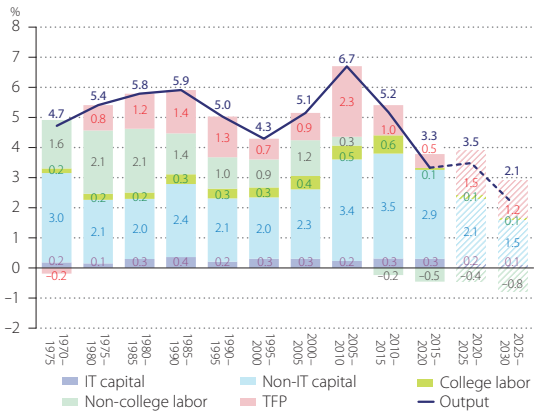

Figure 9 Decomposition of Economic Growth

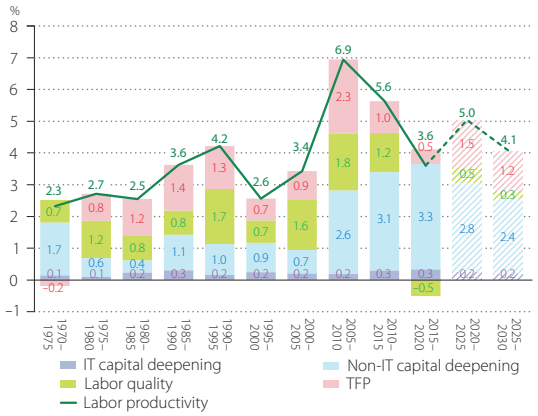

Figure 10 Decomposition of Labor Productivity Growth

South Asia

Key Indicators

GDP in 2020	11,363	Billions of US dollars (as of 2020)
(exchange rate based)	3,393	Billions of US dollars (as of 2020)
Per capita GDP in 2020	6.3	Thousands of US dollars (as of 2020)
(exchange rate based)	1.9	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	16.3	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	7.7	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	18.0	US dollars (as of 2020)
Energy productivity levels in 2019	15.0	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	n.a.	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	678,226	Thousands persons
Employment rate in 2020	37.4	%
Female employment share in 2020	26.1	%
Average schooling years of workers in 2020	6.2	Years
Investment share in 2020	26.5	%
ICT investment share in GFCF in 2020	6.3	%
Agriculture share in GDP in 2020	18.8	%
Manufacturing share in GDP in 2020	13.5	%
Agriculture share in employment in 2020	43.9	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –20	2015 –20	2017 –18	2018 –19	2019 –20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	2.8	5.0	4.9	6.9	4.8	3.4	6.7	1.9	–4.3	7.7	5.4	5.7	5.9
Labor input growth	3.1	3.2	2.8	3.0	2.1	1.8	1.7	1.9	1.6	2.8	3.1	3.1	3.0
Labor quality growth	0.6	1.1	1.0	1.4	1.0	0.8	0.6	0.7	0.5	1.4	1.8	1.8	1.8
Hours worked growth	2.5	2.1	1.7	1.6	1.1	1.0	1.1	1.2	1.1	1.4	1.3	1.3	1.2
College labor input growth	11.3	8.3	6.1	6.0	3.0	2.7	2.6	3.1	2.4	3.7	4.0	4.0	3.9
Non-college labor input growth	2.5	2.4	2.0	2.0	1.7	1.4	1.2	1.4	1.3	2.4	2.7	2.7	2.6
IT capital input growth	10.4	16.7	14.8	16.7	13.2	13.3	14.4	13.5	10.5	4.9	6.1	6.2	6.2
Non-IT capital input growth	4.3	5.1	5.2	6.3	6.9	6.6	6.9	6.6	5.9	4.7	6.0	6.1	6.2
Per-worker labor productivity growth	0.3	3.4	3.4	5.0	3.8	2.6	5.0	2.5	–6.5	6.4	4.1	4.4	4.7
Per-hour labor productivity growth	0.3	3.3	3.4	5.0	3.7	2.6	5.1	2.5	–6.5	6.3	4.2	4.4	4.7
Capital productivity growth	–4.3	–5.2	–5.4	–6.6	–7.1	–6.9	–7.1	–6.9	–6.2	2.7	–0.9	–0.7	–0.6
TFP growth	–0.7	1.5	1.4	2.0	0.5	–0.3	2.2	–0.2	–8.8	4.2	1.4	1.6	1.9

Production

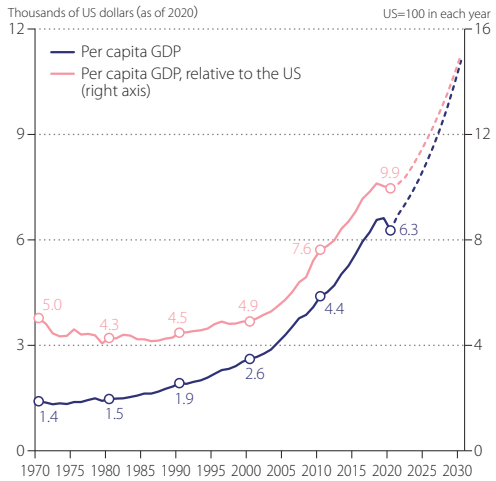

Figure 1 Per Capita GDP

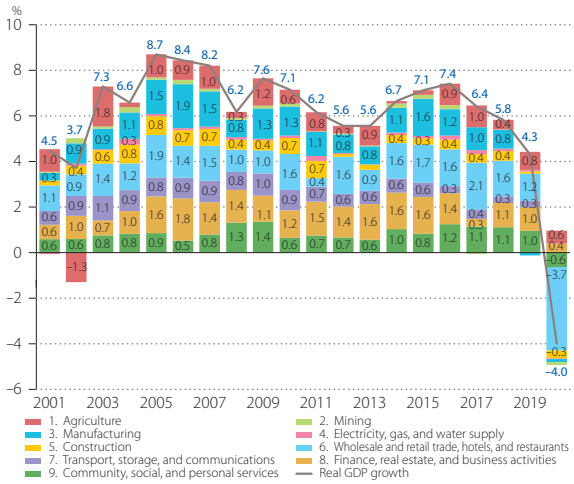

Figure 2 Industry Origins of Economic Growth

Labor

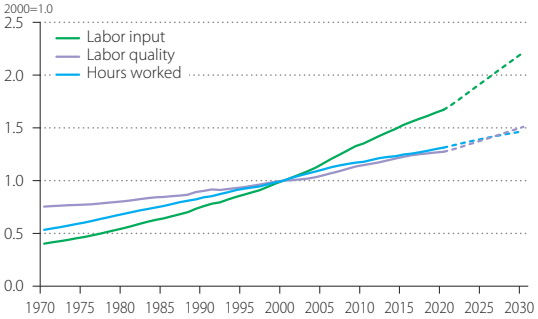

Figure 3 Labor Inputs

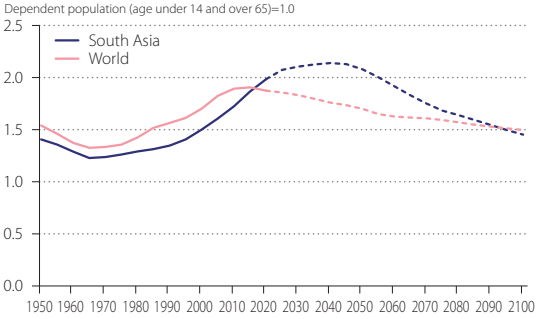

Figure 4 Demographic Dividend

Productivity

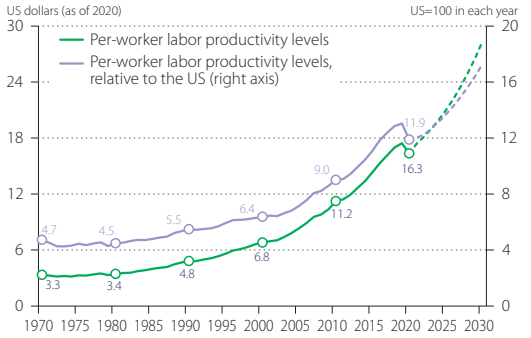

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

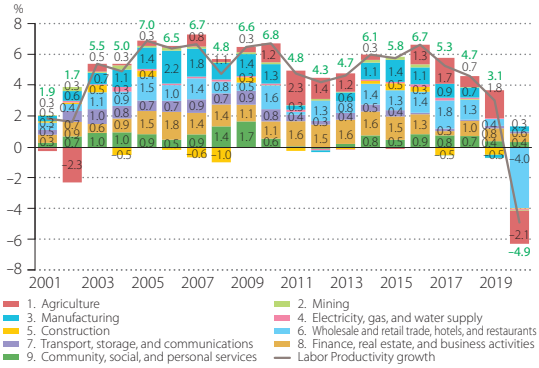

Figure 7 Industry Origins of Labor Productivity Growth

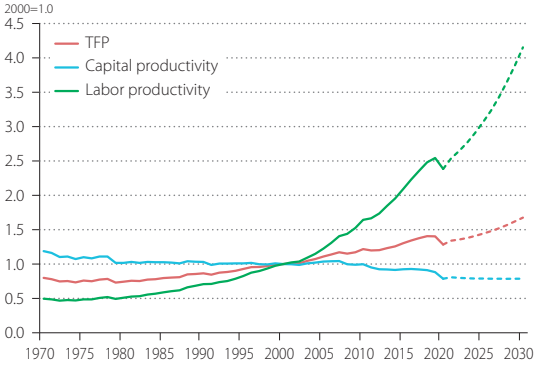

Figure 8 Productivity Indicators

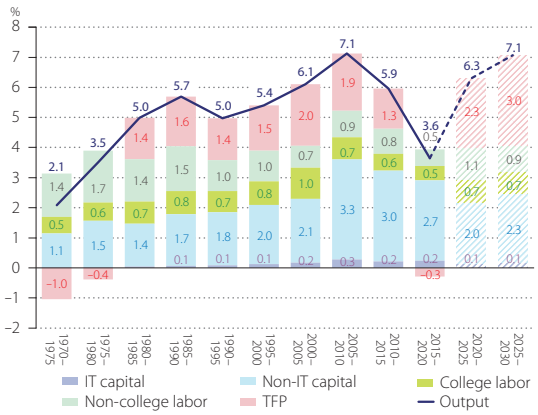

Figure 9 Decomposition of Economic Growth

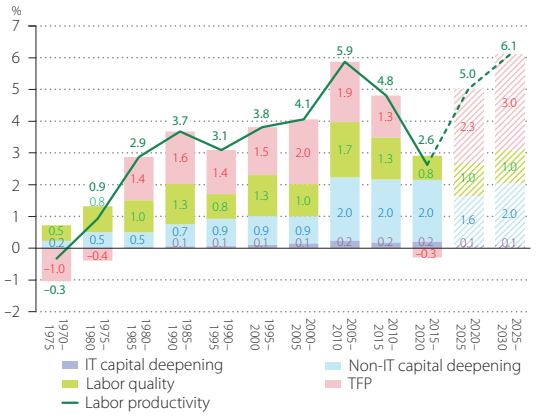

Figure 10 Decomposition of Labor Productivity Growth

ASEAN

Key Indicators

GDP in 2020	8,131	Billions of US dollars (as of 2020)
(exchange rate based)	2,975	Billions of US dollars (as of 2020)
Per capita GDP in 2020	12.3	Thousands of US dollars (as of 2020)
(exchange rate based)	4.5	Thousands of US dollars (as of 2020)
Per-worker labor productivity level in 2020	24.5	Thousands of US dollars per worker (as of 2020)
Per-hour labor productivity level in 2020	11.8	US dollars per hour worked (as of 2020)
Capital stock per hour worked in 2020	32.4	US dollars (as of 2020)
Energy productivity levels in 2019	17.4	Thousands of US dollars per toe (as of 2020)
Carbon intensity of GDP in 2019	n.a.	g-CO2 per US dollar (as of 2020)

Number of employment in 2020	322,355	Thousands persons
Employment rate in 2020	48.9	%
Female employment share in 2020	42.0	%
Average schooling years of workers in 2020	8.6	Years
Investment share in 2020	27.1	%
ICT investment share in GFCF in 2020	8.0	%
Agriculture share in GDP in 2020	11.7	%
Manufacturing share in GDP in 2020	20.8	%
Agriculture share in employment in 2020	29.5	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–20	2015–20	2017–18	2018–19	2019–20	projection 2020–21	2021–22	2022–23	2021–25
GDP growth	6.9	5.5	4.9	5.1	3.9	3.0	5.0	4.0	−4.1	3.3	4.8	3.6	4.2
Labor input growth	4.9	4.6	4.3	4.3	3.1	2.6	2.5	3.7	0.5	4.3	3.0	2.9	2.8
Labor quality growth	1.1	1.5	2.3	2.2	2.2	1.5	0.8	1.7	1.5	2.3	2.2	2.1	2.1
Hours worked growth	3.8	3.1	2.0	2.0	0.9	1.1	1.7	2.0	−1.0	2.0	0.8	0.8	0.8
College labor input growth	9.7	9.8	7.6	7.0	6.2	4.6	2.6	5.5	3.2	5.7	4.0	3.8	3.7
Non-college labor input growth	4.4	3.7	3.5	3.3	1.7	1.6	2.4	2.8	−0.9	3.6	2.5	2.4	2.3
IT capital input growth	12.7	18.8	14.4	13.0	10.0	7.8	9.5	7.3	5.0	4.0	4.3	4.4	4.3
Non-IT capital input growth	6.7	6.6	6.7	3.9	5.3	5.3	5.4	5.3	4.6	4.4	4.6	4.6	4.6
Per-worker labor productivity growth	3.2	2.3	3.0	3.0	2.5	1.4	2.7	2.4	−4.0	2.3	3.8	2.7	3.3
Per-hour labor productivity growth	3.0	2.4	2.9	3.1	3.0	1.9	3.4	1.9	−3.2	1.3	3.9	2.8	3.4
Capital productivity growth	−6.8	−6.8	−6.9	−4.2	−5.4	−5.3	−5.5	−5.3	−4.7	−1.3	−0.1	−1.3	−0.7
TFP growth	0.7	−0.5	−1.0	0.8	−0.6	−1.2	0.8	−0.7	−7.0	−0.7	1.2	0.1	0.7

Production

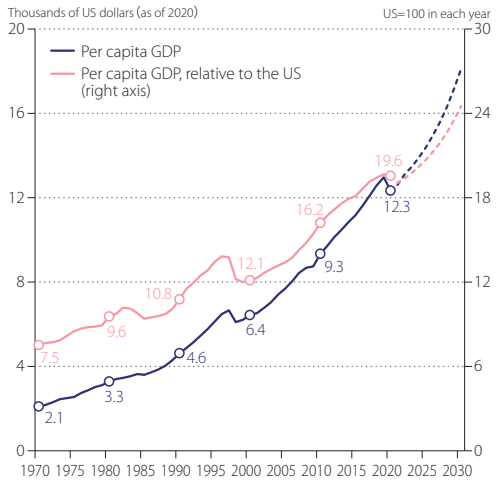

Figure 1 Per Capita GDP

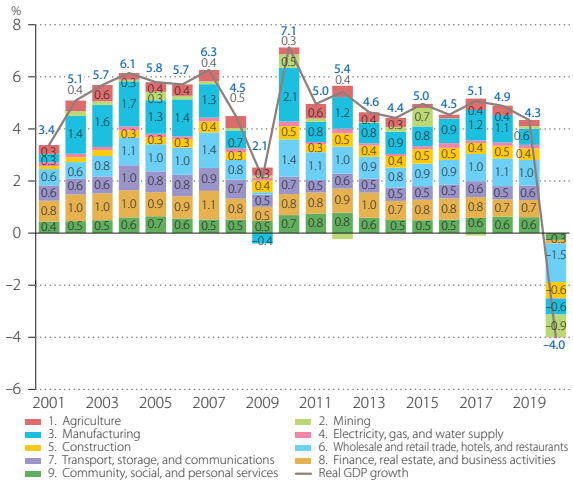

Figure 2 Industry Origins of Economic Growth

Labor

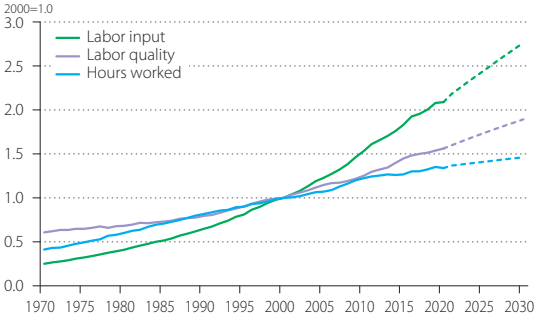

Figure 3 Labor Inputs

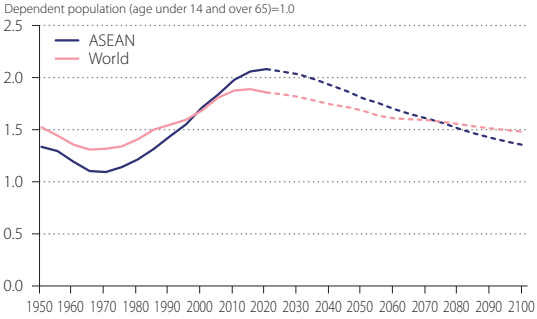

Figure 4 Demographic Dividend

Productivity

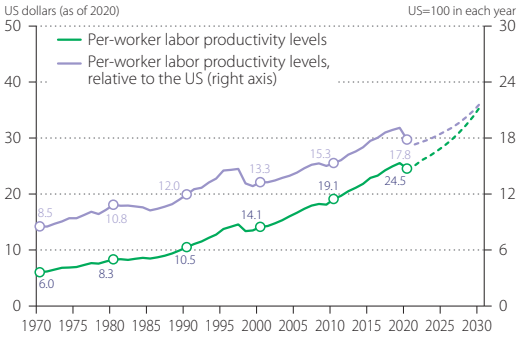

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

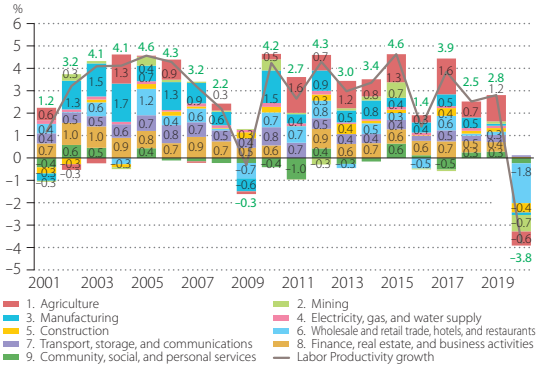

Figure 7 Industry Origins of Labor Productivity Growth

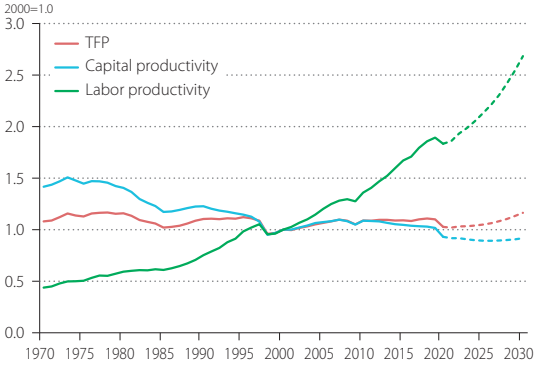

Figure 8 Productivity Indicators

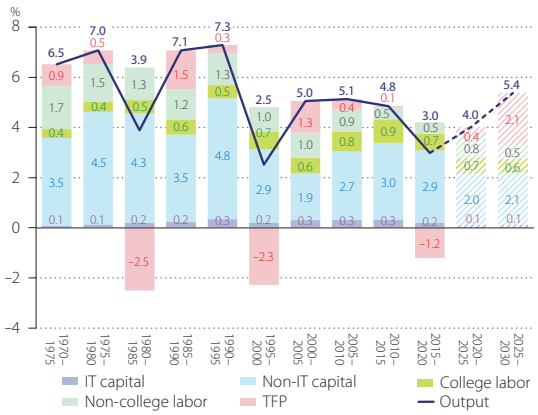

Figure 9 Decomposition of Economic Growth

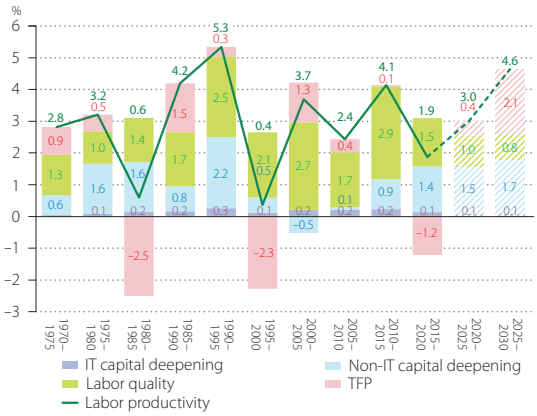

Figure 10 Decomposition of Labor Productivity Growth

9 Methodological Note

9.1 Measurement of Output

9.1.1 SNA Compilation

Understanding data comparability is essential for constructing an international database and requires continuous effort and expert knowledge. Cross-country data inconsistency can arise from variations in one or more of the three aspects of a statistic: definition, coverage, and methodology. The international definitions and guidelines work to standardize countries' measurement efforts. However, country data can deviate from the international best practice and vary in omissions and coverage achieved. Countries can also vary their estimation methodology and assumptions in benchmark and/or annual revisions. This may account for part of the differences observed in the data and interfere with countries' underlying economic performance comparisons.

Between February and June of 2022, the APO Productivity Database project conducted the Metadata Survey 2022 on the national accounts and other statistical data required for international productivity comparisons among the APO member economies.[69] Since most of the economic performance indicators in this report are GDP-related, the surveys emphasize discerning countries' GDP compilation practices. The 2008 SNA is used as the standard. Since there are differences between the 2008 SNA and its predecessors (1993 SNA or 1968 SNA) in some concepts and coverage, it is important to know in which year the data series definitions and classification started to switch. This allows identification in breaks in the time series.

Figure 78 presents the current situation in compilations and data availability of the backward estimates based on the 1968 SNA, the 1993 SNA, and the 2008 SNA (including the plan for introducing the 2008 SNA), based on the Metadata Survey 2022 and our further investigation at KEO. For example, this chart indicates that Japan started to publish national accounts based on the 1968 SNA in 1978 (at present, backward estimates based on the 1968 SNA are available from 1955), national accounts based on the 1993 SNA in 2000 (backward estimates based on the 1993 SNA are available from 1980 to 2014), and national accounts based on the 2008 SNA in 2016 (backward estimates based on the 2008 SNA are available from 1994 to present).[70]

Countries differ in their year of introduction, the extent of implementation, and the availability of backward estimates, as Figure 78 suggests. In Asia25, 18 economies are currently 2008 SNA compliant (partially or fully). The starting year of the official 2008 or 1993 SNA compliant time series varies a great deal across countries, reflecting the differences in the availability of backward estimates. Countries may have adopted the 2008/1993 SNA as the framework for their national accounts, but the extent of compliance in terms of coverage may also vary. The APO Productivity Database tries to reconcile the national accounts variations to provide harmonized estimates for international comparison. See the following sections for details of the adjustments.

The Databook incorporates some significant revisions to the national accounts. Recent developments for upgrading their national accounts based on the 2008 SNA have resulted in Sri Lanka as of March 2016, Thailand as of May 2016, Japan and Turkey as of December 2016, Iran as of August 2017, Nepal as of April 2021, and Oman as of November 2021. A similar revision was planned for Vietnam as of June 2022, but as of the writing of this report, it was not published in June, so the benchmark revision to the 2008 SNA has not been addressed. In Asia25, 18 economies are 2008 SNA-compliant, and others are 1993 SNA-compliant, although it should be noted that the extent of compliance in terms of coverage may vary.

69: For the list of national experts in metadata surveys, see Section 1.2.
70: The Japan's system national accounts (JSNA) has been developed by the Economic Planning Agency (EPA) and its successor, the Economic and Social Research Institute (ESRI), the Cabinet Office of Japan.

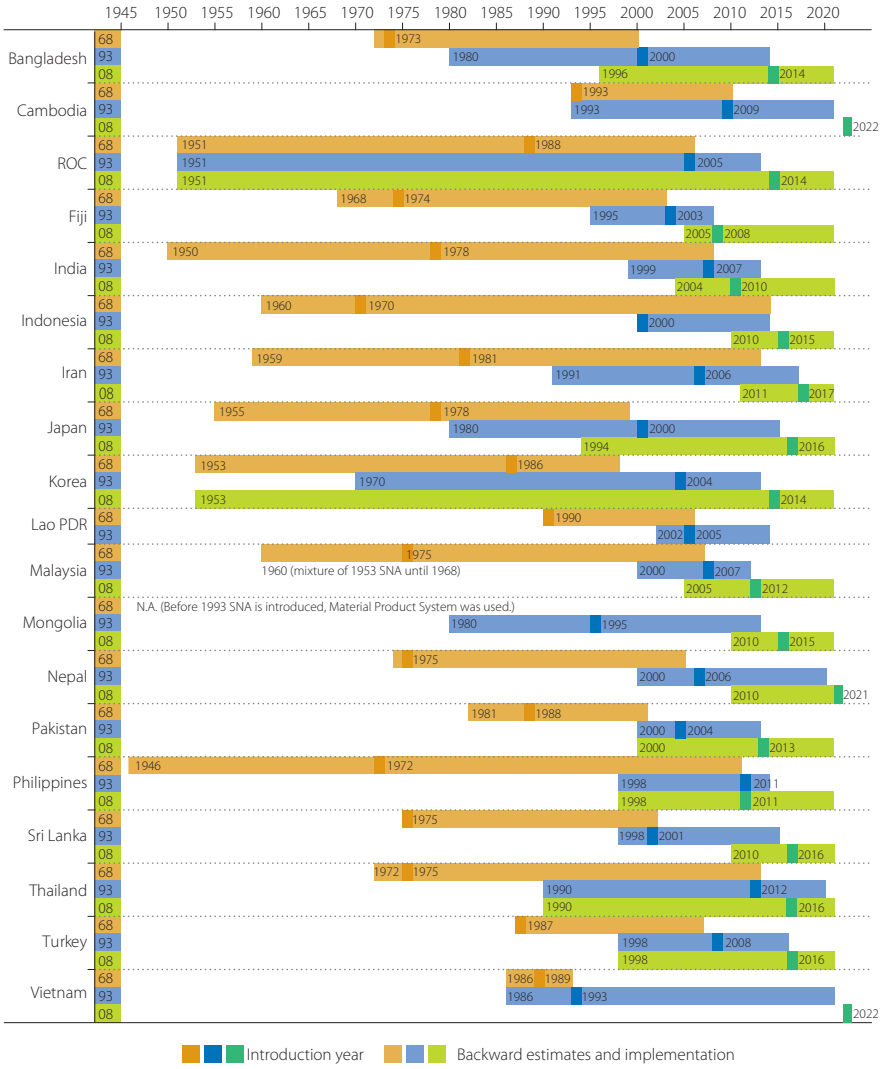

Figure 78 Implementation of the 1968, 1993, and 2008 SNA

Sources: APO Metadata Survey 2022 and our investigation at KEO.

The different statuses of SNA adaptions among economies explain the huge variations of data definitions and coverage in national accounts, calling for data harmonization to perform comparative productivity analyses better.

This edition of the Databook largely follows the concepts and definitions of the 2008 SNA and tries to reconcile the national accounts variations, in particular on the difference in the treatment of research and development (R&D), military weapons systems, software investment, and financial intermediation services indirectly measured (FISIM).[71] To develop long-time series data, it is necessary to use the past

71: The introductions of the 2008 SNA are usually conducted with the benchmark revisions. Thus, in some countries, there are large revisions in data due to the uses of the newly available survey (e.g., a new survey on services) or of the new benchmark data (e.g., a new development of the supply and use table), not largely due to the revisions from the 1993 SNA. The information required to reconcile the different benchmark-year series is collected through our questionnaire to the national experts in our metadata survey or based on our investigation at KEO.

estimates based on the 1968 and 1993 SNA, with exceptions in the ROC, Korea, and Singapore, which already published the backward estimates based on the 2008 SNA from the 1950s or the 1960s. In addition, additional adjustments are necessary to harmonize the long-term estimates of GDP at current prices. Procedures for these adjustments in the APO Productivity Database 2022 are explained below.

9.1.2 FISIM Consumption

FISIM is an indirect measure of the value of financial intermediation services provided. It represents a significant part of the output of the finance sector. The 1993 SNA (United Nations 1993) recommended that FISIM be allocated to users (to individual industries and final demands). This contrasts with the 1968 SNA, where the imputed banking services were allocated exclusively to the business sector. The common practice was to create a notional industry that buys the entire service as an intermediate expense and generates an equivalent negative value added. As such, the imputed banking services have no impact on GDP. Therefore, if fully implemented, the 1993/2008 SNA recommendation will impact industry GDP and the overall GDP for the total economy (by the part of FISIM allocated to final demands).

Among the 21 APO member economies, Cambodia and the Lao PDR do not allocate FISIM to final demands in their official national accounts because they do not follow the 1993/2008 SNA recommendation. Thus, the official estimates of GDP in these countries are less than others by definition. In addition, in the countries whose national accounts follow the 1993/2008 SNA's recommendation on FISIM, sometimes the available data does not cover the entire period of our observations.

To harmonize the GDP concept among countries and over periods, final demands of FISIM are estimated for those countries in the APO Productivity Database, using available estimates of value added in Imputed Bank Service Charge (IBSC) or financial intermediation (in instances where IBSC data is not

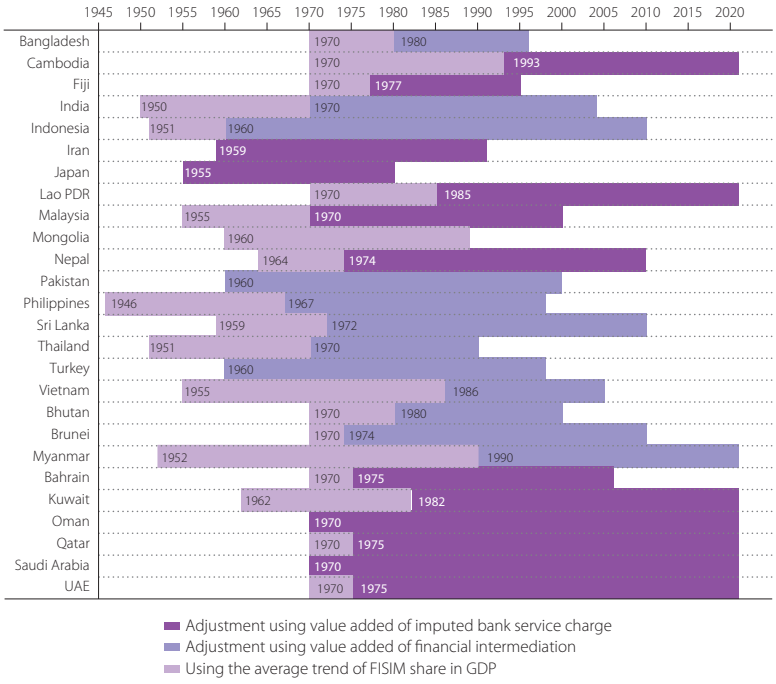

Figure 79 Adjustment of FISIM

Sources: APO Metadata Survey 2022 and our investigation at KEO.

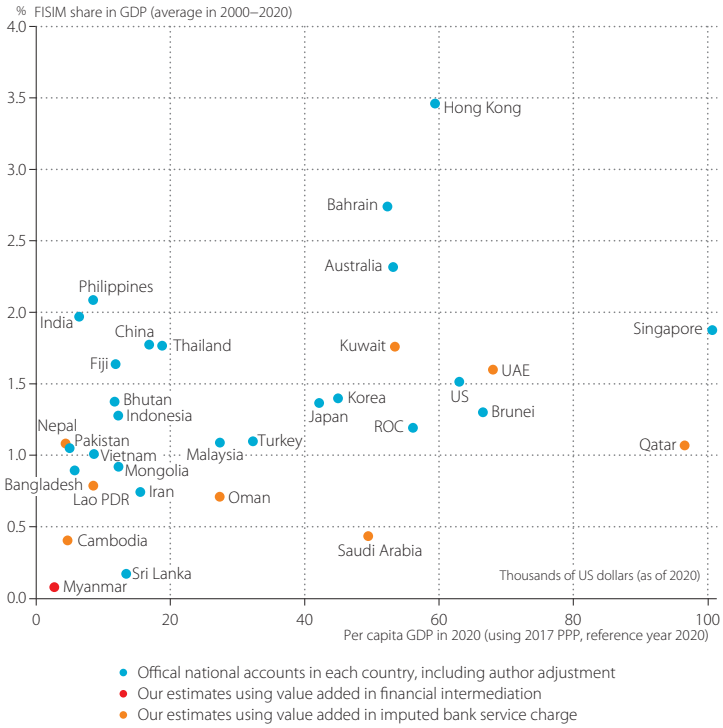

Figure 80 FISIM Share in GDP
——Average share of FISIM production in GDP in 2000–2020

Unit: percentage (current-price share). Sources: Official national accounts in each country and author estimates.

available). The ratios of value added of IBSC or financial intermediation on FISIM allocated to final demand are assumed to be identical to the average ratios observed in the countries in which data is available. Figure 79 describes the countries, years, and methods to adjust FISIM in the official national accounts. As described, in instances where both value-added data are unavailable, the trend of the FISIM share on GDP is applied to extrapolate past estimates (although the impacts on GDP are minor).

Figure 80 plots per capita GDP levels in 2020 and the FISIM share in GDP as an average in 2000–2020 (including the original estimates in the official national accounts and our estimates). In countries where GDP at current prices is adjusted, the proportions by which author adjustments for FISIM increase GDP stand at 0.8–1.1% for Nepal and the Lao PDR and less than 0.4% GDP in others.

9.1.3 Government Consumption

Definitions of government output can differ among countries and periods. For example, as of February 2012, Thailand officially switched to the 1993 SNA, and its national accounts became compatible with the 1993 framework for the first time. In this series, government consumption includes the consumption of fixed capital (CFC) owned by the government since 1990, as described in Figure 78. To construct the long time-series data in the Databook, the past data based on the 1968 SNA has been adjusted to be consistent with the new series. In the APO Productivity Database, government capital stock and its CFC for 1970–1989 are estimated, and the past government consumption and GDP at current prices are adjusted accordingly. A similar adjustment on the CFC of the assets owned by the government was conducted for Bangladesh (for the period 1970–1995), Malaysia (1970–1999), and Mongolia (1970–2004).

Another harmonization is conducted at a price for government consumption, consisting primarily of non-market products. In the APO Productivity Database, the quality of the official price index for government consumption has been examined in each country, compared to our cost-index estimate for government consumption based on our quality-adjusted price indices of capital and labor inputs with zero TFP growth. In the process of retrospective estimation back to 1970, government consumption price indices were found to show unrealistic trends in many Asian countries. The official estimates for these periods are adjusted using our cost index estimates. This revision may yield modest impacts on the real GDP growth rates, as one of the differences between the official estimates and the APO Productivity Database.

9.1.4 Software Investment

The 2008 SNA recommends the capitalization of intellectual property products (IPP), which changes not only GDP but also capital input. One IPP capitalized in the Databook is computer software, which includes pre-packaged software, custom software, and own-account software. Among the Asia25 economies, 16 economies have capitalized all three types of software in the most recent national accounts. Another three countries exclude own-account software in their capitalization, and in two countries (Indonesia and Sri Lanka), only custom software is capitalized (others still do not capitalize software in their national accounts). In addition, the official estimates on software investment availability vary considerably among countries and over periods. Figure 81 presents the availability of the official estimates in the national accounts and the benchmark SUT/IOT, based on the APO Metadata Survey 2022 and our investigation at KEO.

The Databook tries to include all software as assets for better harmonization, even in the countries and the periods in which the official estimates were unavailable. The new estimates for software investment developed in KEO are incorporated from the previous edition of the Databook (APO 2021). In the new data

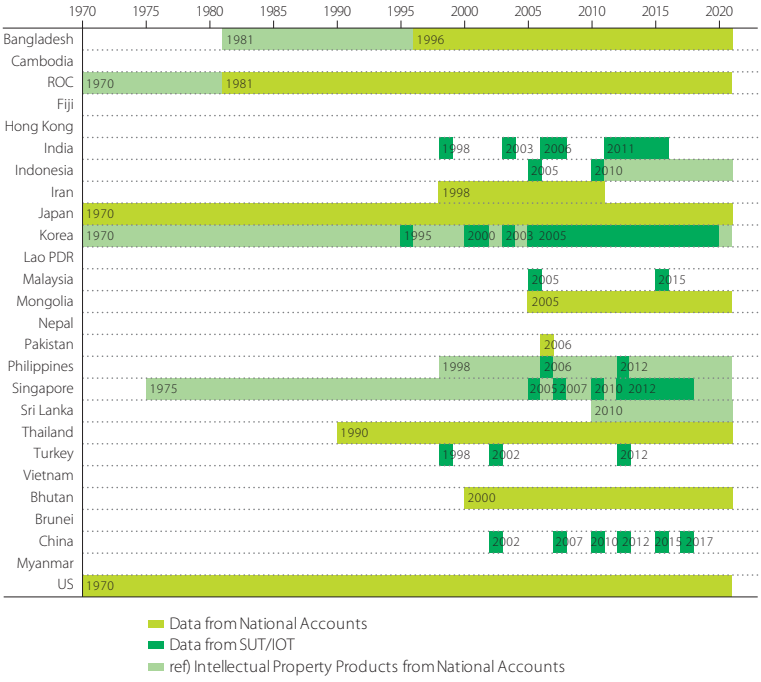

Figure 81 Availability of Software Investment Estimates

Sources: APO Metadata Survey 2022 and our investigation at KEO.

set, the labor cost of the domestically produced software is estimated based on the number of workers in software development, which is defined as the sum of 25. Information and communications technology professionals and 35. Information and communications technicians based on the International Standard Classification of Occupations 2008 (ISCO-08), and the corresponding average wages in ILO (2021). Based on this gross measure of labor cost, the deduction rates are assumed to exclude the hours worked, not for software development. In addition, by assuming the non-labor cost-shares (based on the experiences in other countries, in which the cost compositions in the software industry are available in their SUT/IOT), the total domestic output is estimated. Second, the value of imported software is assumed to be the same as the import of "computer services" recorded in the Balance of Payment in WTO (2021b). The sum of the domestically produced and imported software values is used to extrapolate the official estimates of software investment (Figure 81) or simply used as the software investment in each country.

9.1.5 R&D Investment

Under the 2008 SNA recommendations, the R&D is capitalized in the Databook. In the countries that still do not follow the 2008 SNA, the R&D expenditures are not allocated to GFCF (but to intermediate uses). In some cases, even when R&D investments are included in the GFCF, the counts are not disclosed separately, hindering the proper measurement of capital stock and service volumes. To harmonize the GDP and capital-input concepts among countries and over periods, the R&D investment is estimated for those countries in the APO Productivity Database.

The preferred approach is to collect data on R&D expenditures based on official surveys in each country and estimate R&D investment.[72] Figure 82 describes the countries, years, and methods to estimate R&D

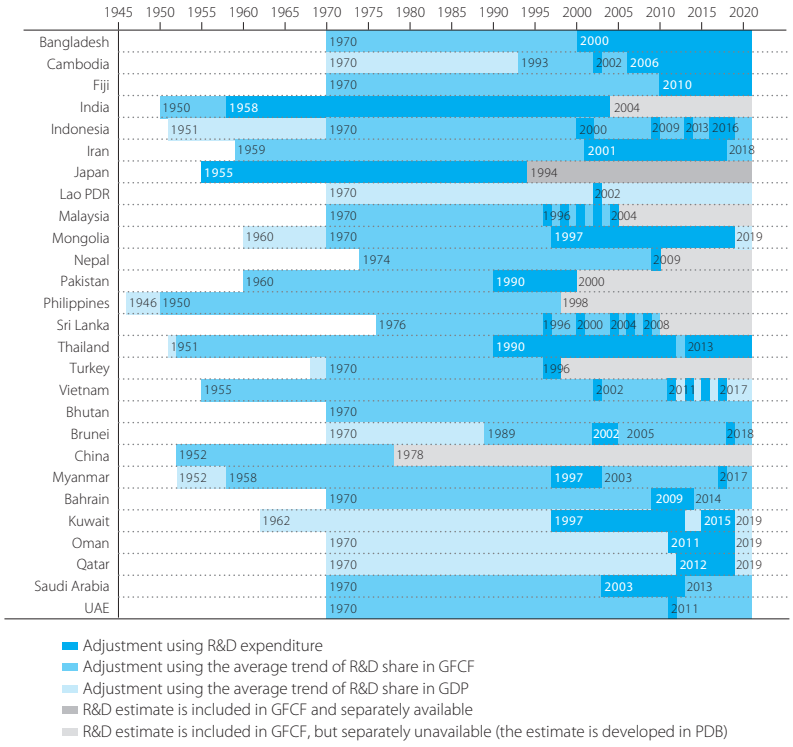

Figure 82 Adjustment of R&D

Source: APO Productivity Database 2022.

investment and add it to GFCF in the official national accounts. For the periods when the data on R&D expenditures are unavailable, the trend of R&D investment shares on GFCF or GDP are applied to extrapolate them as crude estimates, referring to the experience of other countries. Although the share tends to be smaller for countries and periods for which R&D expenditure data are unavailable, it should be noted that there are such limitations in time-series comparisons.

9.1.6 Net Acquisitions of Valuables

Valuables are incorporated as the third type of produced non-financial assets, after fixed assets and inventory, in the SNA 1993. They are defined as "goods of considerable value that are not used primarily for purposes of production or consumption but are held as stores of value over time" in para. 10.7 (United Nations 1993).[73]

Based on the APO Metadata Survey 2022 and our investigation at KEO, net acquisitions (acquisitions less disposals) of valuables are recorded as the final demand in ten countries in Asia, including Bhutan, India, Iran, Korea, Malaysia, Mongolia, Philippines, ROC, Sri Lanka, and Vietnam. For example, the SNA in India has included it since 1999. However, the estimates of net acquisitions of valuables are not separately published (included within the changes in inventories) in Korea, Malaysia, and ROC. Japan's latest system of national accounts still does not include them in the final demand. The current decision in the APO Productivity Database 2022 is to harmonize the data by excluding net acquisitions of valuables from GDP as much as possible.

9.1.7 Basic-Price GDP

GDP can be valued using different price concepts: factor cost, basic prices, and market prices. If the price concept is not standardized across countries, it will interfere with international comparisons. All the countries covered in this Databook officially report GDP at market prices (or at purchasers' prices), but this is not true for GDP at factor cost and GDP at basic prices. International comparisons in Chapter 3 and Chapter 4 are based on GDP at market prices. However, by valuing output and input at the prices that producers actually pay and receive, GDP at basic prices is a more appropriate measure of countries' output for international comparisons of TFP and industry performance, as it is a measure from the producers' perspective. Hence, Chapter 5 on productivity performance is based on GDP at basic prices, including our estimates.

These concepts of GDP differ in the treatment of indirect tax and subsidies (and import duties). The difference between GDP at basic prices and GDP at market prices is "taxes on products" minus "subsidies on products."[74] Since GDP at basic prices is available for some economies in Asia, such as Hong Kong, India, Korea, Mongolia, Nepal, Singapore, and Sri Lanka, a GDP at basic prices calculation needs to be constructed for all other countries. To obtain GDP at basic prices, "taxes on products" and "duties on imports" are subtracted from GDP at market prices, which are available for all the countries studied, and "subsidies on products" is added. The main data sources for estimating "taxes on products" and "subsidies on products" are tax data in national accounts, the IMF's Government Finance Statistics, and the SUT/IOT in each country. Table 3 lists the SUT/IOT used in the APO Productivity Database 2022.

72: For conceptual details on R&D, see the Frascati Manual (OECD 2015).
73: They are held under the expectation that their prices will not deteriorate and will rise in the long run. Valuables consist of precious stones and metals such as diamonds; artwork such as paintings and sculptures; and other valuables such as jewelry made from stones and metals.
74: "Taxes on products" are the indirect taxes payable on goods and services mainly when they are produced, sold, and imported, and "subsidies on products" are subsidies payable on goods and services mainly when they are produced, sold, and imported.

Readers should bear in mind these caveats when interpreting the results in Chapter 6 since the definition of GDP by industry differs among countries due to data availability. GDP is valued at: factor cost for Fiji and Pakistan; basic prices for Bangladesh, Cambodia, Hong Kong, India, Korea, the Lao PDR, Mongolia, Nepal, Singapore, and Vietnam; producers' prices for Iran, the ROC, and the Philippines; and market prices for Indonesia, Japan, Malaysia, Sri Lanka, Thailand, and Turkey. In this sense, the industry data provided in the Databook series should be treated as a work in progress, as it is difficult to advise on data uncertainty. These issues will be examined in the future.

Table 3 SUT/IOT in Asia

	Input-Output Tables and Supply and Use Tables
Bangladesh	1976/1977, 1981/1982, 1986/1987, 1992/1993, 1993/1994, 2000, 2005/2006, 2010/2011, 2010-2017*
Cambodia	Benchmark (2003**, 2005*) Annual (2010–2017*)
ROC	Benchmark (1981, 1986, 1991, 1996, 2001, 2004, 2006, 2011, 2016) Extended (1984, 1989, 1994, 1999, 2004) Annual (2006–2020)
Fiji	1972, 1981, 2002, 2005, 2008, 2011
India	1993/1994, 1998/1999, 2003/2004, 2006/2007, 2007/2008, 2011/2012, 2012/2013, 2013/2014, 2014/2015, 2015/2016
Indonesia	1971, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2016
Iran	1962, 1973, 1974, 1986, 1988, 1991, 1999, 2001, 2004, 2011
Japan	1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2011, 2015
Korea	Benchmark (1960, 1963, 1966, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2015) Updated (1973, 1978, 1983, 1986-1988, 1993, 1998, 2003, 2006–2019)
Lao PDR	Benchmark (2012) Annual (2010–2017*)
Malaysia	1978, 1983, 1987, 1991, 2000, 2005, 2010, 2015
Mongolia	Benchmark (1963, 1966, 1970, 1977, 1983, 1987, 1997, 2000, 2005, 2010) Annual (2010–2019)
Nepal	2004, 2010
Pakistan	1975/1976, 1984/1985, 1989/1990, 1999/2000
Philippines	1961, 1965, 1969, 1974, 1979, 1985, 1988, 1994, 2000, 2006, 2012
Singapore	Benchmark (1973, 1978, 1983, 1988, 2000, 2005, 2007, 2010, 2015) Annual (2012–2014, 2016–2017)
Sri Lanka	2006, 2010
Thailand	1975, 1980, 1985, 1990, 1995, 1998, 2000, 2005, 2010, 2015
Turkey	1973, 1979, 1985, 1990, 1996, 1998, 2002, 2012
Vietnam	1989, 1996, 2000, 2007, 2012
China	Benchmark (1987, 1992, 1997, 2002, 2007, 2012, 2017) Updated (2000, 2005, 2010, 2015)
Bhutan	2007
Brunei	Benchmark (2005, 2010) Annual (2010–2017*)

Source: APO Productivity Database 2022. Note: These SUT/IOT are collected and used in the development of APO Productivity Database 2022, which newly reflects the SUT/IOT of Bangladesh for 1976/1977, the ROC for 2020, Indonesia for 2016, Korea for 2019, Mongolia for 2019, and Singapore for 2017. *ADB (2018), **Kobayashi et al. (2012).

9.2 Measurement of Capital Input

9.2.1 GFCF by Type of Assets

Quality changes in the aggregate measure of capital input can originate from two kinds of sources: the composition changes in capital stock by type of asset and the quality improvement in each type of asset. To consider the composition change of assets, the APO Productivity Database 2022 classifies 16 types of assets: 11 types of fixed assets, four types of land, and inventory. The fixed assets consist of three types of B&C (building and construction), five types of M&E (machinery and equipment), and three types of IPP (intellectual property products). The fixed assets and land classification will be provided in Table 4 in Section 9.2.2 and Table 6 in Section 9.2.6, respectively.

The detailed investment data is not always available in the official national accounts. Figure 83 presents the availability of GFCF data in the national accounts or benchmark SUT/IOT by country. The SUT/IOT used in the APO Productivity Database 2022 is listed in Table 3 in Section 9.1.7. For countries where detailed investment data is unavailable from national accounts, 11 types of investment data are estimated based on the benchmark and annual SUT/IOT and our estimates on the production data for B&C and the product flow of domestic production and export/import of assets for M&E. For IPP, see Sections 9.1.4 and 9.1.5.

In particular, when the division for three types of B&C (the asset codes 5–7 in Table 4 in Section 9.2.2) is difficult for the countries where detailed construction data is unavailable, they are still crude estimates based on other countries' experiences. Readers are cautioned about data uncertainty and should expect

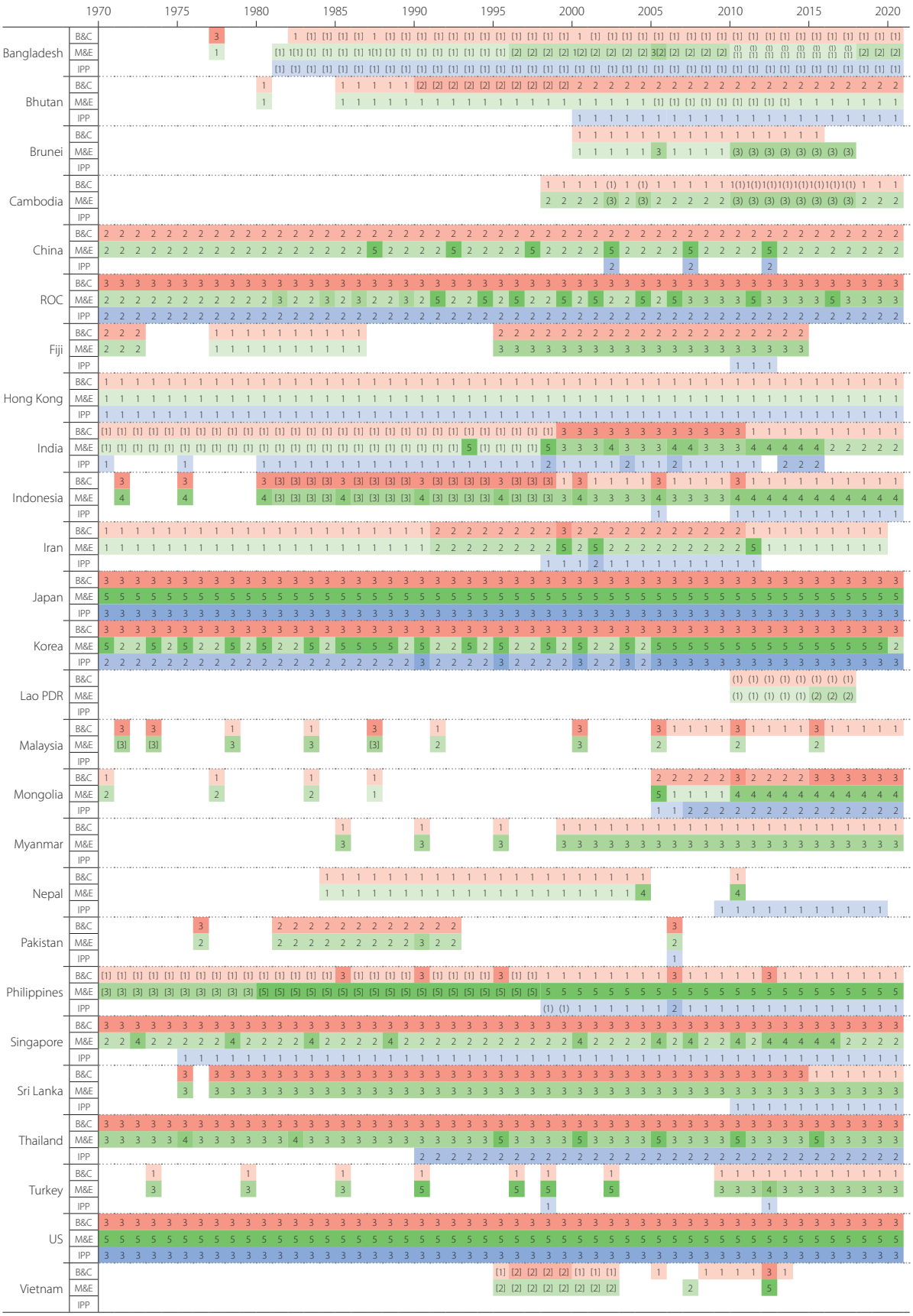

Figure 83 Availability of GFCF Estimates

Sources: Official national accounts and SUT/IOT in each country. Note: B&C is building and construction, M&E is machinery and equipment, and IPP is intellectual property products. The numbers indicate the available number of the types in each B&C, M&E, and IPP. The parenthesis indicates the data, but the national accounts and SUT/IOT ([#] are the estimates by the national experts of this project).

that the decomposition of contributions of capital services into IT and non-IT capital may be revised for some countries when more reliable data sources for estimation will become available.

9.2.2 Fixed Assets Stock

About half of APO member economies publish capital stock estimates in their national accounts systems. Even where official estimates are available, users must be mindful of differences in methodologies and assumptions used to estimate capital stock and its consumption, as well as a large diversity in the treatment of quality adjustment in price statistics among countries. In the APO Productivity Database 2022, a harmonized framework is applied in estimating capital stock and capital services, covering the Asia25 economies and the US as a reference country. The geometric approach is used to measure net capital stock.[75] The standard parameters on geometric depreciation rates are assumed in Table 4 by the country groups (D1–D6) that are defined in Table 2 in Section 6.1.

Table 4 Depreciation Rates of Fixed Assets

asset code	δ					
	D1	D2	D3	D4	D5	D6
1. IT hardware	0.294	0.294	0.294	0.294	0.294	0.294
2. Communications equipment	0.246	0.246	0.246	0.246	0.246	0.246
3. Transportation equipment	0.219	0.219	0.162	0.138	0.138	0.138
4. Other machinery and equipment and weapon systems	0.178	0.178	0.138	0.117	0.117	0.117
5. Dwellings	0.049	0.049	0.041	0.037	0.033	0.033
6. Non-residential buildings	0.084	0.084	0.062	0.056	0.050	0.045
7. Other structures	0.026	0.026	0.019	0.018	0.017	0.016
8. Cultivated biological resources	0.215	0.215	0.202	0.161	0.145	0.131
9. Research and development (R&D)	0.190	0.190	0.180	0.162	0.162	0.162
10. Computer software	0.330	0.330	0.330	0.330	0.330	0.330
11. Other intellectual property products	0.270	0.270	0.270	0.270	0.270	0.270

Source: APO Productivity Database 2022. Note: See Table 2 in Section 6.1 for the country groups (D1–D6). B&C, IPP, and M&E are asset codes 5–7, 9–11, and 1–4&8, respectively.

It is well known that prices of constant-quality IT capital have been falling rapidly. For cross-country comparisons, it has been noted that there is a great disparity in the treatment of quality adjustment in price statistics among countries. Cross-country comparisons will be significantly biased if some countries adjust their deflators for quality change while others do not. Price harmonization is sometimes used to control for methodological differences in the compilation of price indexes, assuming that individual countries' price data fails to capture quality improvements. If the relative price of IT to non-IT capital in the countries compared is set equal to the IT to non-IT prices relative in the reference country, the harmonized price is formulated as $\Delta \ln \tilde{P}^X_{IT} = \Delta \ln P^X_{nIT} + (\Delta \ln P^{ref}_{IT} - \Delta \ln P^{ref}_{nIT})$, where the superscript X denotes the country included in the comparisons, P_{IT} is the price of IT capital, and P_{nIT} is the price of non-IT capital. The price of IT capital in country X, $\tilde{P}^X_{IT}$, , is computed by the observed prices P^{ref}_{IT} and P^{ref}_{nIT} in the reference country and P^X_{nIT} in X. Schreyer, Bignon, and Dupont (2003) applied price harmonization to OECD capital services, with the US as a reference country, since the possible error due to using a harmonized price index would be smaller than the bias arising from comparing capital services based on national deflators.

In the Databook series, the same price harmonization method is applied to adjust the quality improvement for IT hardware and communications equipment in countries where the appropriate quality-adjusted price data is not available, using Japan's prices, which has been developed by the Bank of Japan since the 1980s, as a reference country. A similar procedure was applied in cases where the prices for some assets of B&C and M&E were unavailable to estimate missing data based on the relative price of these assets to total GFCF.

75: In the previous edition of the Databook (APO 2021), the damages by natural disasters were incorpolated in capital stock measurement of produced assets. See Section 9.2.4 for the impacts on the productivity accounts by this revision.

9.2.3 Inventory Stock

Inventory stock is incorporated as one of the capital inputs from the previous edition of the Databook (APO 2021). The official estimates of the changes in inventory recorded in the national accounts are used to estimate the inventory stock. When the official estimates of the price index for inventory changes fluctuate in unrealistic ways, they are replaced by our estimates of the aggregate price index of products consisting of domestically produced goods (by agriculture, mining, and manufacturing sectors) and imported goods. Estimated inventory stocks tend to be too large compared to their GDP if official estimates of inventory changes may have characteristics as a balancing item in the compilation of national accounts. In such cases, inventory stock at the current price is limited to no more than 8% of nominal GDP in the APO Productivity Database 2022.

9.2.4 Disaster Damages on Capital Stock

Natural disasters can significantly impact economic growth, especially in developing economies. From the previous edition of the Databook (APO 2021), the damages to capital stock by natural disasters are incorporated in the net capital stock estimates based on the total estimated damages developed in the Emergency Events Database (EM-DAT) by the Centre for Research on the Epidemiology of Disasters (CRED), Université catholique de Louvain, Belgium. This edition of the Databook reflects these revised productivity accounts.

The data on the total damages estimated in the EM-DAT is incorporated through two adjustment processes. First, the total value of the damage is divided into damage on gross capital stock and damage to GDP, based on our assumptions in the most detailed levels of types of disaster. Second, the gross capital stock is converted to net capital stock to be compared with our capital stock estimates. Table 5 presents the estimated value of damages on the net capital stock of produced assets at a constant price as of 2020

Table 5 Capital Stock Damages by Natural Disasters
——Damage ratios on net capital stock at current prices and damages of capital stock at constant prices in 2020

	Year	Type	Damage to NCS			Year	Type	Damage to NCS			Year	Type	Damage to NCS	
1 Myanmar	2008	S	10.33	(3.13)	21 Cambodia	1991	F	1.46	(0.11)	41 Bangladesh	1995	S	0.82	(0.81)
2 Lao PDR	1993	S	3.43	(0.16)	22 Cambodia	2011	F	1.39	(0.35)	42 Myanmar	1988	O	0.79	(0.04)
3 Fiji	2016	S	3.36	(0.33)	23 Cambodia	2000	F	1.36	(0.13)	43 Fiji	1986	S	0.74	(0.04)
4 Nepal	2015	E	3.30	(2.62)	24 Philippines	1972	F	1.32	(0.76)	44 China	1996	F	0.72	(25.32)
5 Bangladesh	1988	F	3.15	(1.98)	25 Bangladesh	2004	F	1.28	(2.57)	45 Vietnam	1994	F	0.68	(0.38)
6 Bangladesh	1998	F	3.08	(3.75)	26 Philippines	2013	S	1.27	(6.21)	46 Myanmar	1992	F	0.67	(0.04)
7 Myanmar	2004	E	3.03	(0.59)	27 Pakistan	2005	E	1.25	(3.62)	47 Philippines	1976	E	0.66	(0.51)
8 Pakistan	1973	F	3.00	(1.37)	28 Cambodia	2013	F	1.23	(0.35)	48 Vietnam	1997	S	0.65	(0.53)
9 Fiji	1972	S	2.23	(0.06)	29 Vietnam	1996	S	1.18	(0.85)	49 India	1993	F	0.65	(7.38)
10 Thailand	2011	F	2.21	(22.37)	30 Sri Lanka	1978	S	1.13	(0.29)	50 Pakistan	1992	F	0.59	(0.94)
11 Bangladesh	1991	S	2.17	(1.63)	31 Pakistan	1976	F	1.09	(0.53)	51 Fiji	2012	F	0.56	(0.05)
12 Nepal	1980	E	2.16	(0.28)	32 Myanmar	1989	O	1.08	(0.05)	52 Lao PDR	2009	S	0.56	(0.08)
13 Turkey	1999	E	2.09	(9.97)	33 Iran	1990	E	1.03	(15.87)	53 Japan	2011	E	0.55	(100.06)
14 Fiji	1993	S	1.86	(0.12)	34 Fiji	1983	S	1.02	(0.06)	54 Nepal	1987	F	0.55	(0.10)
15 Pakistan	2010	F	1.75	(5.69)	35 China	1976	E	0.97	(5.70)	55 China	1991	F	0.54	(12.04)
16 Bangladesh	1987	F	1.69	(1.01)	36 Bangladesh	2007	S	0.92	(2.36)	56 Sri Lanka	1992	F	0.53	(0.27)
17 Sri Lanka	2004	E	1.65	(1.17)	37 Myanmar	1984	O	0.90	(0.04)	57 China	2008	E	0.50	(62.11)
18 ROC	1999	E	1.65	(11.09)	38 China	1998	F	0.88	(38.00)	58 Thailand	1978	F	0.49	(0.74)
19 Bangladesh	1974	F	1.58	(0.54)	39 Nepal	1993	F	0.87	(0.22)	59 Mongolia	2000	S	0.49	(0.06)
20 Fiji	1985	S	1.55	(0.09)	40 Myanmar	1991	F	0.86	(0.04)	60 ROC	1977	S	0.49	(0.44)

Unit: Percentage (ratio at the beginning-of-period net capital stock: NCS) and billions of US dollars (as of 2020) in parentheses. Sources: EM-DAT, CRED, Université catholique de Louvain, Belgium and APO Productivity Database 2022. Note: S, E, F, and O presents the types of the main disaster as storm, earthquake, flood, and others, respectively.

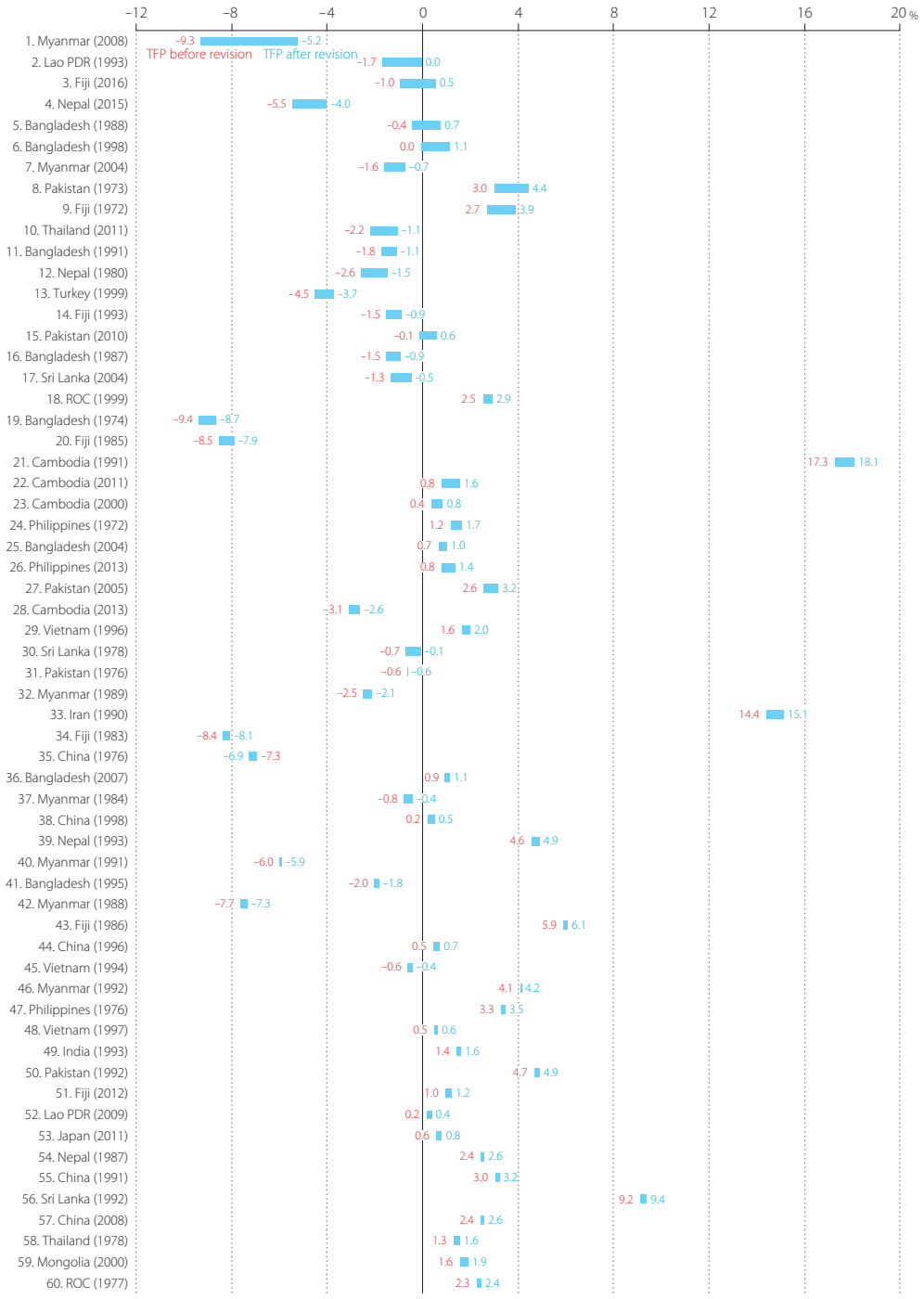

Figure 84 Impacts of Disaster Damages to Capital Stock on TFP
——Growth of total factor productivity from the previous year to the disaster year

Unit: percentage (annual growth rate). Source: APO Productivity Database 2022. Note: See Table 5 for the damages to the capital stock in each disaster.

(in parentheses) and the damage ratios to total stock at current prices in the year the disaster occurred. The top 60 disasters in Asia are sorted by the magnitude of damage ratio to capital stock.

Although the Great East Japan Earthquake in 2011 has the largest damage value of the capital stock (about 100 billion US dollars), the damage ratio on the total stock is limited to 0.55% due to the large size of the aggregate capital stock and ranked in the 53rd position in Table 5. Eight disasters have a damage ratio of over 3% of capital stock, which is found primarily in developing countries. In particular, Cyclone Nargis during early May 2008 was the worst natural disaster in Myanmar's recorded history, causing devastating damage to 10% of its capital stock.

Figure 84 shows the revision of TFP growth from the previous year to the disaster year, reflecting the damages to the capital stock in Table 5. This revision is expected to correct the overvaluation bias of capital stock growth and the undervaluation bias of the TFP estimates in the disaster year. In the case of Myanmar's Cyclone Nargis in 2008, the TFP estimate was revised from a negative 9.3% to 5.2%. In other cases, negative TFPs are modified to be close to zero or slightly positive. Although there is room for improvement in measurement accuracy, we judge that the impact of disasters should be reflected in capital input, not TFP.

9.2.5 Stock-Output Ratio

Figure 85 presents the estimated capital-output ratio (capital stock coefficient) that is defined by the ratio of the beginning-of-period net capital stock (all types of produced assets owned by private and public institutions) to the basic-price GDP at current prices. Bhutan has the highest capital-output ratio among the Asia25 economies, at 4.7 in 2020, reflecting the industry structure highly skewed in electricity generation (hydropower). Compared to the 1980 level in each country, all Asian countries, except Cambodia, Mongolia, and Pakistan, have an increasing trend in capital-output ratio.

9.2.6 Land Stock

Land is an important factor of production not only in the agriculture sector but also in the manufacturing and service sectors. The land occupies a large share of nominal capital stock in densely populated countries. Regardless of its importance, the land was not considered capital until the 2018 edition of the Databook due to data availability. In Asia, only Japan and Korea publish the estimates of land stocks in their national balance sheets within the system of national accounts.

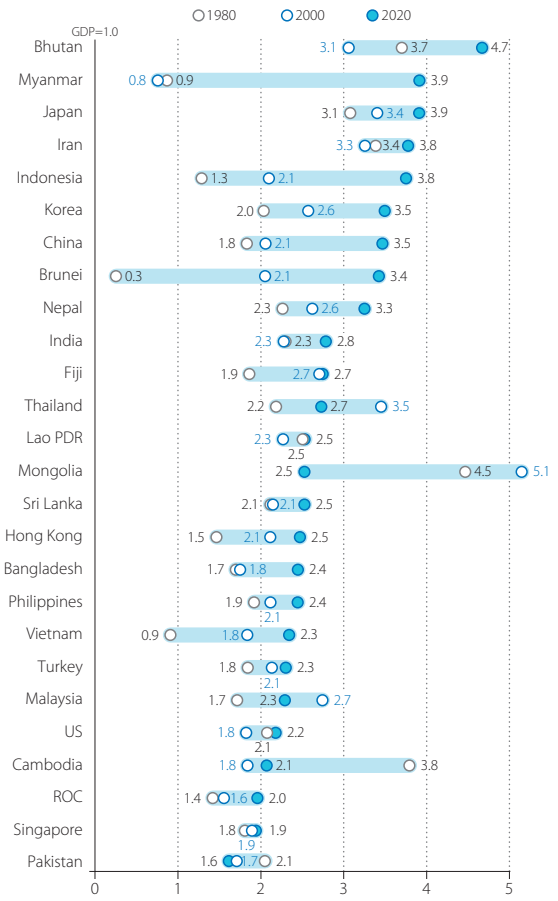

Figure 85 Capital-Output Ratio (Produced Assets)
——Ratio of the beginning-of-period net capital stock to basic-price GDP at current prices in 1980, 2000, and 2020

Unit: Percentage. Source: APO Productivity Database 2022. Note: Net capital stock consists of fixed assets and inventory.

The land database for Asian countries has been developed at KEO since 2016 and these estimates are incorporated in the growth accounting frameworks from the 2019 edition of the Databook. The latest land database used in this edition covers the Asia25 economies. Table 6 defines the types of land use. In this edition, four types of land for economical use (land code: L1100, L1211, L1212, and L1213) from the land database are treated as non-produced assets (asset code: 12–15).

Table 6 Classification of Land

asset code	type of land classification
	L0000 Total land
	L1000 Land for economical use
12	L1100 Land for agricultural use
	L1200 Land for non-agricultural use
	L1210 Land for building use
13	L1211 Land for industrial use
14	L1212 Land for commercial use
15	L1213 Land for residential use
	L1220 Land for other use
	L2000 Land for forest use
	L3000 Land for inland water use

Source: Land database and APO Productivity Database 2022.

The land stock data consists of the current and constant prices estimated by four land-use types. The data on the land area (m2) is available in FAOSTAT for agricultural use (asset code 12) and in national data resources for non-agricultural use (code 13-15). For countries in which the data on the national land area for residential use (code 15) is not available, they are estimated based on multiple approaches using available information and our estimates; e.g., the number of households, average area per unit of household, population/household density in rural and urban areas, stock estimates of dwellings (see Section 9.2.2), and per capita GDP, and so on. If land for industrial use (code 13) is not available from national surveys like the manufacturing census, it is estimated based on our estimates of productivity of industry-use land and the manufacturing GDP. Similarly, land for commercial use (code 14) is estimated based on our estimates of productivity of commercial-use land and the service-sector GDP if it is not available in national data resources.

For countries in which the land stocks at current prices are not available, the samples of land price data are collected to estimate the current-price land stocks. The land price data are available mainly in the urban areas and are collected from market data and survey results such as *The World Land Value Survey* (Japan Association of Real Estate Appraisers: JAREA), *Report on Survey of Urban Land Prices in the Developing World* (International Housing Coalition: IHC), and *Survey on Business Conditions of Japanese Companies in Asia and Oceania* (Japan External Trade Organization: JETRO). With our assumptions on the price gaps between urban and rural areas in each country, these survey prices of urban land areas are discounted to estimate the national level averages. On the land prices for agricultural use, the national level average price is estimated in each country based on our estimates of the discounted present value of future rents, which are based on our estimates of mixed income in the agriculture sector and the rate of return (see Section 9.3.3).

Although further efforts to improve the estimates are required, Figure 86 presents our current estimates of the ratios of total capital stock to basic-price GDP and the land shares of total capital stocks (right axis) as of the beginning of 2020. When including land stocks, the country order of capital-output ratios is considerably revised from Figure 85, which is based on only produced assets. In ROC, Singapore, and Hong Kong, the estimated land shares exceed 70% of total capital stock, which is almost twice 36% in Japan and 31% in the US. In general, the growth rate of the land stock is about constant or much smaller than the growth rate of productive assets. Considering land stock in the measurement of capital inputs would eliminate the bias to underestimate TFP growth rates in many Asian countries.

9.2.7 Capital Services

In production analysis, capital service provides an appropriate concept of capital inputs as recommended in the 2008 SNA. The fundamental assumption in measuring capital services is proportionality between the (productive) capital stock and capital services in each type of asset. Thus, capital services' growth rates

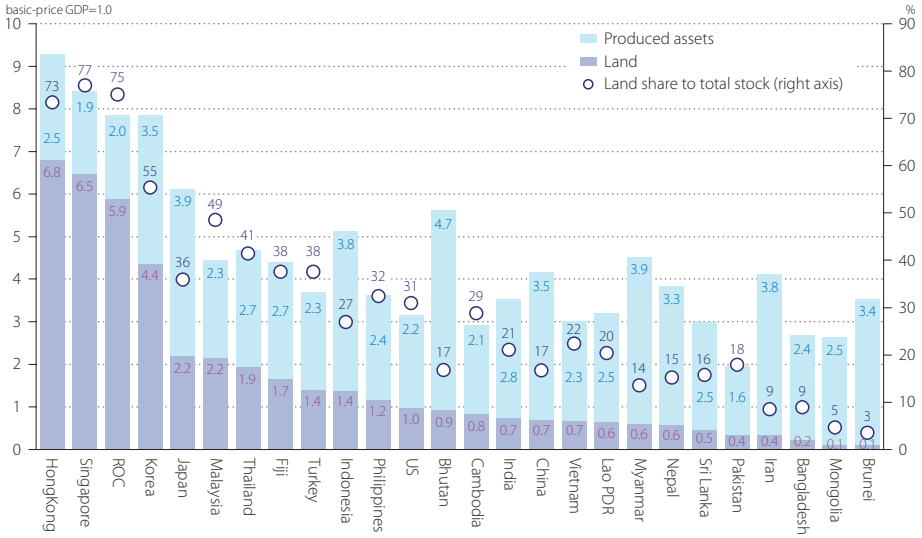

Figure 86 Capital-Output Ratio (Produced Assets and Land)
——Ratio of the beginning-of-period net capital stock to basic-price GDP at current prices in 2020

Unit: Percentage. Sources: Land database and APO Productivity Database 2022.

can differ from capital stock only at the aggregate level. For aggregating different types of capital, the user cost of capital by type of asset is required. This section outlines the methodology of the user cost of capital estimation and presents the estimated results of the endogenous rate of return for Asian countries in the APO Productivity Database 2022.

The user cost of capital of a new asset (with a type of asset denoted as k of the period t), $u^k_{t,0}$, is defined as $q^k_{t-1,0}\{r_t + (1 + \pi^k_t)\,\delta^k_{P,t,0} - \pi^k_t\}$, where r_t, $\delta^k_{P,t,0}$, and $q^k_{t,0}$ are the expected nominal rate of return, cross-section depreciation rate, and asset price, respectively. The asset-specific inflation rate π^k_t is defined as $(q^k_{t,0} / q^k_{t-1,0} - 1)$. The OECD assumes the country-specific ex-ante real rate of return r^* that is constant for the whole period and defines the nominal rate of return as $r_t = (1 + r^*)(1 + p_t) - 1$, where p_t represents the expected overall inflation rate, defined by a five-year centered moving average of the rate of change of the CPI (Schreyer, Bignon, and Dupont 2003).

One of the main difficulties in applying the ex-ante approach for measuring user cost of capital is obtaining proper estimates for real rates of return, which can differ considerably among countries and over time. On the other hand, the ex-post approach originated by Jorgenson and Griliches (1967) allows an estimation based on observed data. Assuming constant returns to scale and competitive markets, capital compensation can be derived from the summation of the capital service cost V^k_t for each asset, which is defined as the product of the user cost of capital and the productive capital stock (i.e., $V_t = \sum_k V^k_t = \sum_k u^k_{t,0} S^k_t$). Based on this identity and the n-equations of the user cost of capital, the n+1 variables of $u^k_{t,0}$ and r_t are simultaneously determined, using the observed capital compensation V_t as the total sum of V^k_t that is not observable in each asset. Note that the depreciation rate $\delta^k_{P,t,0}$ is not independent of the estimated r_t.

The estimated results of the ex-post real rate of return based on $r^*_t = (1 + r_t) / (1 + p_t) - 1$ for the Asia25 economies and the US are presented in Table 7 as the five-year averages in the entire observation period 1970–2020. In 2015–2020, the real rate of return ranged from 3.6–5.3% in Hong Kong, Japan, Korea, and Singapore to over 15% in Bangladesh, Lao PDR, the Philippines, Mongolia, Pakistan, and Sri Lanka, reflecting the difference in country risk. Using these ex-post estimates, the aggregate capital services are

Table 7 Average Ex-Post Real Rate of Return in Asia

	1970–1974	1975–1979	1980–1984	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009	2010–2014	2015–2020
Bangladesh	20.0	14.8	12.4	19.6	21.6	19.6	20.2	20.1	19.9	21.2
Bhutan	8.0	10.9	2.1	6.7	2.0	4.3	7.7	4.6	1.7	4.1
Brunei	53.4	89.5	101.3	57.6	33.3	20.8	30.0	36.8	28.4	12.4
Cambodia	16.4	14.2	3.4	–26.5	–23.5	15.8	16.3	12.5	18.8	14.0
China	14.3	12.8	12.5	8.9	10.0	15.0	17.3	13.7	10.2	8.1
ROC	11.0	9.4	7.9	14.0	2.6	5.5	5.8	3.9	6.0	4.4
Fiji	13.8	13.3	8.8	9.7	18.0	11.1	10.0	10.4	10.0	13.7
Hong Kong	15.2	12.9	1.0	7.8	0.3	2.9	7.6	7.4	3.9	4.0
India	1.2	5.6	0.7	2.2	1.0	3.1	8.2	6.3	3.1	5.8
Indonesia	24.2	23.1	25.0	20.0	16.6	12.5	9.5	11.6	11.3	9.4
Iran	21.9	14.2	2.2	–2.7	–0.8	–3.5	10.5	13.6	7.8	6.7
Japan	–1.1	–2.4	2.5	5.3	1.8	1.2	2.4	3.1	2.3	3.6
Korea	11.0	6.5	3.5	9.9	2.5	0.8	4.7	5.3	3.7	5.3
Lao PDR	–1.7	–13.1	–21.3	–16.0	4.1	–13.4	3.4	17.2	21.0	20.1
Malaysia	19.3	21.0	14.9	12.9	13.0	12.2	14.0	17.5	17.0	13.9
Mongolia	10.0	9.2	8.1	13.0	–42.4	-5.6	10.0	16.5	12.4	17.2
Myanmar	31.4	45.7	43.1	24.6	19.9	19.4	22.1	23.8	39.5	10.5
Nepal	14.8	13.2	8.4	7.4	5.4	6.2	9.4	7.9	3.2	6.0
Pakistan	12.8	10.5	11.6	15.9	12.2	16.8	24.1	16.2	18.6	16.3
Philippines	13.6	14.5	8.0	8.1	7.9	11.1	17.5	15.0	19.0	18.6
Singapore	7.6	9.0	7.0	8.0	6.2	4.4	4.8	8.1	3.7	4.2
Sri Lanka	23.8	24.7	7.7	7.3	5.1	7.2	9.5	10.9	19.8	16.1
Thailand	14.3	11.6	8.7	14.3	10.4	5.4	9.7	10.9	10.9	11.0
Turkey	37.2	16.6	3.1	–0.2	–14.1	–18.7	0.8	17.0	15.2	10.3
Vietnam	18.4	19.1	6.3	–0.6	20.8	23.9	20.4	9.9	9.3	11.9
US	6.2	3.7	3.1	7.0	5.3	8.9	7.9	6.4	8.4	8.8

Unit: Percentage. Source: APO Productivity Database 2022.

measured in this report. The difference caused by the ex-ante and ex-post approaches may provide a modest difference in the growth measure of capital services, regardless of the substantial differences in the rates of return and capital compensations.

9.3 Measurement of Labor Input

9.3.1 Hours Worked

Volume in each labor category can be measured in three units: number of persons in employment, number of filled jobs, and hours actually worked. Given the variations in working patterns and employment legislation over time and across countries, hours worked, if accurately measured, offers the most time-consistent and somewhat internationally comparable unit measuring the volume in each of different types of labor. This is the primary underlying reason for the importance of choosing hours actually worked in productivity analysis, but due to the difficulty in accurately estimating average hours actually worked, it is not always available or comparable across countries. The variety of data sources, definitions, and methodologies available in estimating these labor market variables often leads to a fragmentation of labor market statistics of an individual country concerned, dubious data quality, and incomparability across countries. Here is an attempt to outline some of these intricate measurement issues.

Data on labor volume comes from two main statistical surveys on establishment and household, with respective strengths and weaknesses. Establishment surveys are surveys of firms with stratified sample frames by the size of establishments. The concentration of total employment in a relatively small number of establishments means that this sampling strategy is cost-effective in delivering high-precision labor market estimates with a small sampling error. Questionnaires are designed to be close to the concepts used in company administration. This has both strengths and weaknesses. Data collected is of high quality and accuracy.

On the other hand, changes in legislation and regulation could be a source of instability to the definitions and the data collected. Furthermore, data companies do not collect for administrative purposes, such as unpaid hours and worker characteristics, are unavailable. This greatly limits the variety of labor market data collected through establishments.[76] Information on hours is on paid hours rather than hours actually worked. Certain categories of employment, most notably the self-employed, are not covered. Sometimes small firms, informal employment (which represents more than 50% in some developing Asian countries), or the public sector is also excluded. Because of these limitations, labor market data from establishment surveys often require a raft of adjustments for omissions and definition modifications during the compilation process.

In contrast, household-based labor force surveys (LFS) have full coverage of the economy, although they sometimes incorporate age or geographic exclusions and may have imperfect coverage of the armed forces and other institutional households. Nonetheless, they provide valuable data on certain employment groups, such as the self-employed and unpaid family workers, and the number of multiple job workers. Employment status in LFS is independently determined and is not subject to the criteria used in company records. Most countries follow the International Labour Organization (ILO) definitions. As LFS's are surveyed from the socio-economic perspective, they also provide rich data on worker characteristics relevant to productivity analysis.[77] Table 8 presents the main labor statistics used in this edition of the Databook.

Table 8 Sources of Labor Data

	Sources of Labor Data
Bangladesh	Population and Housing Census, Labour Force Survey
Bhutan	Population and Housing Census, Labour Force Survey, Labour Market Information Bulletin,
Brunei	Population and Housing Census, Labour Force Survey
Cambodia	General Population Census, Inter-Censal Population Survey, Labor Force Survey, Socio-Economic Survey
China	China Statistical Yearbook, China Labor Statistical Yearbook, Population Census, 1% National Population Sample Survey
ROC	Population and Housing Census, Yearbook of Manpower Survey Statistics in Taiwan Area, Manpower Utilization Survey
Fiji	Census of Population and Housing, Employment and Unemployment Survey, Annual Employment Survey
Hong Kong	Population Census, Population By-Census, General Household Survey, Annual Earnings and Hours Survey
India	Census of India, Employment and Unemployment Survey, National Sample Survey
Indonesia	Population and Housing Census, Labor Force Situation in Indonesia, Laborer Situation in Indonesia
Iran	National Population and Housing Census, Labour Force Survey, Iran Salary Report
Japan	Population Census, Labor Force Survey, Census of Manufacture, Basic Survey on Wage Structure, Monthly Labour Survey, Japan's System of National Accounts
Korea	Population and Housing Census, Economically Active Population Survey, Employment Structure Survey, Wage Structure Survey
Lao PDR	Population Census, Labour Force Survey, Urban Labour Force Survey, ADB Key Indicators for Asia and the Pacific
Malaysia	Population and Housing Census, Labour Force Survey, Salaries & Wages Survey
Mongolia	Population and Housing Census, Labour Force Survey, Survey on Wages and Salaries, A Pilot Time Use Survey
Myanmar	Population and Housing Census, Labour Force Survey, Salary Survey Report, Survey on Business Conditions of Japanese Companies in Asia and Oceania
Nepal	Population and Housing Census, Labor Force Survey
Pakistan	Population Census, Labour Force Survey, Census of Manufacturing Industries
Philippines	Labor Force Survey
Singapore	Population Census, Labor Force Survey, Singapore Yearbook of Manpower Statistics, General Household Survey
Sri Lanka	Census of Population and Housing, Labour Force Survey
Thailand	Population and Housing Census, Labor Force Survey
Turkey	Population and Housing Census, Labour Force Survey, Income and Living Conditions Survey
Vietnam	Population and Housing Census, Labour Force and Employment Survey, Living Stabdards Survey, Vietnam Statistical Data in the 20th Century, Vietnam Economy 1986–1991

Source: Asia QALI Database 2022 in Section 9.3.2.

76: Employment as measured is necessarily based on jobs rather than on persons employed, as persons holding multiple jobs with different establishments cannot be identified and will be counted more than once.

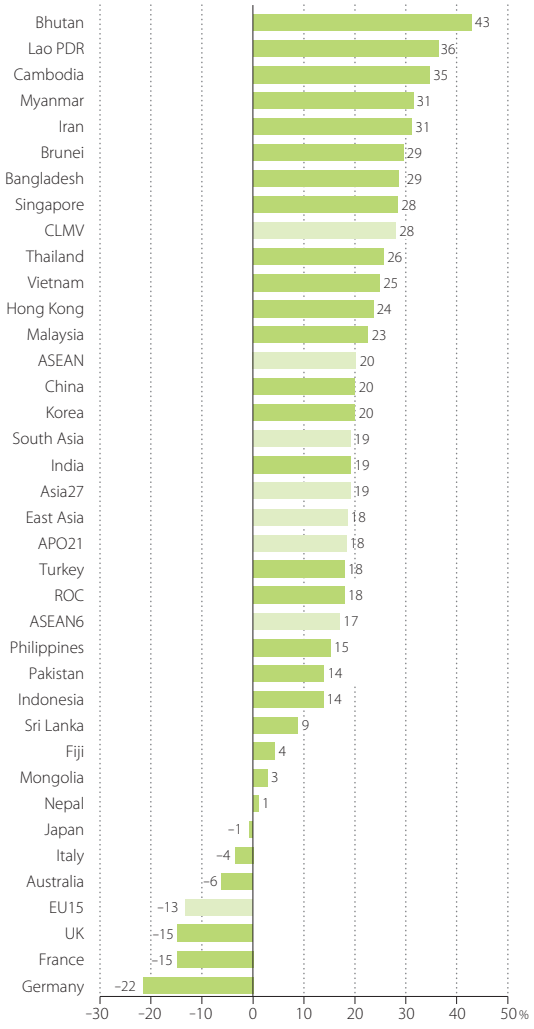

Figure 87 Hours Worked Per Worker, Relative to the US

——Hours worked per worker in 2010–2020

Unit: Percentage (average annual hours worked per worker). Sources: Official national accounts and labor force survey in each country (including author adjustments) for Asian countries and OECD Stat for the EU15, France, Germany, Italy, and the UK.

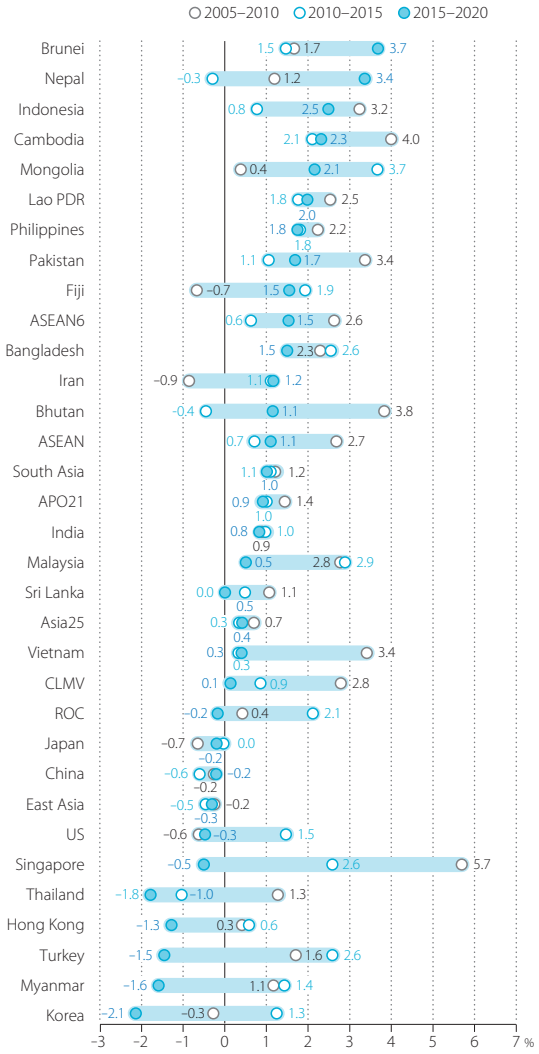

Figure 88 Hours Worked Growth in the Recent Periods

——Growth of hours worked in 2015–2020, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: Asia QALI Database 2022.

The common practice of statistical offices has been combining information from the establishment and household surveys in the national accounts, with a view of using the most reliable aspects of each survey. This seems to be the most promising avenue forward in improving the quality and consistency of data on labor input. However, statistical offices could still differ greatly in their methodologies, especially in estimating the annual average hours worked per job/person, depending on their starting points, namely LFS data or enterprise data. All these must be considered in international comparisons of productivity.

77: The major weakness of the LFS, however, is data precision. By relying on the recollection of the respondents, their response also depends on perception. Response errors could, therefore, arise from confusion of concepts and imprecise recollection of the respondents concerning work patterns and pay during the reference week. Another source of error originates from the proxy response, which relies on the proxy's perception and knowledge of another household member. A high level of proxy responses could, therefore, reduce the reliability of the data collected.

Figure 87 presents a cross-country comparison of average annual hours worked per worker for 2010–2020, relative to the level of the US, based on the Asia QALI Database 2022 in Section 9.3.2. It indicates that workers in Asian countries work much longer hours than those in the US and Europe. In many countries sampled, the difference in annual hours worked per person relative to the US is more than 10% of the US level.[78] Prolonged working hours are observed in Asian countries regardless of their stage of development, spanning low-income countries such as Bangladesh and Cambodia to high-income countries such as Singapore and Korea. An exception is Japan. Workers in Japan are likely to work much shorter hours than those in other Asian countries. However, compared with the EU15, hours worked by workers in Japan are still about 12 percentage points greater.

Figure 88 presents the growth of hours worked for the Asia25 economies in 2015–2020 (including the impact of the pandemic), compared with those in 2010–2015 and 2005–2010. Singapore experienced a continuous slowdown in hours-worked growth over these sub-periods. The change in growth rates varies widely by country and over periods.

9.3.2 Quality-adjusted Labor Input

In productivity analysis, labor inputs at the aggregate level are expected to be quality-adjusted to reflect workforce heterogeneity, as recommended in the SNA 2008 (United Nations 2009).[79] To adjust total hours worked for quality would require information on worker characteristics to differentiate the workforce into different types, which are then weighed by their marginal productivity and approximated by their respective shares of total compensation. In the stage of high economic growth, labor quality growth can be a significant factor, as well as the increase in hours worked, improvement in the educational attainment of workers, and a shift from the self-employed (e.g., in agriculture or informal service sectors) to employees (in manufacturing or formal service sectors).

Deriving a quality-adjusted labor input (QALI) measure is a data-demanding exercise. Even if LFS provides the required information, researchers often run into the consistency issues discussed in Section 9.3.1 and sample size problems as they break down the workforce into fine categories. Covering the Asia25 economies, the data on employment and wage/incomes have been collected by type of labor categories since 2013 at KEO, based mainly on LFS and Population Census listed in Table 8. The developed data is called as Asia QALI Database. This data consists of the number of workers, hours worked per worker, and hourly wages, which are cross-classified by gender, educational attainment, age, and employment status. The first report on developing the Asia QALI Database for South Asian countries was published in Nomura and Akashi (2017). In the second report, a comprehensive revision was conducted by Nomura and Shirane (2020) for the Vietnamese economy. The Asia QALI Database 2022 provides the estimates of total hours worked, labor qualities, and QALI in the APO Productivity Database 2022.[80]

Figure 89 presents the long time-series comparisons of the average schooling years observed in terms of workers from 1970 to 2020 as an intuitive indicator of labor quality based on the Asia QALI Database 2022. Although there is a significant range in 2020 from 4.8 years (Nepal) to 13.3 years (Japan), the average years have increased since 1970 in almost all economies in Asia. In this measure, three-country groups

78: Shorter hours worked in Nepal are due to frequent general strikes called "Banda", which are mainly led by some political parties. According to the Nepal Human Rights Commission, Banda was called 821 times in various regions in 2009, and economic activities were closed during Banda.

79: The SNA 2008 discusses three standardized measures of labor inputs, evaluating "examples in increasing order of being difficult to measure are full-time equivalents, total actual hours worked, and quality-adjusted labour inputs based on models" in para 19.42 in United Nations (2009).

80: Data on hours worked of self-employed and contributing family workers by type of labor category in the Asia QALI is also used to estimate labor income within mixed income (Section 9.3.3).

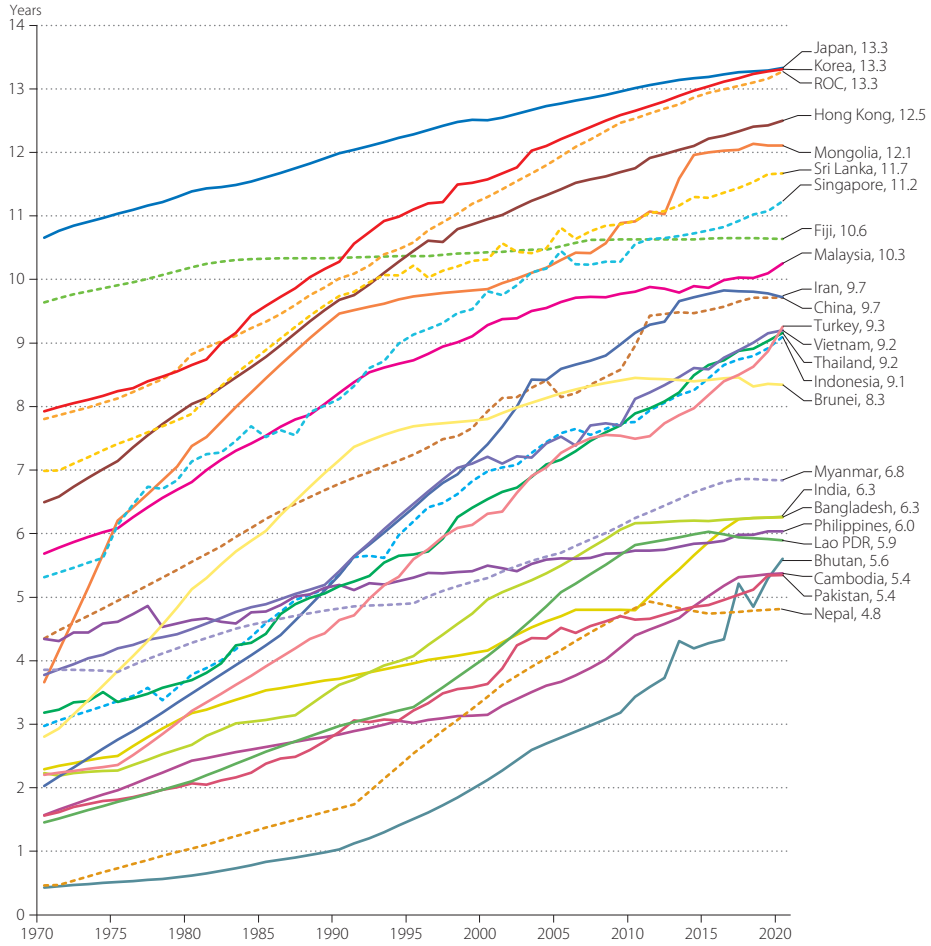

Figure 89 Average Schooling Years of Workers

Unit: Years. Source: Asia QALI Database 2022.

are observed: i) countries with over 11 schooling years on average, ii) countries with 8–11 years, and iii) countries with less than seven years in 2020. The first group consists of East Asian countries and Asian Tigers; Japan, Korea, and the ROC are the leading countries (13.3 years), followed by Hong Kong (12.5 years), Mongolia (12.1 years), Sri Lanka (11.7 years), and Singapore (11.2 years). The second group consists of ASEAN6, China, Fiji, Turkey, and Vietnam. The third group consists of South Asian countries and CLMV but Vietnam. This chart shows that it takes a long time for each country to improve its average educational background.

9.3.3 Labor Share

The labor share, which is defined as the ratio of labor compensation of total employment to GDP at basic prices, is one of the key factors in determining TFP growth. The estimates on the COE (compensation of employees) are not fully available in the official national accounts in Asian countries. Figure 90 summarizes the availability of the COE estimates in the official national accounts and the input-output tables in each country (Table 3 in Section 9.1.7). Currently, the national accounts in Bangladesh, Bhutan, Indonesia, the Lao PDR, Myanmar, Pakistan, and Vietnam do not fully publish the COE estimates. In addition, in some countries like Cambodia and Iran, the estimates are not fully available for the entire period of our

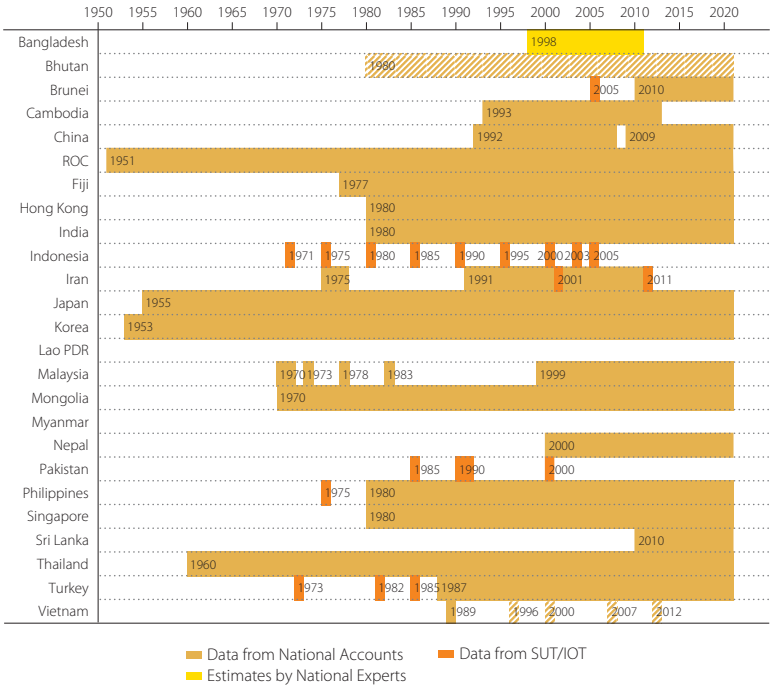

Figure 90 Availability of COE Estimates

Sources: Official national accounts and SUT/IOT in each country. Note: Hatched areas show the periods in which only the data mingled with operating surplus or mixed income is available.

observation of 1970–2020. In such cases, the COE is estimated or extrapolated by the estimates based on the Asia QALI Database.

The compensation for the self-employed and contributing family workers is not separately estimated in the national accounts but is combined with returns to capital in mixed income. This edition of the Databook follows the revised estimates in the Asia QALI Database 2022 (Section9.3.2), in which the different methodologies are applied in agriculture and non-agriculture industries. In the agriculture industry, the capital income is measured based on our estimates of the returns to the capital of land for agriculture use (asset code 12 in Table 6) and of other fixed assets.[81] And the labor income in agriculture is measured as a residual of the basic-price GDP minus our estimates of the returns to capital. In non-agriculture industries, the wage differential ratio (WDR) in hourly wages of non-employees to employees in each elementary group of labor category is assumed in each country. Time-invariant WDR is assumed with a range of 0.2–0.5 by country.[82]

81: Since the capital stock is not measured at the industry level in the APO Productivity Database, the capital stock shares are estimated based on the value-added share of the agriculture industry in the case that the industry-level official estimates are not available.

82: The WDR is set at 0.5 for Japan, 0.3 for the Asian Tigers, and 0.5 for CLMV (except Myanmar), Iran and Turkey, and 0.2 for other countries.

Appendix

A.1 Purchasing Power Parities

Purchasing power parities (PPPs) are indispensable inputs into economic research and policy analysis involving cross-country comparisons of macroeconomic aggregates. They affect a double conversion of macroeconomic measures, estimated in national currencies and price levels, into comparable cross-country volume measures. These are expressed in a common currency and at a uniform price level. PPPs are price relatives that show the ratio of the prices in national currencies of single or composite goods and services in different countries. They are compiled within the International Comparisons Program (ICP), which is managed by the World Bank. Comparisons are made from the expenditure side of GDP. To this end, the ICP compiles PPPs by conducting worldwide surveys at regular intervals (currently, every six years) to collect comparable price and expenditure data for the entire range of final goods and services that make up the final expenditures on GDP. In April 2020, the new benchmark PPP estimates were published by the ICP 2017 round (World Bank 2020a).

The Databook mainly provides the cross-country comparison of economic volumes. To obtain comparable volume measures, the Databook uses the constant PPP approach, which relies not on a time series of PPPs but one of the benchmark estimates. This edition of the Databook uses the benchmark estimates by the ICP 2017 round. The use of this approach creates national series for volumes at the prices of a common reference year (2020) and deflates these by the PPP for a fixed year (2017).

The left chart of Figure 91 shows the revisions of PPPs in Asian countries at the ICP 2017 round in comparison with the ICP 2011 round, which has provided the benchmark estimate for the past Databook

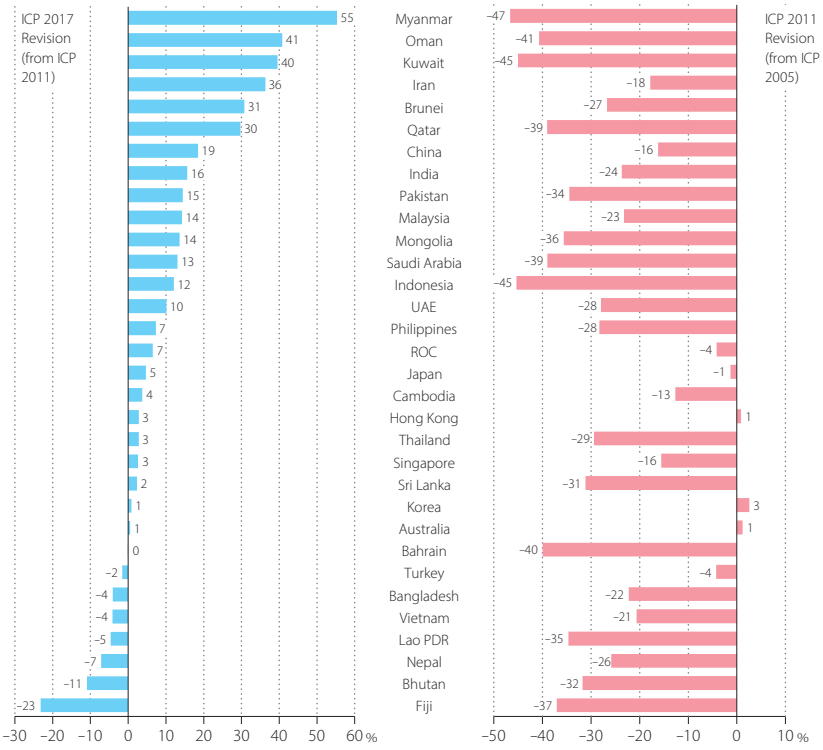

Figure 91 Revisions of PPP for GDP in the ICP 2005, 2011, and 2017 Rounds
——Ratios of the 2017 PPP to the 2011 PPP and the 2011 PPP to the 2005 PPP.

Unit: Percentage. Source: World Bank (2008, 2014, and 2020a). Note: In comparing the 2017 PPP to the 2011 PPP, the 2011 PPP is extrapolated for 2017; and in comparing the 2011 PPP to the 2005 PPP, the 2005 PPP is extrapolated for 2011.

series from 2014 to 2019. The revision at the ICP 2011 round from the ICP 2005 round is presented in the right chart. The 2017 benchmark PPP for 17 Asian economies is more than 5% higher than suggested by their extrapolated equivalents from the 2011 benchmark. The upward revision on PPP reduces the relative sizes of these economies in cross-country level comparison. Compared to the revision on the ICP 2011 round from the 2005 round (in the right chart of Figure 91), the upward revisions by the ICP 2017 round have a property to partly offset the past downward revisions on PPP by the 2011 round. The cross-country level comparison has to face a larger change to be revised, compared to the cross-country growth comparison. The readers should bear in mind these circumstances.

A.2 Data on Non-Member Economies

For China, multiple data sources have been used; GDP for the whole economy, industry GDP, final demands, employment, and income data are taken from *China Statistical Yearbook* (and *China National Income 1952–1995* for our backward estimates before 1969); time-series data of GFCF by type of asset during 1952–2020 at current and constant prices are estimated at KEO based on *Statistics on Investment in Fixed Assets of China 1950–2000, China Statistical Yearbook, 1987, 1992, 1997, 2002, 2007, 2012, and 2017–2020 Input–Output Tables of China, Manufacturing Census in China,* and the import data from *China Customs Statistics*.[83]

Zhang and Zhu (2015) point out that the official Chinese national accounts have significantly underestimated household consumption. In the previous edition of the Databook (APO 2021), the productivity account for China was revised based on our intensive study with Professor W. Erwin Diewert (University of British Columbia). Our revision work on the Chinese growth accounting focused mainly on the imputed rent, the labor share, quality-adjusted labor input, and the price index on government consumption. In particular, some imputed rents for free housing and owner-occupied housing (including land) were added to household consumption and GDP in the Chinese official national accounts. Based on our examinations, China's TFP growth rate has been revised to drop significantly (see footnote 39 in Section 5.3).

The data source for the EU15, the EU27, France, Germany, Italy, and the UK is the OECD.Stat (https://stats.oecd.org/ and Eurostat (https://ec.europa.eu/eurostat). The data sources for the US, Australia, and Bhutan are the US Bureau of Economic Analysis (https://www.bea.gov/), the Australian Bureau of Statistics (https://www.abs.gov.au/), and the National Statistics Bureau of Bhutan (https://www.nsb.gov.bt/) and UNDESA (2016), respectively.

The exchange rates used in the Databook series are adjusted, called the Analysis of Main Aggregate (UNSD database) rates, in the UNSD National Accounts Main Aggregate Database. The AMA rates coincide with IMF rates except for some periods in countries with official fixed exchange rates and high inflation when there could be a serious disparity between real GDP growth and growth converted to US dollars based on IMF rates. In such cases, the AMA adjusts the IMF-based rates by multiplying the growth rate of the GDP deflator relative to the US.

The IMF's Government Finance Statistics (GFS) supplements tax data of member economies. From its tax revenue data, "taxes on goods and services" and "taxes on imports" are used for calculating taxes on products. From its expenditure data, "subsidies" are taken. Data from the GFS play a key role in adjusting GDP at market prices to GDP at basic prices. The energy consumption and CO2 emissions data are based on IEA (2021a and 2021b).

83: Holz (2006) provides a useful reference on Chinese official statistics.

A.3 Supplementary Tables

Table 9 GDP using Exchange Rate

——GDP at current market prices, using the annual average exchange rate

1970		(%)
Japan	209	100.0
China	102	49.1
India	64	30.4
Turkey	24	11.7
Iran	11	5.4
Pakistan	10	4.8
Indonesia	10	4.7
Bangladesh	9.9	4.7
Korea	9.0	4.3
Thailand	7.3	3.5
Philippines	6.8	3.2
ROC	5.8	2.8
Saudi Arabia	5.4	2.6
Malaysia	3.9	1.9
Hong Kong	3.8	1.8
Kuwait	3.0	1.4
Sri Lanka	2.8	1.4
Myanmar	2.7	1.3
Singapore	1.9	0.9
Nepal	1.3	0.6
Vietnam	1.2	0.6
UAE	1.1	0.5
Cambodia	0.8	0.4
Qatar	0.5	0.3
Bahrain	0.4	0.2
Oman	0.3	0.1
Brunei	0.2	0.1
Fiji	0.2	0.1
Lao PDR	0.1	0.1
Mongolia	0.1	0.1
Bhutan	0.1	0.0
(region)		
APO21	383	183.4
Asia25	488	233.9
Asia31	499	239.0
East Asia	330	158.0
South Asia	88	42.0
ASEAN	35	16.7
ASEAN6	30	14.4
CLMV	4.8	2.3
GCC	11	5.1
(reference)		
Australia	45	21.6
France	191	91.6
Germany	312	149.6
Italy	195	93.4
UK	201	96.3
US	1,073	514.0
EU15	1,250	598.4

1980		(%)
Japan	1,111	100.0
China	348	31.4
India	190	17.1
Saudi Arabia	165	14.9
Iran	98	8.8
Turkey	92	8.3
Indonesia	80	7.2
Korea	65	5.9
UAE	44	4.0
ROC	42	3.8
Thailand	33	3.0
Philippines	33	3.0
Kuwait	30	2.7
Hong Kong	29	2.6
Malaysia	25	2.2
Pakistan	24	2.2
Bangladesh	19	1.7
Singapore	12	1.1
Qatar	7.9	0.7
Oman	7.2	0.6
Brunei	6.2	0.6
Myanmar	5.9	0.5
Sri Lanka	4.9	0.4
Bahrain	3.5	0.3
Nepal	2.9	0.3
Fiji	1.2	0.1
Vietnam	1.0	0.1
Cambodia	0.7	0.1
Mongolia	0.5	0.0
Lao PDR	0.3	0.0
Bhutan	0.1	0.0
(region)		
APO21	1,865	167.9
Asia25	2,226	200.4
Asia31	2,483	223.6
East Asia	1,596	143.7
South Asia	241	21.7
ASEAN	197	17.7
ASEAN6	189	17.0
CLMV	8.0	0.7
GCC	258	23.2
(reference)		
Australia	173	15.6
France	533	47.9
Germany	808	72.7
Italy	552	49.7
UK	484	43.6
US	2,857	257.2
EU15	3,334	300.1

1990		(%)
Japan	3,185	100.0
China	434	13.6
India	335	10.5
Korea	283	8.9
Turkey	204	6.4
ROC	166	5.2
Indonesia	127	4.0
Saudi Arabia	119	3.7
Iran	95	3.0
Thailand	89	2.8
Hong Kong	77	2.4
UAE	51	1.6
Philippines	47	1.5
Pakistan	46	1.4
Malaysia	45	1.4
Singapore	39	1.2
Bangladesh	31	1.0
Kuwait	19	0.6
Oman	13	0.4
Sri Lanka	9.4	0.3
Qatar	7.5	0.2
Vietnam	6.5	0.2
Myanmar	6.1	0.2
Nepal	5.0	0.2
Bahrain	4.5	0.1
Brunei	3.9	0.1
Cambodia	1.8	0.1
Mongolia	1.6	0.0
Fiji	1.4	0.0
Lao PDR	0.9	0.0
Bhutan	0.3	0.0
(region)		
APO21	4,796	150.6
Asia25	5,241	164.6
Asia31	5,455	171.3
East Asia	4,147	130.2
South Asia	427	13.4
ASEAN	366	11.5
ASEAN6	351	11.0
CLMV	15	0.5
GCC	214	6.7
(reference)		
Australia	324	10.2
France	1,025	32.2
Germany	1,534	48.2
Italy	1,054	33.1
UK	972	30.5
US	5,963	187.2
EU15	6,417	201.5

2000		(%)
Japan	4,968	100.0
China	1,323	26.6
Korea	576	11.6
India	482	9.7
ROC	331	6.7
Turkey	274	5.5
Saudi Arabia	191	3.9
Hong Kong	172	3.5
Indonesia	168	3.4
Thailand	127	2.6
Iran	113	2.3
UAE	106	2.1
Singapore	96	1.9
Malaysia	95	1.9
Philippines	84	1.7
Pakistan	79	1.6
Bangladesh	52	1.0
Kuwait	38	0.8
Vietnam	33	0.7
Oman	22	0.5
Sri Lanka	19	0.4
Qatar	18	0.4
Bahrain	8.4	0.2
Myanmar	7.8	0.2
Nepal	7.1	0.1
Brunei	6.6	0.1
Cambodia	3.7	0.1
Lao PDR	1.8	0.0
Fiji	1.7	0.0
Mongolia	1.4	0.0
Bhutan	0.4	0.0
(region)		
APO21	7,683	154.6
Asia25	9,021	181.6
Asia31	9,406	189.3
East Asia	7,371	148.4
South Asia	639	12.9
ASEAN	622	12.5
ASEAN6	576	11.6
CLMV	46	0.9
GCC	385	7.7
(reference)		
Australia	410	8.2
France	1,589	32.0
Germany	2,235	45.0
Italy	1,541	31.0
UK	1,558	31.4
US	10,251	206.3
EU15	9,932	199.9
EU27	10,947	220.3

2010		(%)
China	6,421	100.0
Japan	5,759	89.7
India	1,670	26.0
Korea	1,144	17.8
Turkey	777	12.1
Indonesia	756	11.8
Saudi Arabia	533	8.3
Iran	516	8.0
ROC	444	6.9
Thailand	342	5.3
UAE	298	4.6
Malaysia	255	4.0
Singapore	240	3.7
Hong Kong	229	3.6
Philippines	208	3.2
Pakistan	175	2.7
Qatar	128	2.0
Bangladesh	126	2.0
Kuwait	118	1.8
Vietnam	116	1.8
Oman	66	1.0
Sri Lanka	56	0.9
Myanmar	37	0.6
Bahrain	26	0.4
Nepal	21	0.3
Brunei	14	0.2
Cambodia	11	0.2
Lao PDR	7.4	0.1
Mongolia	7.2	0.1
Fiji	3.1	0.0
Bhutan	1.6	0.0
(region)		
APO21	12,864	200.3
Asia25	19,338	301.2
Asia31	20,506	319.4
East Asia	14,004	218.1
South Asia	2,050	31.9
ASEAN	1,987	30.9
ASEAN6	1,815	28.3
CLMV	172	2.7
GCC	1,168	18.2
(reference)		
Australia	1,301	20.3
France	2,336	36.4
Germany	3,183	49.6
Italy	2,084	32.5
UK	2,297	35.8
US	15,049	234.4
EU15	14,606	227.5
EU27	15,270	237.8

2020		(%)
China	15,330	100.0
Japan	5,040	32.9
India	2,646	17.3
Korea	1,638	10.7
Iran	1,181	7.7
Indonesia	1,063	6.9
Turkey	720	4.7
Saudi Arabia	713	4.7
ROC	669	4.4
Thailand	505	3.3
Bangladesh	374	2.4
UAE	373	2.4
Philippines	361	2.4
Hong Kong	347	2.3
Singapore	345	2.3
Malaysia	337	2.2
Vietnam	273	1.8
Pakistan	257	1.7
Qatar	150	1.0
Kuwait	110	0.7
Sri Lanka	81	0.5
Oman	75	0.5
Bahrain	35	0.2
Nepal	34	0.2
Myanmar	33	0.2
Cambodia	25	0.2
Lao PDR	19	0.1
Mongolia	13	0.1
Brunei	12	0.1
Fiji	4.5	0.0
Bhutan	2.3	0.0
(region)		
APO21	15,934	103.9
Asia25	31,311	204.3
Asia31	32,767	213.7
East Asia	23,037	150.3
South Asia	3,393	22.1
ASEAN	2,975	19.4
ASEAN6	2,624	17.1
CLMV	351	2.3
GCC	1,455	9.5
(reference)		
Australia	1,423	9.3
France	3,147	20.5
Germany	4,511	29.4
Italy	2,492	16.3
UK	3,082	20.1
US	20,894	136.3
EU15	19,599	127.8
EU27	18,614	121.4

Unit: Billions of US dollars.
Sources: Official national accounts in each country, including author adjustments.
Note: See Section 9.1 for the adjustments made to harmonize GDP coverage across countries.

App.

Table 10 GDP using PPP

——GDP at constant market prices, using the 2017 PPP, reference year 2020

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2020		(%)
Japan	1,661	100.0	Japan	2,734	100.0	Japan	4,270	100.0	China	5,184	100.0	China	13,521	100.0	China	23,957	100.0
India	717	43.2	China	1,051	38.4	China	2,208	51.7	Japan	4,844	93.4	India	5,490	40.6	India	8,885	37.1
China	639	38.5	India	964	35.3	India	1,577	36.9	India	2,588	49.9	Japan	5,136	38.0	Japan	5,323	22.2
Saudi Arabia	461	27.7	Saudi Arabia	703	25.7	Indonesia	865	20.3	Indonesia	1,302	25.1	Indonesia	2,140	15.8	Indonesia	3,296	13.8
Turkey	283	17.0	Indonesia	472	17.3	Saudi Arabia	772	18.1	Korea	1,134	21.9	Korea	1,824	13.5	Turkey	2,702	11.3
Iran	280	16.8	Turkey	418	15.3	Turkey	695	16.3	Turkey	982	18.9	Turkey	1,514	11.2	Korea	2,326	9.7
Indonesia	212	12.7	Iran	377	13.8	Korea	571	13.4	Saudi Arabia	931	18.0	Saudi Arabia	1,305	9.7	Saudi Arabia	1,718	7.2
Bangladesh	125	7.5	Korea	213	7.8	Iran	473	11.1	Iran	685	13.2	Iran	1,265	9.4	ROC	1,320	5.5
Philippines	106	6.4	Philippines	192	7.0	Thailand	407	9.5	ROC	654	12.6	Thailand	1,017	7.5	Iran	1,314	5.5
Pakistan	106	6.4	UAE	189	6.9	ROC	331	7.8	Thailand	643	12.4	ROC	988	7.3	Thailand	1,294	5.4
Kuwait	104	6.3	Thailand	186	6.8	Pakistan	312	7.3	Pakistan	516	10.0	Pakistan	751	5.6	Pakistan	1,070	4.5
Thailand	92	5.5	Pakistan	167	6.1	Philippines	248	5.8	Malaysia	367	7.1	Malaysia	614	4.5	Bangladesh	981	4.1
Korea	86	5.2	ROC	140	5.1	UAE	198	4.6	Philippines	363	7.0	Philippines	587	4.3	Philippines	922	3.8
Vietnam	61	3.6	Bangladesh	117	4.3	Malaysia	184	4.3	UAE	331	6.4	Bangladesh	498	3.7	Malaysia	894	3.7
UAE	50	3.0	Malaysia	102	3.7	Bangladesh	170	4.0	Vietnam	264	5.1	Vietnam	496	3.7	Vietnam	843	3.5
ROC	49	3.0	Vietnam	91	3.3	Hong Kong	167	3.9	Hong Kong	258	5.0	UAE	487	3.6	UAE	650	2.7
Malaysia	47	2.8	Hong Kong	86	3.1	Vietnam	127	3.0	Bangladesh	257	5.0	Singapore	404	3.0	Singapore	572	2.4
Hong Kong	35	2.1	Kuwait	84	3.1	Singapore	105	2.5	Singapore	220	4.2	Hong Kong	382	2.8	Hong Kong	444	1.9
Sri Lanka	31	1.9	Singapore	51	1.9	Sri Lanka	72	1.7	Sri Lanka	121	2.3	Sri Lanka	211	1.6	Sri Lanka	292	1.2
Qatar	25	1.5	Sri Lanka	47	1.7	Kuwait	61	1.4	Kuwait	94	1.8	Kuwait	190	1.4	Qatar	255	1.1
Singapore	22	1.3	Qatar	32	1.2	Oman	60	1.4	Oman	90	1.7	Qatar	187	1.4	Kuwait	211	0.9
Myanmar	18	1.1	Myanmar	30	1.1	Myanmar	39	0.9	Myanmar	73	1.4	Oman	130	1.0	Oman	143	0.6
Nepal	17	1.0	Oman	29	1.0	Nepal	38	0.9	Qatar	61	1.2	Myanmar	122	0.9	Myanmar	143	0.6
Cambodia	13	0.8	Brunei	25	0.9	Qatar	31	0.7	Nepal	61	1.2	Nepal	88	0.7	Nepal	126	0.5
Brunei	11	0.7	Nepal	24	0.9	Brunei	19	0.4	Bahrain	26	0.5	Bahrain	58	0.4	Bahrain	77	0.3
Bahrain	7.0	0.4	Bahrain	14	0.5	Bahrain	16	0.4	Brunei	25	0.5	Cambodia	47	0.3	Cambodia	76	0.3
Lao PDR	6.1	0.4	Lao PDR	7.9	0.3	Lao PDR	12	0.3	Cambodia	22	0.4	Lao PDR	40	0.3	Lao PDR	62	0.3
Oman	5.2	0.3	Cambodia	7.5	0.3	Cambodia	11	0.3	Lao PDR	21	0.4	Brunei	26	0.2	Mongolia	41	0.2
Mongolia	3.4	0.2	Mongolia	6.1	0.2	Mongolia	10	0.2	Mongolia	11	0.2	Mongolia	21	0.2	Brunei	30	0.1
Fiji	3.3	0.2	Fiji	5.3	0.2	Fiji	6.6	0.2	Fiji	8.4	0.2	Fiji	9.6	0.1	Fiji	11	0.0
Bhutan	0.5	0.0	Bhutan	0.8	0.0	Bhutan	1.5	0.0	Bhutan	2.5	0.0	Bhutan	5.7	0.0	Bhutan	8.8	0.0
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	3,955	238.1	APO21	6,408	234.3	APO21	10,652	249.5	APO21	15,321	295.5	APO21	23,522	174.0	APO21	32,792	136.9
Asia25	4,624	278.4	Asia25	7,515	274.8	Asia25	12,920	302.6	Asia25	20,605	397.5	Asia25	37,197	275.1	Asia25	56,931	237.6
Asia31	5,276	317.6	Asia31	8,566	313.3	Asia31	14,057	329.2	Asia31	22,137	427.0	Asia31	39,553	292.5	Asia31	59,985	250.4
East Asia	2,474	149.0	East Asia	4,231	154.7	East Asia	7,557	177.0	East Asia	12,084	233.1	East Asia	21,873	161.8	East Asia	33,411	139.5
South Asia	997	60.0	South Asia	1,319	48.2	South Asia	2,170	50.8	South Asia	3,546	68.4	South Asia	7,044	52.1	South Asia	11,363	47.4
ASEAN	586	35.3	ASEAN	1,165	42.6	ASEAN	2,017	47.2	ASEAN	3,300	63.7	ASEAN	5,492	40.6	ASEAN	8,131	33.9
ASEAN6	489	29.4	ASEAN6	1,028	37.6	ASEAN6	1,827	42.8	ASEAN6	2,921	56.4	ASEAN6	4,788	35.4	ASEAN6	7,008	29.3
CLMV	97	5.8	CLMV	137	5.0	CLMV	190	4.4	CLMV	379	7.3	CLMV	704	5.2	CLMV	1,123	4.7
GCC	651	39.2	GCC	1,051	38.4	GCC	1,137	26.6	GCC	1,532	29.6	GCC	2,356	17.4	GCC	3,054	12.7
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	315	19.0	Australia	421	15.4	Australia	566	13.3	Australia	803	15.5	Australia	1,090	8.1	Australia	1,364	5.7
France	1,160	69.8	France	1,406	51.4	France	1,844	43.2	France	2,414	46.6	France	2,788	20.6	France	3,020	12.6
Germany	1,139	68.5	Germany	1,629	59.6	Germany	2,086	48.8	Germany	2,559	49.4	Germany	2,899	21.4	Germany	3,012	12.6
Italy	1,885	113.5	Italy	2,486	90.9	Italy	3,017	70.7	Italy	3,698	71.3	Italy	4,030	29.8	Italy	4,501	18.8
UK	1,200	72.3	UK	1,751	64.0	UK	2,201	51.6	UK	2,582	49.8	UK	2,664	19.7	UK	2,449	10.2
US	5,722	344.5	US	7,812	285.7	US	10,719	251.0	US	14,993	289.2	US	17,834	131.9	US	20,894	87.2
EU15	7,393	445.1	EU15	10,116	369.9	EU15	12,925	302.7	EU15	16,186	312.2	EU15	18,261	135.1	EU15	19,260	80.4
									EU27	15,263	294.4	EU27	17,427	128.9	EU27	18,758	78.3

Unit: Billions of US dollars (as of 2020).
Sources: Official national accounts in each country, including author adjustments.
Note: See Section 9.1 for the adjustments made to harmonize GDP coverage across countries.

Table 11 GDP Growth

——Growth rate of GDP at constant market prices

1995–2000		2000–2005		2005–2010		2010–2015		2015–2020		2015–2019		2019–2020	
Qatar	9.8	Kuwait	12.7	Qatar	13.4	Mongolia	9.8	Bangladesh	6.4	Cambodia	7.4	Nepal	6.1
Cambodia	7.9	Cambodia	9.3	China	10.7	Bangladesh	7.2	Lao PDR	5.6	Bangladesh	7.2	Bangladesh	3.4
Myanmar	7.8	Qatar	9.0	Bhutan	9.9	China	7.0	Nepal	5.5	Philippines	6.6	ROC	3.1
China	7.4	China	8.4	India	8.1	Turkey	6.8	Vietnam	5.5	Lao PDR	6.2	Lao PDR	3.1
Lao PDR	7.3	Bahrain	8.0	Bahrain	7.8	Bhutan	6.5	Cambodia	5.0	Vietnam	6.2	Vietnam	2.6
Vietnam	7.0	Iran	7.0	Singapore	7.2	India	6.4	Turkey	4.8	China	5.6	Iran	2.5
Bhutan	6.7	India	6.9	Bangladesh	7.1	Qatar	6.3	China	4.5	Turkey	5.5	Turkey	1.9
UAE	6.6	Vietnam	6.8	Lao PDR	7.0	Myanmar	6.1	Philippines	3.4	India	5.4	Brunei	1.1
Singapore	6.2	Bhutan	6.4	Sri Lanka	6.5	UAE	5.8	Indonesia	3.4	Nepal	5.4	China	−0.2
ROC	6.0	Mongolia	6.3	Mongolia	6.4	Philippines	5.7	Pakistan	3.3	Bhutan	5.1	Pakistan	−0.4
India	5.4	Bangladesh	6.1	Cambodia	6.1	Indonesia	5.3	India	3.2	Mongolia	4.9	Korea	−1.0
Korea	5.4	Myanmar	5.6	Vietnam	5.9	Malaysia	5.2	Mongolia	3.0	Indonesia	4.8	Sri Lanka	−1.7
Bahrain	5.0	Malaysia	5.5	Indonesia	5.4	Vietnam	5.1	ROC	2.9	Pakistan	4.2	Indonesia	−2.3
Sri Lanka	4.9	Lao PDR	5.5	Iran	5.2	Saudi Arabia	5.0	Malaysia	2.3	Malaysia	4.2	Saudi Arabia	−3.6
Pakistan	4.7	Thailand	5.2	Philippines	4.9	Singapore	4.7	Singapore	2.3	Singapore	3.8	Singapore	−3.7
Philippines	4.5	Korea	5.1	Malaysia	4.8	Cambodia	4.6	Bhutan	2.2	Bahrain	3.6	Bahrain	−3.8
Malaysia	4.5	Turkey	5.0	Myanmar	4.8	Sri Lanka	4.4	Bahrain	2.1	Thailand	3.6	Cambodia	−4.3
Bangladesh	4.4	Singapore	4.9	Korea	4.4	Oman	4.2	Sri Lanka	2.1	Sri Lanka	3.1	Mongolia	−4.5
Nepal	4.4	UAE	4.8	Nepal	4.4	Pakistan	3.8	Korea	2.1	Myanmar	2.9	Japan	−4.7
Turkey	4.2	Philippines	4.7	ROC	4.2	Fiji	3.7	Brunei	1.8	Korea	2.9	Qatar	−4.8
Iran	4.1	Sri Lanka	4.6	Thailand	3.9	Bahrain	3.7	Thailand	1.7	ROC	2.8	Malaysia	−5.0
Mongolia	3.6	Indonesia	4.5	Hong Kong	3.8	Kuwait	3.6	Iran	1.2	Fiji	2.7	India	−5.8
Oman	3.2	Pakistan	4.4	Turkey	3.7	Lao PDR	3.4	Saudi Arabia	0.5	Brunei	2.0	Thailand	−5.8
Brunei	2.9	Saudi Arabia	4.3	Oman	3.6	Thailand	3.1	Hong Kong	0.2	Hong Kong	1.7	UAE	−6.0
Hong Kong	2.7	Hong Kong	4.1	Pakistan	3.1	ROC	2.9	Qatar	−0.1	Saudi Arabia	1.6	Hong Kong	−6.2
Fiji	2.0	ROC	4.1	UAE	2.9	Hong Kong	2.8	UAE	−0.1	UAE	1.4	Bhutan	−9.2
Kuwait	1.7	Oman	3.7	Saudi Arabia	2.4	Korea	2.7	Japan	−0.3	Qatar	1.1	Philippines	−9.4
Japan	1.1	Nepal	3.2	Kuwait	1.5	Nepal	1.5	Kuwait	−1.5	Oman	1.1	Kuwait	−10.8
Saudi Arabia	0.7	Fiji	2.0	Fiji	0.7	Japan	1.1	Fiji	−1.6	Iran	0.9	Oman	−15.7
Indonesia	0.7	Japan	1.2	Brunei	0.1	Brunei	0.9	Oman	−2.3	Kuwait	0.8	Fiji	−18.8
Thailand	0.5	Brunei	1.1	Japan	0.0	Iran	−0.4	Myanmar	−3.0	Japan	0.7	Myanmar	−26.7
(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	3.1	APO21	4.3	APO21	4.3	APO21	4.1	APO21	2.6	APO21	3.9	APO21	−2.9
Asia25	4.1	Asia25	5.4	Asia25	6.4	Asia25	5.2	Asia25	3.3	Asia25	4.6	Asia25	−1.8
Asia31	4.0	Asia31	5.4	Asia31	6.2	Asia31	5.2	Asia31	3.1	Asia31	4.4	Asia31	−2.0
East Asia	4.3	East Asia	5.2	East Asia	6.7	East Asia	5.1	East Asia	3.3	East Asia	4.4	East Asia	−0.9
South Asia	5.2	South Asia	6.4	South Asia	7.4	South Asia	6.1	South Asia	3.4	South Asia	5.4	South Asia	−4.3
ASEAN	2.5	ASEAN	5.0	ASEAN	5.2	ASEAN	4.8	ASEAN	3.0	ASEAN	4.8	ASEAN	−4.1
ASEAN6	1.9	ASEAN6	4.8	ASEAN6	5.1	ASEAN6	4.8	ASEAN6	2.8	ASEAN6	4.6	ASEAN6	−4.4
CLMV	7.2	CLMV	6.6	CLMV	5.8	CLMV	5.1	CLMV	4.2	CLMV	5.8	CLMV	−2.1
GCC	2.4	GCC	5.3	GCC	3.3	GCC	5.1	GCC	0.1	GCC	1.5	GCC	−5.3
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
Australia	3.8	Australia	3.4	Australia	2.7	Australia	2.8	Australia	1.7	Australia	1.8	Australia	1.5
France	2.9	France	1.7	France	0.8	France	1.0	France	−0.2	France	1.7	France	−8.1
Germany	2.0	Germany	0.6	Germany	1.1	Germany	1.8	Germany	0.4	Germany	1.9	Germany	−5.2
Italy	2.0	Italy	0.9	Italy	−0.3	Italy	−0.7	Italy	−1.0	Italy	1.1	Italy	−9.4
UK	3.2	UK	2.5	UK	0.4	UK	1.9	UK	−0.3	UK	2.2	UK	−10.1
US	4.2	US	2.5	US	1.0	US	2.1	US	1.1	US	2.2	US	−3.6
EU15	2.9	EU15	1.7	EU15	0.7	EU15	1.0	EU15	0.1	EU15	1.9	EU15	−7.2
EU27	2.8	EU27	1.7	EU27	1.0	EU27	1.0	EU27	0.5	EU27	2.1	EU27	−6.1

Unit: Percentage (average annual growth rate).
Sources: Official national accounts in each country, including author adjustments.
Note: See Section 9.1 for the adjustments made to harmonize GDP coverage across countries.

Table 12 Population

1970		(%)
China	830	40.3
India	555	26.9
Indonesia	116	5.6
Japan	105	5.1
Bangladesh	71	3.5
Pakistan	61	2.9
Vietnam	43	2.1
Philippines	37	1.8
Turkey	36	1.7
Thailand	34	1.7
Korea	32	1.6
Iran	28	1.4
Myanmar	27	1.3
ROC	15	0.7
Sri Lanka	13	0.6
Nepal	11	0.5
Malaysia	11	0.5
Cambodia	6.8	0.3
Saudi Arabia	5.8	0.3
Hong Kong	4.0	0.2
Lao PDR	2.5	0.1
Singapore	2.1	0.1
Mongolia	1.2	0.1
Kuwait	0.7	0.0
Oman	0.7	0.0
Fiji	0.5	0.0
Bhutan	0.3	0.0
UAE	0.2	0.0
Bahrain	0.2	0.0
Brunei	0.1	0.0
Qatar	0.1	0.0
(region)		
APO21	1,184	57.5
Asia25	2,053	99.6
Asia31	2,061	100.0
East Asia	987	47.9
South Asia	711	34.5
ASEAN	280	13.6
ASEAN6	200	9.7
CLMV	79	3.8
GCC	7.8	0.4
(reference)		
Australia	13	0.6
France	52	2.5
Germany	78	3.8
Italy	54	2.6
UK	56	2.7
US	205	10.0
EU15	342	16.6

1980		(%)
China	987	39.0
India	699	27.6
Indonesia	147	5.8
Japan	117	4.6
Bangladesh	85	3.4
Pakistan	83	3.3
Vietnam	54	2.1
Philippines	48	1.9
Thailand	45	1.8
Turkey	45	1.8
Iran	39	1.5
Korea	38	1.5
Myanmar	34	1.4
ROC	18	0.7
Sri Lanka	15	0.6
Nepal	15	0.6
Malaysia	14	0.5
Saudi Arabia	10	0.4
Cambodia	6.6	0.3
Hong Kong	5.1	0.2
Lao PDR	3.2	0.1
Singapore	2.4	0.1
Mongolia	1.7	0.1
Kuwait	1.4	0.1
Oman	1.1	0.0
UAE	1.0	0.0
Fiji	0.6	0.0
Bhutan	0.4	0.0
Bahrain	0.3	0.0
Qatar	0.2	0.0
Brunei	0.2	0.0
(region)		
APO21	1,480	58.5
Asia25	2,515	99.5
Asia31	2,529	100.0
East Asia	1,167	46.1
South Asia	897	35.5
ASEAN	355	14.0
ASEAN6	257	10.2
CLMV	98	3.9
GCC	14	0.5
(reference)		
Australia	15	0.6
France	55	2.2
Germany	78	3.1
Italy	56	2.2
UK	56	2.2
US	227	9.0
EU15	357	14.1
EU27	405	16.0

1990		(%)
China	1,143	37.5
India	873	28.6
Indonesia	179	5.9
Japan	124	4.1
Pakistan	112	3.7
Bangladesh	109	3.6
Vietnam	66	2.2
Philippines	61	2.0
Turkey	56	1.9
Iran	55	1.8
Thailand	55	1.8
Korea	43	1.4
Myanmar	41	1.4
ROC	20	0.7
Malaysia	18	0.6
Nepal	18	0.6
Sri Lanka	17	0.6
Saudi Arabia	16	0.5
Cambodia	8.8	0.3
Hong Kong	5.7	0.2
Lao PDR	4.1	0.1
Singapore	3.0	0.1
Kuwait	2.1	0.1
Mongolia	2.1	0.1
UAE	1.8	0.1
Oman	1.6	0.1
Fiji	0.7	0.0
Bhutan	0.5	0.0
Bahrain	0.5	0.0
Qatar	0.4	0.0
Brunei	0.3	0.0
(region)		
APO21	1,831	60.0
Asia25	3,029	99.3
Asia31	3,051	100.0
East Asia	1,338	43.8
South Asia	1,130	37.0
ASEAN	436	14.3
ASEAN6	316	10.4
CLMV	120	3.9
GCC	23	0.7
(reference)		
Australia	17	0.6
France	58	1.9
Germany	79	2.6
Italy	57	1.9
UK	57	1.9
US	250	8.2
EU15	366	12.0
EU27	418	13.7

2000		(%)
China	1,267	35.9
India	1,057	29.9
Indonesia	206	5.8
Pakistan	138	3.9
Japan	127	3.6
Bangladesh	124	3.5
Vietnam	78	2.2
Philippines	77	2.2
Turkey	68	1.9
Iran	64	1.8
Thailand	61	1.7
Korea	47	1.3
Myanmar	47	1.3
Malaysia	23	0.7
Nepal	23	0.6
ROC	22	0.6
Saudi Arabia	21	0.6
Sri Lanka	19	0.5
Cambodia	12	0.3
Hong Kong	6.7	0.2
Lao PDR	5.2	0.1
Singapore	4.0	0.1
UAE	3.0	0.1
Oman	2.4	0.1
Mongolia	2.4	0.1
Kuwait	1.9	0.1
Fiji	0.8	0.0
Bahrain	0.6	0.0
Qatar	0.6	0.0
Bhutan	0.6	0.0
Brunei	0.3	0.0
(region)		
APO21	2,164	61.3
Asia25	3,499	99.2
Asia31	3,529	100.0
East Asia	1,473	41.7
South Asia	1,361	38.6
ASEAN	513	14.5
ASEAN6	371	10.5
CLMV	141	4.0
GCC	29	0.8
(reference)		
Australia	19	0.5
France	61	1.7
Germany	81	2.3
Italy	57	1.6
UK	59	1.7
US	282	8.0
EU15	378	10.7
EU27	428	12.1

2010		(%)
China	1,341	33.8
India	1,234	31.2
Indonesia	238	6.0
Pakistan	174	4.4
Bangladesh	147	3.7
Japan	128	3.2
Philippines	92	2.3
Vietnam	87	2.2
Iran	74	1.9
Turkey	74	1.9
Thailand	66	1.7
Myanmar	51	1.3
Korea	50	1.3
Malaysia	29	0.7
Saudi Arabia	27	0.7
Nepal	26	0.7
ROC	23	0.6
Sri Lanka	21	0.5
Cambodia	14	0.3
UAE	8.3	0.2
Hong Kong	7.0	0.2
Lao PDR	6.3	0.2
Singapore	5.1	0.1
Kuwait	2.9	0.1
Oman	2.8	0.1
Mongolia	2.8	0.1
Qatar	1.7	0.0
Bahrain	1.2	0.0
Fiji	0.9	0.0
Bhutan	0.7	0.0
Brunei	0.4	0.0
(region)		
APO21	2,498	63.1
Asia25	3,918	98.9
Asia31	3,962	100.0
East Asia	1,551	39.2
South Asia	1,603	40.5
ASEAN	588	14.8
ASEAN6	430	10.9
CLMV	158	4.0
GCC	44	1.1
(reference)		
Australia	22	0.6
France	65	1.6
Germany	80	2.0
Italy	60	1.5
UK	63	1.6
US	309	7.8
EU15	397	10.0
EU27	441	11.1

2020		(%)
China	1,412	32.4
India	1,380	31.7
Indonesia	269	6.2
Pakistan	213	4.9
Bangladesh	167	3.8
Japan	126	2.9
Philippines	108	2.5
Vietnam	98	2.2
Iran	85	1.9
Turkey	84	1.9
Thailand	68	1.6
Myanmar	54	1.2
Korea	52	1.2
Saudi Arabia	35	0.8
Malaysia	33	0.7
Nepal	29	0.7
ROC	24	0.5
Sri Lanka	22	0.5
Cambodia	16	0.4
UAE	10	0.2
Hong Kong	7.5	0.2
Lao PDR	7.4	0.2
Singapore	5.7	0.1
Oman	5.2	0.1
Kuwait	3.9	0.1
Mongolia	3.3	0.1
Qatar	2.6	0.1
Bahrain	1.5	0.0
Fiji	0.9	0.0
Bhutan	0.7	0.0
Brunei	0.5	0.0
(region)		
APO21	2,798	64.2
Asia25	4,300	98.7
Asia31	4,358	100.0
East Asia	1,625	37.3
South Asia	1,812	41.6
ASEAN	660	15.1
ASEAN6	484	11.1
CLMV	175	4.0
GCC	58	1.3
(reference)		
Australia	26	0.6
France	68	1.6
Germany	83	1.9
Italy	59	1.4
UK	67	1.5
US	332	7.6
EU15	411	9.4
EU27	447	10.3

Unit: Millions of persons.
Sources: Population census and other official data in each country, including author interpolations.

Table 13 Per Capita GDP using Exchange Rate

——GDP per person, using the annual average exchange rate

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2020		(%)
Japan	2.00	100.0	Japan	9.49	100.0	Japan	25.8	100.0	Japan	39.1	100.0	Singapore	47.2	100.0	Singapore	60.7	100.0
Hong Kong	0.96	48.3	Hong Kong	5.70	60.1	Hong Kong	13.5	52.3	Hong Kong	25.8	65.8	Japan	45.0	95.2	Hong Kong	46.3	76.3
Singapore	0.93	46.4	Singapore	5.00	52.7	Singapore	12.8	49.5	Singapore	23.9	60.9	Hong Kong	32.6	68.9	Japan	39.9	65.8
Turkey	0.68	34.3	Iran	2.51	26.5	ROC	8.16	31.7	ROC	14.8	37.9	Korea	23.1	48.9	Korea	31.6	52.0
Fiji	0.43	21.4	ROC	2.37	24.9	Korea	6.61	25.7	Korea	12.3	31.3	ROC	19.2	40.6	ROC	28.4	46.8
Iran	0.40	19.9	Turkey	2.07	21.8	Turkey	3.62	14.0	Turkey	4.05	10.3	Turkey	10.5	22.3	Iran	14.0	23.0
ROC	0.39	19.7	Fiji	1.92	20.2	Malaysia	2.50	9.7	Malaysia	4.04	10.3	Malaysia	8.92	18.9	China	10.9	17.9
Malaysia	0.36	17.9	Malaysia	1.78	18.7	Fiji	1.85	7.2	Fiji	2.10	5.4	Iran	6.94	14.7	Malaysia	10.3	17.0
Korea	0.28	14.0	Korea	1.72	18.1	Iran	1.72	6.7	Thailand	2.09	5.3	Thailand	5.18	11.0	Turkey	8.61	14.2
Sri Lanka	0.23	11.4	Thailand	0.74	7.8	Thailand	1.63	6.3	Iran	1.75	4.5	China	4.79	10.1	Thailand	7.37	12.1
Bhutan	0.22	11.2	Philippines	0.69	7.2	Philippines	0.77	3.0	Philippines	1.09	2.8	Fiji	3.65	7.7	Fiji	4.99	8.2
Thailand	0.21	10.6	Indonesia	0.54	5.7	Mongolia	0.77	3.0	China	1.04	2.7	Indonesia	3.18	6.7	Mongolia	4.05	6.7
Philippines	0.18	9.3	China	0.35	3.7	Indonesia	0.71	2.8	Sri Lanka	1.01	2.6	Sri Lanka	2.73	5.8	Indonesia	3.96	6.5
Pakistan	0.17	8.4	Bhutan	0.34	3.6	Bhutan	0.58	2.3	Indonesia	0.82	2.1	Mongolia	2.61	5.5	Sri Lanka	3.69	6.1
Bangladesh	0.14	7.0	Sri Lanka	0.33	3.5	Sri Lanka	0.55	2.2	Bhutan	0.74	1.9	Bhutan	2.29	4.9	Philippines	3.34	5.5
China	0.12	6.2	Pakistan	0.29	3.1	Pakistan	0.41	1.6	Mongolia	0.60	1.5	Philippines	2.26	4.8	Bhutan	3.10	5.1
Cambodia	0.12	5.9	Mongolia	0.29	3.0	India	0.38	1.5	Pakistan	0.57	1.5	India	1.35	2.9	Vietnam	2.80	4.6
India	0.11	5.7	India	0.27	2.9	China	0.38	1.5	India	0.46	1.2	Vietnam	1.34	2.8	Lao PDR	2.64	4.3
Nepal	0.11	5.6	Bangladesh	0.22	2.3	Bangladesh	0.29	1.1	Vietnam	0.42	1.1	Lao PDR	1.18	2.5	Bangladesh	2.23	3.7
Myanmar	0.10	5.0	Nepal	0.20	2.1	Nepal	0.28	1.1	Bangladesh	0.42	1.1	Pakistan	1.01	2.1	India	1.92	3.2
Mongolia	0.09	4.7	Myanmar	0.17	1.8	Lao PDR	0.22	0.8	Lao PDR	0.35	0.9	Bangladesh	0.86	1.8	Cambodia	1.62	2.7
Indonesia	0.09	4.3	Cambodia	0.11	1.2	Cambodia	0.20	0.8	Nepal	0.31	0.8	Cambodia	0.82	1.7	Pakistan	1.20	2.0
Lao PDR	0.05	2.4	Lao PDR	0.10	1.1	Myanmar	0.15	0.6	Cambodia	0.31	0.8	Nepal	0.81	1.7	Nepal	1.20	2.0
Vietnam	0.03	1.4	Vietnam	0.02	0.2	Vietnam	0.10	0.4	Myanmar	0.17	0.4	Myanmar	0.73	1.6	Myanmar	0.60	1.0
Bahrain	1.88	94.4	Bahrain	10.3	108.5	Bahrain	9.25	35.9	Bahrain	13.2	33.7	Bahrain	20.8	44.1	Bahrain	23.6	38.9
Kuwait	4.00	200.6	Kuwait	21.8	229.9	Kuwait	9.10	35.3	Kuwait	20.6	52.7	Kuwait	40.7	86.1	Kuwait	27.8	45.8
Oman	0.45	22.6	Oman	6.61	69.6	Oman	8.22	31.9	Oman	9.36	23.9	Oman	23.7	50.2	Oman	14.4	23.8
Qatar	4.97	249.1	Qatar	35.4	373.3	Qatar	17.8	69.2	Qatar	29.5	75.5	Qatar	75.3	159.3	Qatar	56.8	93.6
Saudi Arabia	0.92	46.3	Saudi Arabia	17.1	179.7	Saudi Arabia	7.30	28.3	Saudi Arabia	9.26	23.7	Saudi Arabia	19.4	41.1	Saudi Arabia	20.5	33.7
UAE	4.28	214.6	UAE	42.3	445.4	UAE	28.9	112.3	UAE	35.3	90.2	UAE	36.0	76.3	UAE	39.0	64.2
Brunei	1.72	86.4	Brunei	33.0	347.7	Brunei	15.4	59.9	Brunei	20.5	52.3	Brunei	35.4	75.0	Brunei	26.5	43.6
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	0.32	16.2	APO21	1.26	13.3	APO21	2.62	10.2	APO21	3.55	9.1	APO21	5.15	10.9	APO21	5.70	9.4
Asia25	0.24	12.0	Asia25	0.89	9.4	Asia25	1.74	6.7	Asia25	2.59	6.6	Asia25	4.97	10.5	Asia25	7.34	12.1
Asia31	0.24	12.2	Asia31	0.99	10.4	Asia31	1.79	7.0	Asia31	2.68	6.8	Asia31	5.21	11.0	Asia31	7.58	12.5
East Asia	0.33	16.8	East Asia	1.37	14.4	East Asia	3.10	12.0	East Asia	5.01	12.8	East Asia	9.03	19.1	East Asia	14.2	23.4
South Asia	0.12	6.2	South Asia	0.27	2.8	South Asia	0.38	1.5	South Asia	0.47	1.2	South Asia	1.28	2.7	South Asia	1.87	3.1
ASEAN	0.12	6.2	ASEAN	0.56	5.9	ASEAN	0.84	3.3	ASEAN	1.21	3.1	ASEAN	3.38	7.2	ASEAN	4.51	7.4
ASEAN6	0.15	7.5	ASEAN6	0.74	7.8	ASEAN6	1.11	4.3	ASEAN6	1.55	4.0	ASEAN6	4.22	8.9	ASEAN6	5.42	8.9
CLMV	0.06	3.0	CLMV	0.08	0.9	CLMV	0.13	0.5	CLMV	0.33	0.8	CLMV	1.09	2.3	CLMV	2.00	3.3
GCC	1.36	68.2	GCC	18.7	197.5	GCC	9.46	36.7	GCC	13.2	33.7	GCC	26.4	55.8	GCC	25.2	41.6
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	3.58	179.4	Australia	11.8	124.4	Australia	19.0	73.7	Australia	21.5	55.0	Australia	59.0	125.0	Australia	55.4	91.2
France	3.68	184.5	France	9.65	101.7	France	17.6	68.3	France	26.1	66.6	France	35.9	76.1	France	46.4	76.4
Germany	4.02	201.5	Germany	10.3	108.7	Germany	19.3	75.0	Germany	27.4	70.1	Germany	39.6	83.9	Germany	54.2	89.3
Italy	3.62	181.6	Italy	9.78	103.0	Italy	18.6	72.1	Italy	27.1	69.1	Italy	34.8	73.7	Italy	41.9	69.0
UK	3.62	181.2	UK	8.59	90.6	UK	17.0	65.9	UK	26.5	67.6	UK	36.6	77.5	UK	45.9	75.7
US	5.23	262.3	US	12.6	132.5	US	23.9	92.7	US	36.3	92.8	US	48.7	103.0	US	63.0	103.8
EU15	3.65	183.1	EU15	9.33	98.3	EU15	17.5	68.0	EU15	26.3	67.2	EU15	36.8	77.8	EU15	47.7	78.5
									EU27	25.5	65.3	EU27	34.7	73.4	EU27	41.6	68.5

Unit: Thousands of US dollars (GDP per person at current market prices).
Sources: Official national accounts in each country, including author adjustments.
Note: See Section 9.1 for the adjustments made to harmonize GDP coverage across countries.

App.

Table 14 Per Capita GDP

——GDP at constant market prices per person, using the 2017 PPP, reference year 2020

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2020		(%)
Japan	15.9	100.0	Japan	23.4	100.0	Japan	34.5	100.0	Singapore	54.7	100.0	Singapore	79.5	100.0	Singapore	100.6	100.0
Singapore	10.6	67.0	Singapore	21.2	90.8	Singapore	34.5	99.7	Hong Kong	38.7	70.7	Hong Kong	54.4	68.4	Hong Kong	59.3	59.0
Iran	9.83	61.9	Hong Kong	17.0	72.6	Hong Kong	29.2	84.7	Japan	38.2	69.8	ROC	42.7	53.7	ROC	56.0	55.7
Hong Kong	8.92	56.2	Iran	9.71	41.6	ROC	16.2	47.0	ROC	29.3	53.7	Japan	40.1	50.5	Korea	44.9	44.6
Turkey	7.95	50.1	Turkey	9.35	40.0	Korea	13.3	38.5	Korea	24.1	44.1	Korea	36.8	46.3	Japan	42.2	41.9
Fiji	6.40	40.4	Fiji	8.37	35.8	Turkey	12.3	35.6	Malaysia	15.6	28.6	Malaysia	21.5	27.0	Turkey	32.3	32.1
Malaysia	4.28	27.0	ROC	7.85	33.6	Malaysia	10.2	29.4	Turkey	14.5	26.5	Turkey	20.5	25.8	Malaysia	27.4	27.2
ROC	3.33	21.0	Malaysia	7.35	31.5	Fiji	9.00	26.0	Iran	10.7	19.5	Iran	17.0	21.4	Thailand	18.9	18.8
Philippines	2.89	18.2	Korea	5.59	23.9	Iran	8.60	24.9	Thailand	10.6	19.4	Thailand	15.4	19.4	China	17.0	16.9
Mongolia	2.72	17.1	Thailand	4.15	17.8	Thailand	7.46	21.6	Fiji	10.4	19.1	Fiji	11.1	14.0	Iran	15.5	15.4
Thailand	2.67	16.8	Philippines	3.99	17.1	Mongolia	4.99	14.5	Sri Lanka	6.34	11.6	Sri Lanka	10.2	12.8	Sri Lanka	13.3	13.3
Korea	2.66	16.8	Mongolia	3.70	15.8	Indonesia	4.82	14.0	Indonesia	6.31	11.5	China	10.1	12.7	Indonesia	12.3	12.2
Sri Lanka	2.51	15.8	Indonesia	3.20	13.7	Sri Lanka	4.22	12.2	Philippines	4.75	8.7	Indonesia	9.00	11.3	Mongolia	12.2	12.1
Lao PDR	2.42	15.3	Sri Lanka	3.20	13.7	Philippines	4.08	11.8	Mongolia	4.73	8.7	Bhutan	8.38	10.5	Fiji	11.9	11.8
Cambodia	1.85	11.6	Lao PDR	2.48	10.6	Bhutan	2.88	8.3	Bhutan	4.20	7.7	Mongolia	7.73	9.7	Bhutan	11.7	11.6
Indonesia	1.82	11.5	Pakistan	2.02	8.6	Lao PDR	2.83	8.2	China	4.09	7.5	Philippines	6.35	8.0	Vietnam	8.64	8.6
Bangladesh	1.75	11.0	Bhutan	2.01	8.6	Pakistan	2.78	8.1	Lao PDR	4.04	7.4	Lao PDR	6.31	7.9	Philippines	8.51	8.5
Pakistan	1.75	11.0	Vietnam	1.70	7.3	Nepal	2.08	6.0	Pakistan	3.74	6.9	Vietnam	5.70	7.2	Lao PDR	8.44	8.4
Bhutan	1.70	10.7	Nepal	1.62	6.9	China	1.93	5.6	Vietnam	3.40	6.2	India	4.45	5.6	India	6.44	6.4
Nepal	1.51	9.5	India	1.38	5.9	Vietnam	1.93	5.6	Nepal	2.66	4.9	Pakistan	4.33	5.4	Bangladesh	5.85	5.8
Vietnam	1.42	8.9	Bangladesh	1.36	5.8	India	1.81	5.2	India	2.45	4.5	Cambodia	3.40	4.3	Pakistan	5.02	5.0
India	1.29	8.1	Cambodia	1.14	4.9	Bangladesh	1.56	4.5	Bangladesh	2.08	3.8	Bangladesh	3.38	4.2	Cambodia	4.79	4.8
China	0.77	4.9	China	1.06	4.6	Cambodia	1.30	3.7	Cambodia	1.82	3.3	Nepal	3.36	4.2	Nepal	4.41	4.4
Myanmar	0.65	4.1	Myanmar	0.88	3.8	Myanmar	0.95	2.8	Myanmar	1.56	2.8	Myanmar	2.41	3.0	Myanmar	2.62	2.6
Bahrain	33.7	212.5	Bahrain	42.7	182.9	Bahrain	31.6	91.6	Bahrain	41.0	75.0	Bahrain	46.6	58.6	Bahrain	52.2	51.9
Kuwait	140.8	887.0	Kuwait	61.5	263.3	Kuwait	29.1	84.4	Kuwait	50.2	91.8	Kuwait	65.3	82.2	Kuwait	53.5	53.1
Oman	7.65	48.2	Oman	26.3	112.5	Oman	36.8	106.6	Oman	37.4	68.5	Oman	46.8	58.9	Oman	27.4	27.2
Qatar	227.6	1434.5	Qatar	142.0	608.0	Qatar	73.2	212.0	Qatar	98.9	180.9	Qatar	109.8	138.1	Qatar	96.7	96.1
Saudi Arabia	78.9	497.4	Saudi Arabia	72.5	310.6	Saudi Arabia	47.5	137.6	Saudi Arabia	45.1	82.4	Saudi Arabia	47.6	59.9	Saudi Arabia	49.4	49.1
UAE	199.6	1257.8	UAE	181.2	775.5	UAE	111.6	323.2	UAE	110.4	202.0	UAE	58.9	74.1	UAE	67.9	67.5
Brunei	83.4	525.8	Brunei	133.3	570.8	Brunei	73.7	213.3	Brunei	76.7	140.2	Brunei	68.4	86.1	Brunei	66.6	66.2
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	3.34	21.0	APO21	4.33	18.5	APO21	5.82	16.8	APO21	7.08	13.0	APO21	9.42	11.8	APO21	11.7	11.7
Asia25	2.26	14.3	Asia25	3.00	12.9	Asia25	4.28	12.4	Asia25	5.92	10.8	Asia25	9.56	12.0	Asia25	13.3	13.3
Asia31	2.57	16.2	Asia31	3.40	14.6	Asia31	4.63	13.4	Asia31	6.31	11.5	Asia31	10.1	12.6	Asia31	13.9	13.8
East Asia	2.51	15.8	East Asia	3.63	15.5	East Asia	5.65	16.4	East Asia	8.21	15.0	East Asia	14.1	17.7	East Asia	20.6	20.4
South Asia	1.40	8.8	South Asia	1.47	6.3	South Asia	1.92	5.6	South Asia	2.61	4.8	South Asia	4.39	5.5	South Asia	6.27	6.2
ASEAN	2.10	13.2	ASEAN	3.28	14.1	ASEAN	4.62	13.4	ASEAN	6.44	11.8	ASEAN	9.35	11.8	ASEAN	12.3	12.3
ASEAN6	2.44	15.4	ASEAN6	4.00	17.1	ASEAN6	5.78	16.7	ASEAN6	7.87	14.4	ASEAN6	11.1	14.0	ASEAN6	14.5	14.4
CLMV	1.22	7.7	CLMV	1.40	6.0	CLMV	1.58	4.6	CLMV	2.68	4.9	CLMV	4.47	5.6	CLMV	6.41	6.4
GCC	83.2	524.5	GCC	76.4	327.2	GCC	50.2	145.3	GCC	52.5	96.1	GCC	53.2	66.9	GCC	53.0	52.6
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	24.9	157.2	Australia	28.7	122.7	Australia	33.2	96.1	Australia	42.2	77.2	Australia	49.5	62.2	Australia	53.1	52.8
France	21.9	138.1	France	29.5	126.4	France	35.8	103.6	France	42.0	76.9	France	44.6	56.1	France	44.4	44.2
Germany	24.3	152.9	Germany	31.7	135.9	Germany	38.0	110.1	Germany	45.4	83.0	Germany	50.2	63.2	Germany	54.1	53.8
Italy	22.3	140.5	Italy	31.0	132.8	Italy	38.8	112.4	Italy	45.3	83.0	Italy	44.5	56.0	Italy	41.2	40.9
UK	20.8	131.3	UK	25.0	106.8	UK	32.2	93.2	UK	41.0	75.0	UK	44.4	55.9	UK	45.0	44.7
US	27.9	175.8	US	34.4	147.2	US	42.9	124.3	US	53.1	97.2	US	57.7	72.5	US	63.0	62.7
EU15	21.6	136.2	EU15	28.3	121.2	EU15	35.3	102.1	EU15	42.9	78.4	EU15	46.0	57.8	EU15	46.9	46.6
									EU27	35.6	65.2	EU27	39.5	49.8	EU27	41.9	41.7

Unit: Thousands of US dollars (as of 2020)
Sources: Official national accounts in each country, including author adjustments.
Note: See Section 9.1 for the adjustments made to harmonize GDP coverage across countries.

Table 15 Final Demand Shares in GDP

——Shares of final demands to GDP at current prices

	1970				1990				2000				2010				2020			
	Household consumption	Government consumption	Investment	Net exports	Household consumption	Government consumption	Investment	Net exports	Household consumption	Government consumption	Investment	Net exports	Household consumption	Government consumption	Investment	Net exports	Household consumption	Government consumption	Investment	Net exports
Bahrain	67.8	14.8	21.3	−3.9	62.1	23.4	12.8	1.8	48.9	17.3	10.1	23.8	41.2	12.9	27.3	18.6	42.0	17.1	35.3	5.6
Bangladesh	90.9	1.3	9.7	−1.9	84.7	4.6	17.5	−6.8	75.9	5.0	23.8	−4.6	74.1	5.1	26.0	−5.2	68.1	6.0	31.3	−5.4
Bhutan	68.5	33.6	24.6	−26.7	49.6	32.6	21.1	−3.3	51.2	21.9	45.8	−18.9	52.1	20.4	56.4	−28.9	63.7	20.8	32.1	−16.6
Brunei	21.2	8.3	15.2	55.3	39.2	21.8	19.6	19.5	30.4	25.5	18.9	25.3	14.7	22.2	23.7	39.4	29.5	25.4	40.6	4.4
Cambodia	69.0	22.5	10.2	−1.8	96.0	5.7	6.6	−8.3	89.1	5.2	17.5	−11.9	81.7	6.3	17.4	−5.4	70.4	5.5	25.6	−1.4
China	59.6	10.0	30.3	0.1	54.1	12.4	31.0	2.5	51.7	15.4	30.7	2.2	38.6	13.8	44.1	3.5	39.6	16.1	41.8	2.5
ROC	55.9	17.7	26.4	0.0	52.3	18.0	25.5	4.2	55.2	15.7	27.2	1.8	53.2	15.1	25.1	6.6	48.5	14.0	24.2	13.3
Fiji	66.9	14.0	22.3	−3.1	73.5	17.1	14.0	−4.7	66.5	17.2	21.3	−5.1	72.6	15.0	18.7	−6.4	79.9	24.8	12.0	−16.7
Hong Kong	66.2	5.7	20.4	7.7	57.5	6.8	27.2	8.5	58.6	9.4	27.6	4.4	61.4	8.9	23.9	5.9	66.5	12.7	19.0	1.8
India	74.0	9.4	16.7	−0.1	62.4	11.9	27.1	−1.4	64.2	12.8	23.9	−0.9	57.5	11.7	35.3	−4.5	61.0	12.2	27.2	−0.4
Indonesia	73.0	8.2	21.1	−2.2	61.8	7.9	27.7	2.5	61.1	6.4	22.2	10.3	56.1	9.0	33.0	1.9	56.9	9.2	32.7	1.1
Iran	54.3	17.6	28.7	−0.6	55.9	11.7	40.5	−8.1	51.9	15.0	25.3	7.8	44.6	18.8	31.8	4.8	46.2	12.3	31.6	9.9
Japan	46.8	10.5	41.4	1.3	50.4	13.4	35.4	0.7	53.7	16.5	28.4	1.4	56.9	19.2	22.6	1.3	53.8	21.0	25.4	−0.2
Korea	73.5	9.9	26.3	−9.7	50.2	11.0	39.6	−0.8	54.4	10.9	32.9	1.8	50.4	14.2	32.6	2.8	46.4	18.1	31.9	3.7
Kuwait	39.8	13.2	12.3	34.7	59.6	37.4	15.7	−12.7	42.2	21.1	10.9	25.9	30.0	16.7	17.8	35.4	43.5	23.4	25.1	8.0
Lao PDR	80.7	35.0	20.2	−35.8	79.4	7.2	26.5	−13.2	79.8	6.7	27.6	−14.1	79.5	11.5	22.5	−13.5	53.9	13.3	41.8	−9.0
Malaysia	57.4	18.2	20.2	4.2	52.6	13.4	31.9	2.0	43.8	10.0	27.1	19.0	48.1	12.6	23.4	15.9	60.8	13.0	19.7	6.4
Mongolia	77.8	24.1	32.6	−34.6	64.8	20.4	31.4	−16.7	72.4	14.4	24.3	−11.1	55.2	12.7	42.1	−10.0	59.8	15.6	22.1	2.5
Myanmar	90.7	8.1	10.1	−8.9	91.0	7.6	8.2	−6.7	84.8	3.6	11.2	0.4	42.6	4.7	16.8	36.0	39.4	10.5	39.5	10.6
Nepal	89.3	5.3	8.3	−3.0	80.6	6.6	23.1	−10.3	76.9	6.9	24.3	−8.2	84.7	8.2	27.8	−20.7	88.6	8.9	37.8	−35.3
Oman	25.0	11.2	16.8	47.0	43.2	23.7	20.8	12.4	37.7	18.6	18.9	24.7	33.2	16.2	29.1	21.5	44.2	27.2	21.3	7.3
Pakistan	76.9	10.1	15.8	−2.7	71.8	13.0	19.9	−4.7	75.5	8.1	17.6	−1.1	79.7	10.3	15.8	−5.8	79.3	12.8	15.3	−7.4
Philippines	66.2	10.1	24.6	−0.8	70.1	10.6	26.3	−7.0	71.7	11.1	15.7	1.5	70.2	9.7	20.4	−0.4	75.1	15.3	17.4	−7.8
Qatar	21.7	20.3	23.4	34.6	28.1	32.2	18.7	20.9	15.6	19.3	21.1	44.0	16.8	13.7	31.8	37.7	27.0	21.2	43.9	7.9
Saudi Arabia	32.6	15.8	22.4	29.2	46.6	28.8	15.7	8.9	36.5	25.6	19.4	18.5	32.4	20.0	31.2	16.4	43.0	28.5	28.2	0.3
Singapore	69.0	11.8	38.2	−19.0	44.8	9.5	35.7	10.1	42.0	10.5	35.2	12.3	36.3	9.7	27.7	26.3	33.5	12.3	22.5	31.7
Sri Lanka	79.4	6.3	16.9	−2.5	81.1	7.0	18.7	−6.7	73.0	7.6	28.3	−8.9	68.9	8.5	29.9	−7.3	71.0	10.3	25.1	−6.4
Thailand	67.0	11.9	25.3	−4.2	55.8	10.0	41.7	−7.4	55.6	13.5	22.5	8.4	53.0	15.8	25.5	5.7	52.6	17.7	24.4	5.3
Turkey	76.9	7.9	15.6	−0.4	68.7	9.3	23.2	−1.2	66.9	11.9	23.7	−2.6	62.7	14.9	26.8	−4.3	56.7	15.2	31.9	−3.8
UAE	30.1	6.3	32.6	30.9	49.6	9.9	25.9	14.7	55.7	9.3	23.1	11.9	40.5	9.8	29.7	20.1	37.6	13.6	25.1	23.7
Vietnam	69.5	33.5	21.8	−24.8	87.3	7.5	14.3	−9.2	67.9	6.1	28.4	−2.3	66.3	6.0	36.0	−8.2	62.9	6.7	27.6	2.9
(region)																				
APO21	61.3	10.6	28.7	−0.6	57.5	11.7	31.5	−0.7	58.9	12.8	26.0	2.3	57.3	13.7	28.6	0.5	57.6	14.1	27.2	1.1
Asia25	61.2	10.5	28.8	−0.5	57.0	11.8	31.3	−0.2	57.1	13.4	27.1	2.3	50.4	13.7	34.2	1.7	50.0	14.9	33.4	1.7
Asia31	57.8	11.1	27.9	3.2	56.2	13.0	30.3	0.6	56.0	14.0	26.6	3.5	49.4	13.9	33.9	2.8	49.5	15.4	33.2	2.0
East Asia	51.6	10.4	37.4	0.6	51.7	13.0	33.8	1.4	53.1	15.3	29.7	1.8	45.0	15.1	36.9	3.1	43.1	16.9	37.5	2.6
South Asia	76.9	8.2	15.6	−0.7	66.7	11.1	24.8	−2.6	67.2	11.2	23.2	−1.6	61.7	10.9	32.3	−4.9	63.9	11.6	26.5	−2.0
ASEAN	69.5	12.9	22.7	−5.2	62.1	9.3	30.0	−1.3	59.0	9.1	23.2	8.8	55.4	10.5	28.5	5.6	57.3	11.7	27.2	3.8
ASEAN6	68.6	10.5	23.4	−2.4	59.7	9.4	31.6	−0.6	57.3	9.5	23.0	10.2	54.3	11.1	28.1	6.5	57.0	12.4	26.7	3.9
CLMV	74.8	27.5	19.0	−21.2	88.0	7.5	13.2	−8.7	72.6	5.6	24.3	−2.5	63.6	6.0	30.8	−0.4	59.7	7.5	29.9	3.0
GCC	33.4	14.8	21.6	30.2	47.4	25.7	17.8	9.1	40.4	21.0	19.6	19.0	32.9	16.7	29.6	20.7	40.6	24.0	28.5	6.9
(reference)																				
Australia	54.3	13.9	32.1	−0.3	57.7	18.2	24.2	−0.1	58.6	17.9	23.4	0.1	54.6	17.9	26.5	1.0	51.5	21.4	22.7	4.4
France	54.3	17.0	28.1	0.5	55.2	21.2	24.3	−0.8	53.9	22.3	22.4	1.3	55.4	24.0	21.9	−1.3	53.2	25.1	23.8	−2.0
Germany	52.9	16.3	32.3	−1.5	56.2	19.2	24.8	−0.2	56.4	19.1	24.4	0.2	55.2	19.6	19.9	5.3	50.8	22.4	21.0	5.7
Italy	58.7	15.0	26.0	0.2	57.7	19.6	22.5	0.2	60.6	17.8	20.8	0.9	60.8	20.6	20.5	−1.9	57.9	20.9	17.5	3.7
UK	57.2	17.8	24.2	0.9	60.0	18.6	23.2	−1.8	66.7	16.8	18.1	−1.7	64.2	21.6	16.0	−1.9	60.8	22.3	16.7	0.2
US	60.3	18.0	21.4	0.4	63.9	15.9	21.5	−1.3	66.0	14.0	23.7	−3.7	68.2	16.7	18.7	−3.5	67.2	14.7	21.2	−3.1
EU15	56.5	16.0	28.0	−0.5	56.7	19.5	24.6	−0.7	57.7	19.1	22.8	0.4	57.0	21.7	20.2	1.1	53.1	22.7	21.1	3.0
EU27									61.8	17.0	20.4	0.7	57.8	20.5	20.1	1.5	48.0	24.3	23.6	4.1

Unit: Percentage.

Sources: Official national accounts in each country, including author adjustments.

Note: Final demand shares in country groups are computed by using the PPP for GDP. Household consumption includes the consumption of NPISHs. The investment includes GFCF plus changes in inventories.

Table 16 Per-Worker Labor Productivity Level

——GDP at constant basic prices per worker, using the 2017 PPP, reference year 2020

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2020		(%)
Iran	36.3	100.0	Japan	46.3	100.0	Japan	66.1	100.0	Singapore	98.7	100.0	Singapore	124.4	100.0	Singapore	150.3	100.0
Singapore	31.8	87.6	Singapore	43.8	94.5	Singapore	63.6	96.2	Hong Kong	77.2	78.2	Hong Kong	105.7	85.0	Hong Kong	117.7	78.3
Japan	31.4	86.7	Iran	37.9	81.9	Hong Kong	59.6	90.1	Japan	72.2	73.1	ROC	89.2	71.7	ROC	109.0	72.5
Turkey	23.8	65.7	Hong Kong	36.9	79.6	ROC	37.2	56.3	ROC	64.5	65.4	Japan	77.5	62.3	Turkey	90.9	60.5
Hong Kong	22.4	61.8	Turkey	27.1	58.5	Iran	37.0	55.9	Korea	47.2	47.8	Korea	66.8	53.7	Korea	77.3	51.4
Fiji	20.2	55.6	Fiji	23.5	50.8	Turkey	34.6	52.4	Turkey	46.1	46.7	Iran	61.0	49.0	Japan	76.6	51.0
Malaysia	12.2	33.6	ROC	19.9	43.0	Korea	27.6	41.8	Iran	40.1	40.6	Turkey	60.5	48.6	Iran	54.5	36.3
ROC	9.6	26.5	Malaysia	19.4	42.0	Malaysia	25.2	38.1	Malaysia	36.3	36.8	Malaysia	47.1	37.9	Malaysia	54.4	36.2
Philippines	8.8	24.2	Korea	14.1	30.5	Fiji	22.9	34.7	Fiji	24.3	24.7	Fiji	25.0	20.1	Sri Lanka	33.5	22.3
Korea	8.4	23.0	Philippines	10.7	23.2	Thailand	12.5	18.9	Thailand	17.5	17.8	Sri Lanka	24.0	19.3	Mongolia	31.7	21.1
Sri Lanka	6.9	19.0	Mongolia	10.2	22.0	Mongolia	12.0	18.2	Sri Lanka	15.8	16.0	Thailand	24.0	19.3	Thailand	30.7	20.5
Mongolia	6.8	18.7	Sri Lanka	9.0	19.4	Sri Lanka	11.7	17.7	Indonesia	13.9	14.1	Indonesia	19.0	15.3	China	28.5	19.0
Thailand	6.1	16.7	Indonesia	8.3	17.8	Indonesia	11.0	16.6	Pakistan	12.9	13.1	Mongolia	18.8	15.1	Fiji	24.5	16.3
Pakistan	5.5	15.2	Thailand	8.2	17.7	Philippines	10.5	15.9	Mongolia	12.7	12.9	Bhutan	16.0	12.9	Indonesia	24.4	16.2
Indonesia	5.4	14.9	Pakistan	6.5	14.1	Pakistan	9.5	14.4	Philippines	12.4	12.6	China	15.9	12.8	Bhutan	21.8	14.5
Bangladesh	5.3	14.7	Bhutan	5.4	11.6	Bhutan	7.9	11.9	Bhutan	11.3	11.5	Philippines	15.3	12.3	Philippines	19.4	12.9
Bhutan	4.5	12.3	Lao PDR	5.1	11.0	Lao PDR	5.8	8.8	Lao PDR	7.8	7.9	Pakistan	13.6	10.9	India	15.4	10.2
Lao PDR	4.3	11.8	Bangladesh	3.8	8.1	Nepal	4.9	7.5	China	6.4	6.5	Lao PDR	11.4	9.2	Pakistan	15.3	10.2
Cambodia	4.0	10.9	Vietnam	3.6	7.8	Bangladesh	4.5	6.8	Nepal	6.4	6.4	India	10.3	8.3	Lao PDR	14.8	9.9
Vietnam	3.6	10.0	Nepal	3.4	7.4	India	4.0	6.0	Vietnam	6.1	6.2	Vietnam	9.0	7.2	Vietnam	14.1	9.4
Nepal	3.4	9.4	India	2.8	6.1	Vietnam	3.7	5.5	India	5.8	5.8	Nepal	8.3	6.7	Bangladesh	13.9	9.2
India	2.7	7.4	Myanmar	2.7	5.7	China	3.0	4.6	Bangladesh	5.4	5.5	Bangladesh	8.1	6.5	Nepal	10.1	6.7
Myanmar	2.0	5.6	Cambodia	2.3	5.0	Cambodia	2.7	4.1	Myanmar	3.9	4.0	Myanmar	5.6	4.5	Cambodia	7.3	4.8
China	1.6	4.4	China	2.0	4.2	Myanmar	2.7	4.1	Cambodia	3.6	3.6	Cambodia	5.5	4.5	Myanmar	6.0	4.0
Bahrain	120.1	331.2	Bahrain	108.6	234.6	Bahrain	74.6	112.9	Bahrain	92.6	93.8	Bahrain	80.1	64.4	Bahrain	78.0	51.9
Kuwait	467.1	1287.7	Kuwait	181.9	393.0	Kuwait	71.4	108.0	Kuwait	119.9	121.4	Kuwait	119.8	96.3	Kuwait	105.3	70.1
Oman	107.7	297.0	Oman	146.8	317.1	Oman	157.1	237.7	Oman	135.5	137.3	Oman	93.4	75.1	Oman	83.6	55.6
Qatar	423.9	1168.5	Qatar	264.5	571.3	Qatar	142.5	215.6	Qatar	196.7	199.3	Qatar	146.7	117.9	Qatar	119.6	79.6
Saudi Arabia	379.0	1044.8	Saudi Arabia	239.4	517.2	Saudi Arabia	159.9	241.9	Saudi Arabia	151.4	153.4	Saudi Arabia	132.8	106.8	Saudi Arabia	159.9	106.4
UAE	460.4	1269.2	UAE	336.1	726.1	UAE	214.0	323.8	UAE	188.0	190.4	UAE	138.9	111.7	UAE	173.7	115.6
Brunei	282.5	778.7	Brunei	372.9	805.6	Brunei	182.9	276.7	Brunei	171.8	174.0	Brunei	147.3	118.4	Brunei	131.6	87.5
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	8.6	23.6	APO21	10.5	22.7	APO21	14.2	21.4	APO21	17.3	17.6	APO21	22.5	18.1	APO21	28.1	18.7
Asia25	5.5	15.2	Asia25	6.7	14.5	Asia25	9.0	13.7	Asia25	12.6	12.7	Asia25	20.1	16.2	Asia25	29.0	19.3
Asia31	6.3	17.3	Asia31	7.6	16.5	Asia31	9.8	14.8	Asia31	13.4	13.6	Asia31	21.2	17.0	Asia31	30.2	20.1
East Asia	5.8	15.9	East Asia	7.4	15.9	East Asia	10.0	15.1	East Asia	14.4	14.5	East Asia	24.6	19.8	East Asia	37.8	25.2
South Asia	3.3	9.2	South Asia	3.4	7.4	South Asia	4.8	7.3	South Asia	6.8	6.9	South Asia	11.2	9.0	South Asia	16.3	10.9
ASEAN	6.0	16.6	ASEAN	8.3	17.9	ASEAN	10.5	15.9	ASEAN	14.1	14.3	ASEAN	19.1	15.4	ASEAN	24.5	16.3
ASEAN6	7.1	19.5	ASEAN6	10.1	21.9	ASEAN6	13.1	19.8	ASEAN6	17.5	17.8	ASEAN6	23.5	18.9	ASEAN6	29.4	19.5
CLMV	3.4	9.4	CLMV	3.5	7.5	CLMV	3.6	5.5	CLMV	5.7	5.7	CLMV	8.4	6.7	CLMV	12.1	8.0
GCC	365.1	1006.5	GCC	233.2	503.7	GCC	149.6	226.3	GCC	150.6	152.5	GCC	125.8	101.2	GCC	139.2	92.6
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	54.3	149.7	Australia	62.3	134.6	Australia	67.0	101.4	Australia	83.8	84.9	Australia	91.9	73.9	Australia	100.1	66.6
France	47.6	131.1	France	64.1	138.4	France	78.6	118.9	France	89.0	90.2	France	96.2	77.3	France	95.0	63.2
Germany	61.2	168.8	Germany	79.6	171.9	Germany	89.1	134.8	Germany	83.3	84.4	Germany	88.5	71.1	Germany	90.3	60.1
Italy	53.9	148.5	Italy	73.2	158.2	Italy	87.0	131.7	Italy	100.6	101.9	Italy	96.4	77.5	Italy	87.9	58.5
UK	43.0	118.6	UK	50.2	108.5	UK	61.2	92.6	UK	78.4	79.5	UK	85.2	68.5	UK	82.9	55.2
US	70.8	195.0	US	76.5	165.4	US	87.8	132.8	US	106.6	108.0	US	124.7	100.3	US	137.5	91.5
EU15	47.0	129.7	EU15	60.8	131.3	EU15	72.7	110.0	EU15	85.5	86.6	EU15	90.7	72.9	EU15	89.9	59.8
									EU27	72.4	73.4	EU27	79.1	63.6	EU27	80.9	53.8

Unit: Thousands of US dollars (as of 2020).
Source: APO Productivity Database 2022.

Table 17 Per-Worker Labor Productivity Growth

——Growth rate of GDP at constant price per worker, using the 2017 PPP

1995–2000		2000–2005		2005–2010		2010–2015		2015–2020		2015–2019		2019–2020	
Oman	6.4	China	7.7	China	10.4	Mongolia	7.7	Vietnam	5.2	China	6.3	Oman	11.6
China	6.3	Cambodia	6.6	India	7.0	China	6.6	China	5.1	Bangladesh	5.8	Turkey	6.4
ROC	5.1	Kuwait	6.4	Bhutan	6.8	Bangladesh	5.7	Bangladesh	5.1	Vietnam	5.4	Vietnam	4.5
Vietnam	5.1	India	4.7	Sri Lanka	5.2	India	5.3	Turkey	4.7	Saudi Arabia	5.3	Iran	3.6
Myanmar	5.1	Turkey	4.5	Mongolia	5.1	Sri Lanka	5.0	Saudi Arabia	3.8	India	5.3	ROC	3.1
Lao PDR	5.0	Vietnam	4.3	Iran	5.1	Myanmar	4.7	Lao PDR	3.6	Mongolia	5.0	Nepal	2.6
Korea	4.8	Malaysia	3.9	Lao PDR	4.5	Bhutan	4.6	Cambodia	3.4	Cambodia	4.6	Bangladesh	2.2
Qatar	4.7	Thailand	3.8	Bangladesh	4.4	UAE	4.5	Mongolia	2.8	Lao PDR	4.3	Lao PDR	0.9
Turkey	4.3	Myanmar	3.6	Myanmar	3.7	Philippines	4.2	Oman	2.7	Turkey	4.3	Sri Lanka	0.5
Singapore	4.3	Indonesia	3.6	Vietnam	3.5	Indonesia	4.1	India	2.6	Thailand	3.9	China	0.3
Cambodia	4.3	Korea	3.5	Korea	3.4	Vietnam	3.8	ROC	2.4	Philippines	3.5	Korea	−0.1
India	4.2	Bangladesh	3.5	Nepal	3.3	Turkey	3.4	Nepal	2.3	Bhutan	3.3	Hong Kong	−0.9
Philippines	3.1	ROC	3.4	ROC	3.1	Thailand	3.4	Singapore	2.0	Singapore	3.0	Cambodia	−1.7
Bangladesh	2.8	Iran	3.3	Hong Kong	3.1	Fiji	2.5	Sri Lanka	1.7	Myanmar	2.6	Indonesia	−1.8
Mongolia	2.5	Singapore	3.3	Philippines	2.7	Cambodia	2.0	Bhutan	1.7	Malaysia	2.5	Singapore	−2.1
Bhutan	2.5	Hong Kong	3.2	Indonesia	2.6	Bahrain	2.0	Thailand	1.6	Nepal	2.2	Saudi Arabia	−2.4
Pakistan	2.5	Sri Lanka	3.2	Thailand	2.5	Singapore	1.8	Korea	1.6	ROC	2.2	Pakistan	−2.7
Nepal	2.4	Lao PDR	3.2	Cambodia	2.2	Malaysia	1.8	Malaysia	1.1	Sri Lanka	2.0	UAE	−3.0
Sri Lanka	1.6	Mongolia	2.7	Singapore	1.3	Pakistan	1.7	Hong Kong	0.9	Korea	2.0	Kuwait	−3.4
Fiji	1.4	Nepal	2.0	Malaysia	1.3	ROC	1.6	Indonesia	0.9	Brunei	1.8	Bahrain	−4.1
Bahrain	1.4	Pakistan	1.6	Turkey	1.0	Lao PDR	1.6	Pakistan	0.7	Pakistan	1.6	Japan	−4.1
Japan	1.2	Philippines	1.4	Fiji	0.5	Nepal	1.6	Philippines	0.5	Indonesia	1.5	Malaysia	−4.4
UAE	1.1	Japan	1.4	Japan	0.1	Korea	1.4	UAE	0.0	Hong Kong	1.4	Bhutan	−4.9
Malaysia	0.6	Oman	1.1	Bahrain	−0.2	Hong Kong	1.2	Iran	−0.5	Fiji	1.3	Qatar	−5.8
Iran	0.6	Qatar	0.2	Pakistan	−0.6	Japan	0.7	Japan	−1.0	UAE	0.7	Mongolia	−5.9
Hong Kong	0.6	Bhutan	0.1	Brunei	−1.5	Saudi Arabia	−0.1	Brunei	−1.6	Oman	0.4	Thailand	−7.6
Thailand	0.3	Fiji	0.0	Saudi Arabia	−2.5	Kuwait	−0.5	Qatar	−1.8	Japan	−0.2	India	−8.1
Kuwait	−0.2	Saudi Arabia	−0.2	UAE	−3.7	Brunei	−0.7	Kuwait	−2.1	Qatar	−0.8	Philippines	−11.4
Brunei	−0.4	Brunei	−1.5	Qatar	−6.1	Iran	−1.7	Bahrain	−2.5	Iran	−1.6	Brunei	−15.1
Indonesia	−1.6	UAE	−2.3	Kuwait	−6.4	Qatar	−2.3	Fiji	−2.9	Kuwait	−1.7	Fiji	−20.0
Saudi Arabia	−1.9	Bahrain	−2.7	Oman	−8.6	Oman	−4.9	Myanmar	−3.5	Bahrain	−2.1	Myanmar	−27.8
(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	1.7	APO21	2.5	APO21	2.8	APO21	2.9	APO21	1.5	APO21	2.8	APO21	−3.7
Asia25	2.8	Asia25	4.1	Asia25	5.4	Asia25	4.4	Asia25	2.9	Asia25	4.2	Asia25	−2.1
Asia31	2.7	Asia31	4.0	Asia31	5.1	Asia31	4.3	Asia31	2.8	Asia31	4.0	Asia31	−2.2
East Asia	3.2	East Asia	4.5	East Asia	6.3	East Asia	4.8	East Asia	3.8	East Asia	4.9	East Asia	−0.4
South Asia	3.8	South Asia	4.1	South Asia	5.9	South Asia	4.9	South Asia	2.6	South Asia	4.9	South Asia	−6.5
ASEAN	0.6	ASEAN	3.3	ASEAN	2.7	ASEAN	3.6	ASEAN	1.4	ASEAN	2.7	ASEAN	−4.0
ASEAN6	0.2	ASEAN6	3.3	ASEAN6	2.6	ASEAN6	3.7	ASEAN6	0.8	ASEAN6	2.1	ASEAN6	−4.7
CLMV	4.9	CLMV	4.3	CLMV	3.6	CLMV	3.7	CLMV	3.6	CLMV	4.8	CLMV	−1.0
GCC	−0.3	GCC	−0.1	GCC	−3.5	GCC	0.3	GCC	1.7	GCC	2.6	GCC	−1.5
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
Australia	2.1	Australia	1.3	Australia	0.5	Australia	1.5	Australia	0.2	Australia	−0.5	Australia	3.0
France	1.3	France	1.1	France	0.4	France	0.6	France	−0.8	France	0.8	France	−7.1
Germany	1.0	Germany	0.9	Germany	0.3	Germany	0.8	Germany	−0.4	Germany	0.6	Germany	−4.4
Italy	1.0	Italy	−0.3	Italy	−0.5	Italy	−0.4	Italy	−1.4	Italy	0.1	Italy	−7.3
UK	1.9	UK	1.5	UK	0.2	UK	0.5	UK	−1.1	UK	1.0	UK	−9.3
US	2.4	US	1.8	US	1.4	US	0.7	US	1.2	US	0.8	US	2.8
EU15	1.4	EU15	0.8	EU15	0.3	EU15	0.6	EU15	−0.7	EU15	0.5	EU15	−5.8
EU27	1.8	EU27	1.2	EU27	0.6	EU27	0.7	EU27	−0.3	EU27	0.8	EU27	−4.7

Unit: Percentage (average annual growth rate).
Source: APO Productivity Database 2022.

Table 18 Per-Hour Labor Productivity Level

——GDP at constant basic prices per hour, using the 2017 PPP, reference year 2020

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2020		(%)
Singapore	14.5	100.0	Japan	21.6	100.0	Japan	31.6	100.0	Singapore	41.1	100.0	Singapore	53.6	100.0	Singapore	68.5	100.0
Iran	14.4	99.4	Singapore	20.6	95.5	Singapore	28.1	88.7	Japan	38.2	92.9	Hong Kong	45.9	85.6	Hong Kong	55.3	80.7
Japan	13.9	95.8	Iran	15.0	69.7	Hong Kong	26.1	82.6	Hong Kong	33.1	80.5	ROC	43.3	80.6	ROC	52.4	76.6
Turkey	12.0	82.4	Hong Kong	14.9	69.0	ROC	16.7	52.8	ROC	29.6	71.9	Japan	43.0	80.2	Turkey	46.8	68.3
Fiji	10.8	74.6	Turkey	13.4	62.3	Turkey	16.5	52.0	Turkey	21.9	53.1	Korea	29.7	55.4	Japan	45.0	65.8
Hong Kong	8.9	61.0	Fiji	12.5	57.9	Iran	14.5	45.9	Korea	18.7	45.5	Turkey	27.7	51.7	Korea	40.0	58.4
Malaysia	5.5	37.6	Malaysia	8.7	40.3	Fiji	12.6	39.9	Malaysia	16.1	39.3	Iran	25.6	47.8	Malaysia	26.0	38.0
ROC	4.2	28.8	ROC	8.6	39.9	Malaysia	11.2	35.6	Iran	15.9	38.7	Malaysia	21.2	39.5	Iran	23.7	34.7
Philippines	3.9	27.1	Korea	5.3	24.4	Korea	10.3	32.6	Fiji	13.1	31.9	Fiji	13.8	25.7	Sri Lanka	17.4	25.4
Sri Lanka	3.6	25.1	Mongolia	5.0	23.2	Sri Lanka	5.9	18.6	Sri Lanka	7.9	19.1	Sri Lanka	12.8	23.9	Mongolia	15.8	23.1
Mongolia	3.3	22.8	Philippines	5.0	23.1	Mongolia	5.9	18.6	Indonesia	7.0	17.1	Mongolia	11.1	20.8	Thailand	14.8	21.6
Korea	3.1	21.3	Sri Lanka	4.6	21.3	Indonesia	5.7	18.2	Thailand	7.0	17.0	Thailand	10.2	19.0	China	13.4	19.6
Indonesia	2.9	20.2	Indonesia	4.4	20.4	Philippines	4.9	15.5	Mongolia	6.8	16.4	Indonesia	9.2	17.2	Fiji	12.9	18.8
Thailand	2.5	17.0	Thailand	3.0	14.0	Thailand	4.8	15.3	Pakistan	5.9	14.3	Philippines	7.4	13.8	Indonesia	12.0	17.6
Pakistan	2.5	16.9	Pakistan	2.9	13.6	Pakistan	4.3	13.6	Philippines	5.9	14.3	China	7.3	13.5	Philippines	9.7	14.2
Bangladesh	2.4	16.8	Lao PDR	2.1	9.8	Bhutan	2.8	8.8	Bhutan	4.0	9.7	Pakistan	6.4	11.9	Bhutan	8.8	12.8
Nepal	2.0	13.5	Nepal	2.0	9.3	Nepal	2.8	8.7	Nepal	3.5	8.6	Bhutan	5.9	11.0	Pakistan	7.9	11.6
Cambodia	1.8	12.6	Bhutan	1.9	8.8	Lao PDR	2.4	7.5	Lao PDR	3.2	7.8	India	4.9	9.1	India	7.2	10.6
Lao PDR	1.8	12.2	Bangladesh	1.7	8.0	Bangladesh	1.9	6.1	China	3.0	7.4	Lao PDR	4.7	8.8	Vietnam	6.4	9.4
Vietnam	1.6	10.8	Vietnam	1.6	7.2	India	1.9	6.1	India	2.8	6.7	Nepal	4.6	8.6	Lao PDR	6.1	9.0
Bhutan	1.6	10.8	India	1.4	6.3	Vietnam	1.6	5.0	Vietnam	2.5	6.2	Vietnam	3.9	7.3	Bangladesh	5.9	8.7
India	1.3	8.9	Myanmar	1.1	5.1	China	1.5	4.7	Bangladesh	2.4	5.9	Bangladesh	3.7	6.9	Nepal	5.6	8.2
Myanmar	0.8	5.8	Cambodia	1.1	4.9	Cambodia	1.3	4.0	Myanmar	1.6	3.9	Myanmar	2.3	4.3	Cambodia	3.0	4.4
China	0.8	5.3	China	1.0	4.5	Myanmar	1.1	3.6	Cambodia	1.6	3.8	Cambodia	2.3	4.3	Myanmar	2.7	4.0
Brunei	121.4	836.0	Brunei	160.7	745.3	Brunei	79.1	250.1	Brunei	74.6	181.3	Brunei	64.0	119.3	Brunei	56.5	82.5
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	4.0	27.7	APO21	4.9	22.9	APO21	6.6	20.9	APO21	8.2	19.8	APO21	10.6	19.8	APO21	13.5	19.7
Asia25	2.6	18.1	Asia25	3.2	14.9	Asia25	4.3	13.6	Asia25	5.9	14.4	Asia25	9.4	17.5	Asia25	13.8	20.2
East Asia	2.8	19.1	East Asia	3.6	16.5	East Asia	4.8	15.3	East Asia	6.8	16.5	East Asia	11.4	21.3	East Asia	18.1	26.4
South Asia	1.6	11.0	South Asia	1.7	7.7	South Asia	2.3	7.3	South Asia	3.2	7.9	South Asia	5.3	9.9	South Asia	7.7	11.3
ASEAN	2.8	19.3	ASEAN	3.8	17.6	ASEAN	4.8	15.2	ASEAN	6.4	15.6	ASEAN	8.7	16.2	ASEAN	11.8	17.2
ASEAN6	3.4	23.6	ASEAN6	4.8	22.1	ASEAN6	6.2	19.5	ASEAN6	8.2	20.0	ASEAN6	11.0	20.6	ASEAN6	14.4	21.1
CLMV	1.5	10.0	CLMV	1.5	6.9	CLMV	1.5	4.9	CLMV	2.4	5.8	CLMV	3.6	6.7	CLMV	5.4	7.9
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	29.6	203.7	Australia	34.2	158.7	Australia	37.6	118.9	Australia	47.3	115.1	Australia	54.4	101.4	Australia	61.9	90.4
France	23.9	164.4	France	35.5	164.6	France	47.8	151.1	France	57.1	138.9	France	62.4	116.4	France	67.8	99.0
									Germany	56.9	138.2	Germany	62.0	115.7	Germany	67.8	99.0
									Italy	54.4	132.1	Italy	54.3	101.2	Italy	56.4	82.4
UK	24.2	167.0	UK	31.0	143.8	UK	37.8	119.6	UK	50.3	122.4	UK	56.5	105.4	UK	60.6	88.6
US	35.4	243.7	US	40.5	187.8	US	47.3	149.4	US	58.2	141.4	US	70.4	131.3	US	77.8	113.7
									EU15	53.0	128.8	EU15	57.8	107.7	EU15	62.5	91.3

Unit: US dollar (as of 2020).
Source: APO Productivity Database 2022.

Table 19 Per-Hour Labor Productivity Growth

——Growth rate of GDP at constant basic prices per hour, using the 2017 PPP

1995–2000		2000–2005		2005–2010		2010–2015		2015–2020		2015–2019		2019–2020	
Korea	5.6	China	6.5	China	11.0	China	7.6	Turkey	6.3	China	5.6	Turkey	10.3
ROC	5.5	Vietnam	6.1	India	6.9	Bhutan	7.0	Vietnam	5.2	Bangladesh	5.6	Vietnam	4.7
China	5.4	Cambodia	5.9	Bhutan	6.1	Mongolia	6.2	Bangladesh	4.9	Turkey	5.3	Korea	4.3
Myanmar	5.0	Thailand	5.2	Iran	6.1	India	5.2	China	4.7	Vietnam	5.3	ROC	3.9
Lao PDR	5.0	India	4.6	Mongolia	6.0	Thailand	4.8	Korea	4.2	India	5.3	Iran	3.1
Turkey	4.8	Korea	4.6	Sri Lanka	5.4	Vietnam	4.8	Lao PDR	3.6	Myanmar	5.2	Nepal	2.4
Vietnam	4.4	Sri Lanka	4.4	Bangladesh	4.8	Myanmar	4.7	ROC	3.1	Lao PDR	4.3	Bangladesh	2.1
India	4.1	Mongolia	4.0	Korea	4.7	Bangladesh	4.6	Singapore	2.8	Korea	4.2	Hong Kong	1.1
Mongolia	4.0	ROC	3.8	Lao PDR	4.5	Indonesia	4.5	Cambodia	2.7	Philippines	4.2	China	0.9
Singapore	3.8	Singapore	3.8	ROC	3.7	Sri Lanka	4.4	Thailand	2.6	Cambodia	4.1	Lao PDR	0.9
Bangladesh	3.3	Myanmar	3.6	Myanmar	3.7	Turkey	4.2	India	2.6	Thailand	3.9	Singapore	0.2
Cambodia	3.3	Bangladesh	3.5	Hong Kong	3.5	Philippines	3.9	Nepal	2.2	Singapore	3.4	Sri Lanka	0.2
Philippines	2.8	Iran	3.4	Nepal	3.2	Pakistan	2.7	Malaysia	1.8	ROC	2.9	Malaysia	0.0
Pakistan	2.7	Malaysia	3.4	Philippines	2.7	Cambodia	2.5	Pakistan	1.6	Pakistan	2.7	Indonesia	−2.6
Nepal	2.4	Lao PDR	3.2	Vietnam	2.5	Malaysia	2.3	Sri Lanka	1.6	Bhutan	2.5	Cambodia	−2.7
Bhutan	2.4	Indonesia	3.1	Thailand	2.4	Hong Kong	2.3	Philippines	1.6	Malaysia	2.3	Pakistan	−2.7
Japan	2.0	Hong Kong	3.1	Indonesia	2.2	Singapore	2.1	Hong Kong	1.4	Mongolia	2.1	Thailand	−2.8
Fiji	1.2	Turkey	2.7	Cambodia	2.1	Nepal	1.9	Bhutan	1.1	Nepal	2.1	Japan	−3.5
Thailand	1.2	Nepal	2.1	Turkey	2.0	Fiji	1.8	Mongolia	0.9	Sri Lanka	2.0	Mongolia	−4.1
Sri Lanka	1.0	Philippines	2.0	Malaysia	2.0	Korea	1.7	Indonesia	0.9	Indonesia	1.7	Bhutan	−4.5
Iran	0.7	Pakistan	1.8	Singapore	1.5	Lao PDR	1.7	Iran	0.0	Hong Kong	1.5	India	−8.1
Malaysia	0.6	Japan	1.8	Fiji	1.4	Japan	1.1	Japan	−0.2	Brunei	1.5	Philippines	−8.9
Hong Kong	−0.1	Bhutan	1.7	Japan	0.6	ROC	0.8	Myanmar	−1.4	Fiji	1.1	Brunei	−15.4
Brunei	−0.4	Fiji	−0.4	Pakistan	−0.2	Brunei	−0.6	Brunei	−1.9	Japan	0.7	Fiji	−20.0
Indonesia	−2.1	Brunei	−1.5	Brunei	−1.5	Iran	−1.5	Fiji	−3.1	Iran	−0.8	Myanmar	−27.8
(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	1.7	APO21	2.5	APO21	2.8	APO21	3.0	APO21	1.7	APO21	3.0	APO21	−3.3
Asia25	2.4	Asia25	3.6	Asia25	5.6	Asia25	4.8	Asia25	2.9	Asia25	4.1	Asia25	−1.6
East Asia	2.6	East Asia	3.4	East Asia	6.9	East Asia	5.6	East Asia	3.6	East Asia	4.4	East Asia	0.3
South Asia	3.8	South Asia	4.1	South Asia	5.9	South Asia	4.8	South Asia	2.6	South Asia	4.9	South Asia	−6.5
ASEAN	0.4	ASEAN	3.7	ASEAN	2.4	ASEAN	4.1	ASEAN	1.9	ASEAN	3.1	ASEAN	−3.2
ASEAN6	0.1	ASEAN6	3.5	ASEAN6	2.4	ASEAN6	4.2	ASEAN6	1.3	ASEAN6	2.4	ASEAN6	−3.5
CLMV	4.4	CLMV	5.3	CLMV	3.0	CLMV	4.3	CLMV	4.1	CLMV	5.3	CLMV	−1.0
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
Australia	2.3	Australia	1.9	Australia	0.9	Australia	1.7	Australia	0.9	Australia	−0.1	Australia	5.3
France	1.8	France	1.4	France	0.3	France	0.9	France	0.8	France	0.9	France	0.4
Germany	1.9	Germany	1.4	Germany	0.4	Germany	1.1	Germany	0.7	Germany	1.0	Germany	−0.6
Italy	1.1	Italy	0.1	Italy	−0.1	Italy	0.2	Italy	0.5	Italy	0.1	Italy	2.3
UK	2.3	UK	1.7	UK	0.6	UK	0.3	UK	1.1	UK	0.8	UK	2.4
US	2.5	US	2.2	US	1.6	US	0.6	US	1.4	US	0.9	US	3.4
		EU15	1.1	EU15	0.6	EU15	0.8	EU15	0.7	EU15	0.6	EU15	1.3

Unit: Percentage (average annual growth rate).
Source: APO Productivity Database 2022.

Table 20 TFP Growth

——Growth rate of total factor productivity

1995–2000		2000–2005		2005–2010		2010–2015		2015–2020		2015–2019		2019–2020	
Mongolia	3.7	Mongolia	3.7	Bhutan	3.2	Fiji	2.4	ROC	1.6	India	2.4	ROC	1.7
Iran	2.6	Cambodia	3.5	China	3.0	Pakistan	2.1	Vietnam	1.4	Cambodia	1.9	Iran	1.4
Cambodia	2.0	Iran	3.4	India	2.5	Mongolia	2.1	Turkey	1.3	Vietnam	1.7	Turkey	0.7
ROC	2.0	India	2.6	Iran	2.1	India	1.7	Korea	1.2	ROC	1.6	Nepal	0.6
Korea	1.8	Thailand	2.3	Sri Lanka	2.1	Turkey	1.5	China	0.5	Thailand	1.5	Korea	0.2
India	1.8	Malaysia	1.9	Hong Kong	2.0	Philippines	1.4	Cambodia	0.3	China	1.5	Vietnam	0.0
Sri Lanka	1.3	Hong Kong	1.9	Singapore	2.0	Vietnam	1.1	Hong Kong	0.2	Korea	1.5	Hong Kong	−2.5
Myanmar	1.0	Philippines	1.7	ROC	1.8	Bhutan	1.0	Singapore	0.2	Turkey	1.4	Bangladesh	−2.7
Lao PDR	0.9	Sri Lanka	1.6	Philippines	1.3	Hong Kong	1.0	Nepal	0.2	Singapore	1.1	Pakistan	−2.8
Pakistan	0.8	ROC	1.4	Korea	1.2	Japan	0.9	Pakistan	0.0	Hong Kong	0.9	Singapore	−3.4
China	0.5	Singapore	1.3	Mongolia	0.9	China	0.7	India	−0.2	Mongolia	0.9	China	−3.5
Singapore	0.5	Lao PDR	1.1	Lao PDR	0.9	Malaysia	0.5	Thailand	−0.2	Pakistan	0.7	Sri Lanka	−4.5
Turkey	0.4	Pakistan	0.9	Malaysia	0.8	ROC	0.4	Bangladesh	−0.3	Fiji	0.6	Japan	−4.9
Japan	0.4	Korea	0.7	Fiji	0.7	Singapore	0.3	Iran	−0.5	Malaysia	0.5	Lao PDR	−5.0
Philippines	0.1	Japan	0.7	Nepal	0.7	Thailand	0.3	Japan	−0.7	Philippines	0.4	Brunei	−5.7
Bangladesh	−0.1	China	0.6	Bangladesh	0.5	Nepal	0.3	Mongolia	−0.8	Japan	0.3	Cambodia	−6.3
Bhutan	−0.2	Turkey	0.3	Pakistan	0.2	Korea	0.2	Malaysia	−1.0	Bangladesh	0.2	Malaysia	−6.7
Brunei	−0.3	Indonesia	−0.1	Thailand	0.2	Sri Lanka	−0.1	Brunei	−1.2	Nepal	0.1	Indonesia	−7.2
Fiji	−0.4	Bangladesh	−0.1	Indonesia	0.1	Bangladesh	−0.2	Lao PDR	−1.4	Brunei	−0.1	Thailand	−7.2
Vietnam	−0.4	Vietnam	−0.1	Japan	−0.3	Indonesia	−1.3	Sri Lanka	−1.5	Myanmar	−0.1	Mongolia	−7.4
Nepal	−0.8	Myanmar	−0.1	Cambodia	−1.1	Cambodia	−1.6	Philippines	−2.1	Lao PDR	−0.6	India	−10.4
Hong Kong	−1.7	Fiji	−0.3	Myanmar	−1.3	Myanmar	−1.9	Indonesia	−2.4	Sri Lanka	−0.8	Bhutan	−12.1
Malaysia	−1.7	Nepal	−0.7	Turkey	−1.5	Iran	−3.1	Bhutan	−3.1	Bhutan	−0.8	Philippines	−12.1
Thailand	−2.8	Brunei	−1.1	Vietnam	−1.6	Lao PDR	−3.2	Fiji	−3.4	Iran	−1.0	Fiji	−19.5
Indonesia	−4.9	Bhutan	−2.2	Brunei	−3.4	Brunei	−4.4	Myanmar	−5.7	Indonesia	−1.1	Myanmar	−27.8
(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	0.1	APO21	1.2	APO21	0.8	APO21	0.7	APO21	−0.4	APO21	0.9	APO21	−5.5
Asia25	0.4	Asia25	1.2	Asia25	1.7	Asia25	0.7	Asia25	0.0	Asia25	1.2	Asia25	−4.8
East Asia	0.7	East Asia	0.9	East Asia	2.3	East Asia	1.0	East Asia	0.5	East Asia	1.4	East Asia	−3.3
South Asia	1.5	South Asia	2.0	South Asia	1.9	South Asia	1.3	South Asia	−0.3	South Asia	1.8	South Asia	−8.8
ASEAN	−2.3	ASEAN	1.3	ASEAN	0.4	ASEAN	0.1	ASEAN	−1.2	ASEAN	0.2	ASEAN	−7.0
ASEAN6	−2.8	ASEAN6	1.2	ASEAN6	0.6	ASEAN6	−0.2	ASEAN6	−1.6	ASEAN6	−0.1	ASEAN6	−7.5
CLMV	0.1	CLMV	0.2	CLMV	−1.3	CLMV	0.3	CLMV	0.2	CLMV	1.4	CLMV	−4.7
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
US	1.1	US	0.8	US	0.1	US	0.4	US	0.1	US	0.4	US	−0.9

Unit: Percentage (average annual growth rate).
Source: APO Productivity Database 2022.

Table 21 Output Growth and Contributions of Labor, Capital, and TFP

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		IT		Non–IT			
Bangladesh	1970–1975	−5.2	0.9	(−17)	0.2	(−3)	0.0	(0)	0.0	(1)	−6.1	(119)
	1975–1980	3.8	1.5	(39)	0.8	(22)	0.1	(2)	1.9	(49)	−0.4	(−11)
	1980–1985	3.0	1.1	(38)	0.5	(17)	0.1	(2)	2.2	(74)	−0.9	(−31)
	1985–1990	4.6	1.5	(32)	0.7	(15)	0.1	(2)	2.4	(51)	0.0	(0)
	1990–1995	3.8	1.2	(32)	0.5	(13)	0.1	(2)	2.7	(70)	−0.7	(−18)
	1995–2000	4.4	0.5	(12)	0.1	(3)	0.2	(4)	3.7	(85)	−0.1	(−3)
	2000–2005	6.1	1.2	(19)	0.4	(7)	0.5	(8)	4.2	(68)	−0.1	(−1)
	2005–2010	7.1	0.9	(13)	0.3	(4)	0.7	(10)	4.6	(65)	0.5	(8)
	2010–2015	7.2	1.0	(13)	0.8	(11)	0.5	(7)	5.1	(72)	−0.2	(−3)
	2015–2020	6.4	0.5	(8)	0.4	(7)	0.4	(6)	5.4	(85)	−0.3	(−5)
	1970–2020	4.1	1.0	(25)	0.5	(11)	0.3	(6)	3.2	(78)	−0.8	(−20)
Brunei	1970–1975	4.9	0.7	(14)	0.3	(6)	0.0	(0)	2.7	(54)	1.3	(26)
	1975–1980	11.7	0.8	(7)	0.3	(2)	0.4	(4)	3.1	(27)	7.1	(61)
	1980–1985	−4.0	0.4	(−10)	0.4	(−9)	0.1	(−3)	7.3	(−184)	−12.2	(305)
	1985–1990	−1.9	1.0	(−54)	0.4	(−19)	0.0	(1)	3.6	(−190)	−6.9	(361)
	1990–1995	2.9	0.8	(26)	0.2	(7)	0.4	(12)	6.4	(219)	−4.8	(−164)
	1995–2000	2.9	0.7	(23)	0.0	(2)	0.1	(3)	2.4	(81)	−0.3	(−10)
	2000–2005	1.1	0.5	(49)	0.2	(17)	0.1	(7)	1.4	(132)	−1.1	(−106)
	2005–2010	0.1	0.4	(274)	0.2	(145)	0.2	(154)	2.7	(2029)	−3.4	(−2503)
	2010–2015	0.9	0.3	(36)	0.0	(−3)	0.2	(21)	4.8	(553)	−4.4	(−508)
	2015–2020	1.8	1.2	(65)	−0.1	(−6)	0.1	(4)	1.9	(107)	−1.2	(−69)
	1970–2020	2.0	0.7	(33)	0.2	(9)	0.2	(7)	3.6	(178)	−2.6	(−127)
China	1970–1975	4.2	1.6	(37)	0.4	(10)	0.0	(1)	3.6	(85)	−1.4	(−33)
	1975–1980	5.7	1.6	(28)	0.7	(12)	0.0	(1)	3.1	(55)	0.3	(5)
	1980–1985	8.4	1.9	(23)	0.4	(5)	0.1	(1)	3.5	(42)	2.4	(29)
	1985–1990	6.4	1.3	(20)	0.4	(6)	0.1	(2)	4.2	(66)	0.5	(7)
	1990–1995	9.6	0.4	(4)	0.9	(10)	0.1	(2)	4.4	(45)	3.8	(39)
	1995–2000	7.4	0.9	(12)	0.4	(5)	0.3	(4)	5.4	(72)	0.5	(7)
	2000–2005	8.4	0.9	(10)	0.8	(9)	0.8	(9)	5.4	(65)	0.6	(7)
	2005–2010	10.7	−0.1	(−1)	0.9	(8)	0.5	(5)	6.5	(60)	3.0	(28)
	2010–2015	7.0	−0.3	(−4)	0.6	(8)	0.6	(9)	5.4	(78)	0.7	(9)
	2015–2020	4.5	−0.1	(−2)	−0.3	(−7)	0.5	(10)	3.9	(88)	0.5	(11)
	1970–2020	7.2	0.8	(11)	0.5	(7)	0.3	(4)	4.5	(63)	1.1	(15)
Fiji	1970–1975	5.6	1.7	(31)	0.9	(15)	0.1	(1)	2.8	(50)	0.1	(3)
	1975–1980	3.7	1.3	(36)	1.3	(37)	0.0	(1)	2.9	(80)	−2.0	(−54)
	1980–1985	0.7	1.3	(185)	0.9	(125)	0.1	(8)	1.5	(219)	−3.1	(−438)
	1985–1990	3.7	0.9	(24)	1.4	(37)	0.2	(7)	0.4	(11)	0.8	(21)
	1990–1995	2.6	1.4	(53)	1.3	(48)	0.1	(4)	1.4	(55)	−1.6	(−59)
	1995–2000	2.0	0.4	(21)	0.7	(35)	−0.1	(−3)	1.3	(64)	−0.4	(−18)
	2000–2005	2.0	1.1	(57)	0.6	(32)	0.1	(3)	0.5	(26)	−0.3	(−17)
	2005–2010	0.7	−0.3	(−45)	0.2	(29)	0.1	(14)	0.0	(−2)	0.7	(103)
	2010–2015	3.7	0.8	(22)	0.1	(2)	0.1	(4)	0.2	(6)	2.4	(65)
	2015–2020	−1.6	0.7	(−41)	0.2	(−12)	0.2	(−10)	0.8	(−51)	−3.4	(214)
	1970–2020	2.3	0.9	(41)	0.8	(33)	0.1	(4)	1.2	(52)	−0.7	(−29)
India	1970–1975	2.8	1.9	(66)	0.3	(12)	0.0	(1)	0.9	(31)	−0.3	(−9)
	1975–1980	3.1	1.8	(60)	0.5	(17)	0.0	(1)	1.2	(39)	−0.5	(−16)
	1980–1985	5.0	1.6	(31)	0.8	(15)	0.0	(1)	1.1	(21)	1.6	(32)
	1985–1990	5.8	1.4	(24)	0.9	(15)	0.1	(1)	1.5	(25)	2.0	(34)
	1990–1995	5.0	1.3	(26)	0.5	(9)	0.1	(2)	1.5	(31)	1.6	(33)
	1995–2000	5.7	1.1	(19)	1.0	(17)	0.2	(3)	1.7	(30)	1.8	(32)
	2000–2005	6.5	1.2	(19)	0.6	(9)	0.2	(3)	2.0	(30)	2.6	(39)
	2005–2010	7.8	0.5	(7)	1.2	(16)	0.3	(4)	3.3	(42)	2.5	(31)
	2010–2015	6.2	0.6	(10)	0.8	(13)	0.2	(3)	2.9	(47)	1.7	(27)
	2015–2020	3.4	0.5	(15)	0.4	(11)	0.2	(7)	2.5	(73)	−0.2	(−5)
	1970–2020	5.1	1.2	(23)	0.7	(13)	0.1	(3)	1.9	(36)	1.3	(25)
Iran	1970–1975	9.2	0.6	(6)	0.6	(6)	0.1	(1)	4.5	(49)	3.5	(38)
	1975–1980	−3.2	1.0	(−30)	0.1	(−3)	0.0	(0)	3.9	(−121)	−8.3	(254)
	1980–1985	3.5	0.7	(21)	0.1	(2)	0.1	(2)	2.1	(59)	0.6	(16)
	1985–1990	1.0	1.1	(107)	0.7	(65)	0.0	(4)	−0.3	(−33)	−0.5	(−44)
	1990–1995	3.3	0.5	(16)	0.5	(15)	0.1	(2)	0.0	(−1)	2.2	(68)
	1995–2000	4.1	0.8	(20)	0.3	(8)	0.1	(2)	0.3	(7)	2.6	(63)
	2000–2005	7.0	0.8	(11)	0.5	(7)	0.3	(4)	2.2	(31)	3.4	(48)
	2005–2010	5.2	−0.2	(−3)	0.4	(7)	0.2	(3)	2.7	(52)	2.1	(41)
	2010–2015	−0.4	0.3	(−65)	0.3	(−83)	0.1	(−28)	1.9	(−466)	−3.1	(742)
	2015–2020	1.2	0.3	(24)	0.1	(8)	0.0	(0)	1.3	(116)	−0.5	(−47)
	1970–2020	3.1	0.6	(19)	0.4	(11)	0.1	(3)	1.9	(60)	0.2	(7)
Bhutan	1970–1975	2.6	1.4	(54)	0.1	(5)	0.0	(1)	2.7	(103)	−1.7	(−63)
	1975–1980	7.1	1.5	(21)	−0.2	(−2)	0.1	(1)	1.9	(27)	3.8	(54)
	1980–1985	5.3	1.1	(20)	0.7	(12)	0.1	(1)	2.6	(49)	0.9	(17)
	1985–1990	7.1	1.0	(15)	1.5	(21)	0.1	(1)	2.7	(39)	1.8	(25)
	1990–1995	3.1	−0.7	(−23)	1.5	(49)	0.2	(7)	2.3	(74)	−0.2	(−8)
	1995–2000	6.7	2.1	(31)	0.6	(9)	0.8	(12)	3.4	(51)	−0.2	(−3)
	2000–2005	6.4	2.3	(36)	0.8	(12)	0.0	(0)	5.6	(87)	−2.2	(−35)
	2005–2010	9.9	1.6	(16)	1.1	(11)	0.4	(4)	3.6	(36)	3.2	(33)
	2010–2015	6.5	−0.2	(−3)	0.9	(13)	0.2	(3)	4.7	(72)	1.0	(15)
	2015–2020	2.2	0.4	(18)	1.5	(69)	0.0	(1)	3.4	(150)	−3.1	(−138)
	1970–2020	5.7	1.1	(18)	0.8	(15)	0.2	(3)	3.3	(58)	0.3	(6)
Cambodia	1970–1975	−4.3	0.7	(−16)	0.3	(−7)	0.0	(0)	2.1	(−50)	−7.4	(174)
	1975–1980	−5.9	−0.3	(6)	0.4	(−7)	0.0	(0)	0.1	(−2)	−6.0	(103)
	1980–1985	1.1	1.0	(86)	0.2	(16)	0.0	(1)	−0.1	(−5)	0.0	(3)
	1985–1990	7.2	0.9	(13)	0.2	(3)	0.0	(0)	0.3	(4)	5.8	(80)
	1990–1995	4.9	1.5	(31)	0.3	(6)	0.0	(0)	1.0	(21)	2.0	(41)
	1995–2000	7.9	2.2	(28)	0.7	(9)	0.1	(1)	3.0	(38)	2.0	(25)
	2000–2005	9.3	1.8	(19)	0.6	(6)	0.1	(1)	3.3	(36)	3.5	(38)
	2005–2010	6.1	1.9	(31)	0.4	(6)	0.0	(0)	4.8	(80)	−1.1	(−18)
	2010–2015	4.6	1.0	(23)	1.7	(36)	0.1	(1)	3.4	(75)	−1.6	(−36)
	2015–2020	5.0	1.3	(25)	0.2	(4)	0.0	(1)	3.2	(64)	0.3	(6)
	1970–2020	3.6	1.2	(33)	0.5	(14)	0.0	(1)	2.1	(59)	−0.3	(−7)
ROC	1970–1975	9.7	1.8	(18)	0.1	(1)	0.3	(3)	4.5	(46)	3.1	(31)
	1975–1980	11.3	1.7	(15)	1.1	(10)	0.3	(2)	4.2	(37)	3.9	(35)
	1980–1985	7.6	1.2	(16)	0.2	(3)	0.3	(5)	3.2	(43)	2.6	(34)
	1985–1990	9.6	1.0	(10)	0.8	(8)	0.3	(3)	3.1	(33)	4.3	(45)
	1990–1995	7.6	1.0	(13)	0.6	(8)	0.3	(3)	3.0	(40)	2.7	(35)
	1995–2000	6.0	0.3	(5)	0.6	(10)	0.6	(10)	2.6	(43)	2.0	(32)
	2000–2005	4.1	0.1	(3)	0.9	(21)	0.2	(6)	1.5	(36)	1.4	(35)
	2005–2010	4.2	0.2	(5)	0.9	(22)	0.0	(1)	1.2	(28)	1.8	(44)
	2010–2015	2.9	1.0	(36)	0.6	(21)	0.1	(2)	0.8	(27)	0.4	(14)
	2015–2020	2.9	−0.1	(−3)	0.4	(14)	0.1	(2)	0.9	(31)	1.6	(56)
	1970–2020	6.6	0.8	(13)	0.6	(10)	0.3	(4)	2.5	(38)	2.4	(36)
Hong Kong	1970–1975	6.6	1.9	(29)	0.1	(2)	0.2	(3)	3.2	(48)	1.2	(18)
	1975–1980	11.2	2.0	(18)	0.7	(7)	0.3	(2)	3.8	(34)	4.5	(40)
	1980–1985	5.3	0.9	(16)	0.6	(11)	0.3	(5)	3.0	(55)	0.7	(12)
	1985–1990	8.0	0.2	(2)	1.0	(13)	0.3	(4)	2.3	(29)	4.1	(52)
	1990–1995	6.0	0.6	(9)	0.9	(15)	0.4	(6)	2.7	(45)	1.5	(24)
	1995–2000	2.7	1.5	(53)	0.5	(17)	0.6	(22)	1.9	(69)	−1.7	(−61)
	2000–2005	4.1	0.5	(13)	0.3	(6)	0.3	(8)	1.1	(26)	1.9	(46)
	2005–2010	3.8	0.2	(5)	0.3	(7)	0.3	(8)	1.0	(26)	2.0	(54)
	2010–2015	2.8	0.3	(11)	0.6	(22)	0.3	(11)	0.6	(21)	1.0	(35)
	2015–2020	0.2	−0.7	(−483)	0.5	(316)	0.1	(77)	0.1	(39)	0.2	(151)
	1970–2020	5.1	0.7	(14)	0.5	(11)	0.3	(6)	1.9	(38)	1.5	(30)
Indonesia	1970–1975	8.3	1.5	(18)	0.8	(10)	0.0	(0)	4.3	(52)	1.7	(21)
	1975–1980	7.8	1.4	(18)	0.6	(7)	0.1	(2)	5.6	(72)	0.1	(1)
	1980–1985	4.7	1.4	(31)	0.5	(10)	0.1	(2)	5.2	(111)	−2.5	(−54)
	1985–1990	7.5	0.9	(13)	1.2	(17)	0.2	(3)	4.5	(61)	0.5	(7)
	1990–1995	7.5	0.5	(7)	2.5	(33)	0.2	(3)	4.7	(62)	−0.3	(−5)
	1995–2000	0.7	1.1	(161)	1.1	(158)	0.1	(19)	3.3	(492)	−4.9	(−731)
	2000–2005	4.5	0.5	(12)	1.4	(32)	0.2	(4)	2.4	(54)	−0.1	(−1)
	2005–2010	5.4	1.1	(21)	0.6	(12)	0.1	(2)	3.4	(63)	0.1	(2)
	2010–2015	5.3	0.3	(6)	2.2	(41)	0.2	(4)	4.0	(75)	−1.3	(−25)
	2015–2020	3.3	1.1	(33)	1.1	(34)	0.2	(5)	3.3	(98)	−2.4	(−70)
	1970–2020	5.5	1.0	(18)	1.2	(22)	0.1	(3)	4.1	(74)	−0.9	(−16)
Japan	1970–1975	4.4	−0.4	(−10)	1.1	(24)	0.2	(5)	2.7	(62)	0.8	(18)
	1975–1980	4.7	0.7	(14)	0.8	(18)	0.2	(4)	1.6	(34)	1.4	(30)
	1980–1985	4.3	0.5	(11)	0.6	(15)	0.4	(9)	1.5	(35)	1.3	(31)
	1985–1990	4.9	0.4	(8)	0.6	(12)	0.5	(10)	1.7	(36)	1.6	(34)
	1990–1995	1.3	−0.2	(−18)	0.4	(31)	0.3	(19)	1.1	(80)	−0.2	(−12)
	1995–2000	1.0	−0.6	(−54)	0.4	(39)	0.3	(34)	0.5	(47)	0.4	(35)
	2000–2005	1.2	−0.3	(−28)	0.5	(40)	0.2	(20)	0.1	(12)	0.7	(56)
	2005–2010	0.0	−0.4	(774)	0.4	(−851)	0.2	(−311)	0.1	(−171)	−0.3	(659)
	2010–2015	1.0	0.0	(−1)	0.2	(16)	0.1	(11)	−0.1	(−13)	0.9	(86)
	2015–2020	−0.4	−0.1	(35)	0.3	(−67)	0.1	(−25)	0.1	(−35)	−0.7	(192)
	1970–2020	2.2	−0.1	(−2)	0.5	(23)	0.2	(11)	0.9	(42)	0.6	(26)

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		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		IT		Non–IT			
Korea	1970–1975	9.4	1.6	(17)	0.2	(3)	0.1	(1)	4.4	(46)	3.1	(33)
	1975–1980	7.7	1.3	(18)	0.6	(7)	0.4	(5)	6.1	(80)	−0.7	(−9)
	1980–1985	8.9	1.1	(13)	1.7	(20)	0.4	(4)	3.6	(40)	2.1	(23)
	1985–1990	9.9	1.6	(16)	1.4	(14)	0.5	(5)	4.2	(43)	2.1	(21)
	1990–1995	8.3	1.0	(12)	1.6	(19)	0.4	(5)	3.8	(46)	1.4	(17)
	1995–2000	5.6	0.0	(0)	0.7	(12)	0.6	(10)	2.5	(45)	1.8	(33)
	2000–2005	5.0	0.2	(4)	1.2	(25)	0.4	(8)	2.4	(49)	0.7	(14)
	2005–2010	4.4	−0.1	(−3)	1.0	(23)	0.2	(4)	2.1	(49)	1.2	(28)
	2010–2015	3.0	0.6	(21)	0.6	(19)	0.1	(2)	1.6	(52)	0.2	(5)
	2015–2020	2.1	−1.1	(−54)	0.4	(22)	0.1	(6)	1.4	(69)	1.2	(58)
	1970–2020	6.4	0.6	(10)	0.9	(15)	0.3	(5)	3.2	(50)	1.3	(20)
Malaysia	1970–1975	7.6	1.3	(17)	0.4	(5)	0.1	(1)	3.9	(51)	1.9	(26)
	1975–1980	8.1	1.3	(16)	0.8	(10)	0.1	(1)	4.9	(60)	1.0	(13)
	1980–1985	5.2	1.3	(25)	0.9	(17)	0.1	(3)	5.8	(112)	−2.9	(−56)
	1985–1990	6.6	1.4	(21)	0.7	(11)	0.2	(3)	2.7	(41)	1.6	(24)
	1990–1995	9.3	1.1	(11)	1.2	(13)	0.4	(5)	6.4	(68)	0.3	(3)
	1995–2000	4.5	1.3	(30)	0.6	(13)	0.5	(11)	3.7	(83)	−1.7	(−37)
	2000–2005	5.5	0.7	(13)	0.9	(16)	0.8	(15)	1.1	(21)	1.9	(35)
	2005–2010	4.8	1.0	(21)	0.5	(10)	0.6	(13)	1.9	(39)	0.8	(16)
	2010–2015	5.2	1.1	(22)	0.4	(8)	0.5	(10)	2.7	(52)	0.5	(9)
	2015–2020	2.3	0.2	(8)	0.7	(30)	0.2	(10)	2.2	(92)	−1.0	(−41)
	1970–2020	5.9	1.1	(18)	0.7	(12)	0.4	(6)	3.5	(59)	0.3	(4)
Myanmar	1970–1975	2.9	1.1	(38)	−0.2	(−5)	0.0	(1)	1.8	(61)	0.2	(6)
	1975–1980	7.6	1.3	(17)	0.6	(8)	0.1	(2)	5.0	(65)	0.6	(8)
	1980–1985	4.7	1.2	(26)	0.5	(11)	0.1	(2)	4.4	(95)	−1.6	(−34)
	1985–1990	0.6	1.2	(193)	0.6	(99)	0.0	(7)	1.1	(164)	−2.3	(−362)
	1990–1995	4.4	1.3	(30)	0.2	(5)	0.1	(2)	2.6	(59)	0.2	(5)
	1995–2000	7.8	1.6	(21)	0.5	(6)	0.3	(3)	4.4	(57)	1.0	(12)
	2000–2005	5.6	1.0	(19)	0.7	(12)	0.1	(3)	3.9	(69)	−0.1	(−3)
	2005–2010	4.8	0.5	(11)	0.7	(14)	0.2	(3)	4.8	(100)	−1.3	(−28)
	2010–2015	6.1	0.5	(9)	0.6	(9)	0.2	(3)	6.7	(109)	−1.9	(−31)
	2015–2020	−3.0	−0.8	(27)	−0.1	(3)	0.1	(−3)	3.5	(−116)	−5.7	(189)
	1970–2020	4.2	0.9	(22)	0.4	(10)	0.1	(3)	3.8	(92)	−1.1	(−26)
Pakistan	1970–1975	3.6	1.2	(34)	0.7	(19)	0.0	(1)	1.7	(47)	0.0	(−1)
	1975–1980	5.4	1.7	(31)	0.9	(17)	0.0	(0)	2.5	(47)	0.3	(5)
	1980–1985	6.2	1.4	(23)	0.1	(2)	0.0	(1)	2.6	(42)	2.0	(32)
	1985–1990	6.4	1.4	(23)	1.1	(17)	0.1	(1)	2.7	(42)	1.1	(17)
	1990–1995	5.4	1.0	(18)	0.8	(15)	0.1	(1)	2.7	(50)	0.9	(16)
	1995–2000	4.7	1.0	(22)	0.3	(7)	0.0	(1)	2.5	(54)	0.8	(17)
	2000–2005	4.4	1.1	(24)	0.7	(15)	0.1	(3)	1.6	(37)	0.9	(20)
	2005–2010	3.1	1.3	(42)	0.2	(5)	0.1	(2)	1.3	(43)	0.2	(8)
	2010–2015	3.8	0.4	(11)	0.6	(16)	0.1	(2)	0.6	(15)	2.1	(57)
	2015–2020	3.3	0.9	(26)	1.0	(29)	0.1	(4)	1.4	(42)	0.0	(−1)
	1970–2020	4.6	1.1	(25)	0.6	(14)	0.1	(1)	2.0	(42)	0.8	(18)
Singapore	1970–1975	8.8	2.6	(29)	0.4	(5)	0.3	(4)	5.1	(57)	0.5	(5)
	1975–1980	8.0	2.3	(29)	0.6	(8)	0.3	(4)	3.7	(46)	1.1	(14)
	1980–1985	6.6	1.4	(21)	1.3	(20)	0.6	(10)	4.3	(66)	−1.1	(−16)
	1985–1990	7.8	2.1	(27)	0.7	(9)	0.8	(11)	2.6	(34)	1.5	(20)
	1990–1995	8.6	2.1	(24)	1.7	(19)	0.7	(8)	3.4	(39)	0.8	(9)
	1995–2000	6.2	1.1	(17)	1.0	(16)	0.6	(9)	3.1	(49)	0.5	(8)
	2000–2005	4.9	0.5	(10)	1.0	(21)	0.5	(11)	1.5	(31)	1.3	(27)
	2005–2010	7.2	2.4	(33)	0.4	(6)	0.5	(6)	2.0	(27)	2.0	(27)
	2010–2015	4.7	1.1	(24)	0.5	(12)	0.6	(13)	2.1	(44)	0.3	(7)
	2015–2020	2.3	−0.2	(−10)	0.5	(21)	0.7	(30)	1.1	(50)	0.2	(10)
	1970–2020	6.5	1.5	(24)	0.8	(12)	0.6	(9)	2.9	(44)	0.7	(11)
Thailand	1970–1975	5.5	0.9	(17)	1.4	(26)	0.1	(1)	2.8	(51)	0.3	(5)
	1975–1980	7.4	2.7	(36)	1.1	(14)	0.2	(3)	3.3	(44)	0.2	(3)
	1980–1985	5.3	1.0	(19)	1.8	(35)	0.3	(6)	3.3	(61)	−1.1	(−21)
	1985–1990	9.8	1.5	(15)	1.7	(17)	0.4	(4)	4.1	(42)	2.2	(22)
	1990–1995	8.1	0.7	(9)	1.8	(22)	0.7	(8)	6.1	(75)	−1.1	(−14)
	1995–2000	0.7	−0.2	(−22)	1.9	(251)	0.1	(11)	1.8	(236)	−2.8	(−376)
	2000–2005	5.3	0.1	(1)	1.8	(34)	0.4	(7)	0.7	(14)	2.3	(44)
	2005–2010	3.7	0.5	(13)	0.8	(22)	0.7	(19)	1.5	(41)	0.2	(5)
	2010–2015	3.0	−0.7	(−24)	1.6	(53)	0.5	(18)	1.3	(43)	0.3	(10)
	2015–2020	1.6	−0.4	(−25)	0.6	(38)	0.0	(2)	1.6	(100)	−0.2	(−16)
	1970–2020	5.0	0.6	(12)	1.5	(29)	0.3	(7)	2.6	(52)	0.0	(0)

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		IT		Non–IT			
Lao PDR	1970–1975	3.8	1.0	(27)	0.1	(3)	0.0	(0)	1.5	(39)	1.2	(31)
	1975–1980	1.6	−0.1	(−8)	0.1	(8)	0.0	(1)	1.3	(82)	0.3	(16)
	1980–1985	3.9	0.6	(16)	0.2	(5)	0.1	(2)	2.3	(60)	0.7	(17)
	1985–1990	4.0	1.6	(42)	0.1	(4)	0.1	(1)	2.9	(72)	−0.7	(−19)
	1990–1995	4.4	1.6	(35)	0.1	(3)	0.1	(3)	3.4	(76)	−0.8	(−18)
	1995–2000	7.3	1.0	(14)	0.5	(7)	0.1	(2)	4.7	(64)	0.9	(12)
	2000–2005	5.5	1.0	(18)	0.5	(8)	0.2	(3)	2.7	(50)	1.1	(21)
	2005–2010	7.1	1.0	(14)	0.8	(11)	0.3	(4)	4.1	(59)	0.9	(12)
	2010–2015	3.4	0.6	(19)	0.6	(16)	0.2	(5)	5.2	(152)	−3.2	(−93)
	2015–2020	5.6	0.7	(12)	0.0	(0)	0.1	(1)	6.3	(112)	−1.4	(−26)
	1970–2020	4.7	0.9	(20)	0.3	(7)	0.1	(2)	3.4	(74)	−0.1	(−3)
Mongolia	1970–1975	6.5	0.6	(8)	2.6	(40)	0.1	(1)	3.0	(46)	0.3	(5)
	1975–1980	5.4	0.9	(17)	0.7	(13)	0.1	(2)	4.4	(82)	−0.8	(−14)
	1980–1985	6.6	0.9	(13)	0.4	(7)	0.2	(3)	5.2	(78)	0.0	(−1)
	1985–1990	3.8	1.5	(39)	0.3	(8)	0.1	(2)	2.9	(75)	−0.9	(−24)
	1990–1995	−1.8	−0.2	(12)	−1.2	(66)	0.0	(−3)	0.1	(−7)	−0.6	(31)
	1995–2000	3.6	−0.1	(−2)	0.1	(3)	0.1	(3)	−0.3	(−9)	3.7	(105)
	2000–2005	6.3	0.5	(8)	1.0	(15)	0.3	(5)	0.8	(13)	3.7	(59)
	2005–2010	6.4	0.0	(1)	0.3	(4)	0.4	(7)	4.7	(74)	0.9	(14)
	2010–2015	9.8	1.1	(12)	1.1	(11)	0.1	(1)	5.4	(55)	2.1	(22)
	2015–2020	3.0	0.7	(23)	0.8	(26)	0.3	(9)	2.0	(68)	−0.8	(−25)
	1970–2020	5.0	0.6	(12)	0.6	(12)	0.2	(3)	2.8	(57)	0.8	(16)
Nepal	1970–1975	3.0	1.6	(54)	0.2	(7)	0.0	(1)	1.0	(35)	0.1	(3)
	1975–1980	3.6	1.7	(46)	0.2	(7)	0.0	(1)	1.9	(53)	−0.3	(−8)
	1980–1985	4.1	0.9	(21)	1.9	(47)	0.0	(1)	2.5	(62)	−1.3	(−31)
	1985–1990	5.1	0.6	(12)	1.7	(34)	0.0	(1)	2.4	(46)	0.4	(8)
	1990–1995	5.2	1.5	(28)	1.7	(33)	0.0	(1)	2.5	(49)	−0.5	(−10)
	1995–2000	4.4	1.1	(26)	1.8	(42)	0.1	(2)	2.2	(50)	−0.8	(−19)
	2000–2005	3.2	0.6	(20)	1.2	(39)	0.1	(2)	1.9	(60)	−0.7	(−21)
	2005–2010	4.4	0.6	(14)	0.7	(16)	0.0	(0)	2.3	(54)	0.7	(16)
	2010–2015	1.5	−0.2	(−11)	−0.4	(−29)	0.0	(1)	1.9	(121)	0.3	(17)
	2015–2020	5.5	1.7	(30)	0.1	(1)	0.0	(1)	3.5	(64)	0.2	(4)
	1970–2020	4.0	1.0	(25)	0.9	(23)	0.0	(1)	2.2	(56)	−0.2	(−5)
Philippines	1970–1975	6.2	1.9	(31)	0.2	(3)	0.2	(3)	3.7	(60)	0.2	(4)
	1975–1980	5.6	1.1	(20)	0.7	(13)	0.1	(2)	5.0	(90)	−1.4	(−25)
	1980–1985	−0.5	1.2	(−217)	0.4	(−76)	0.2	(−46)	3.6	(−685)	−6.0	(1125)
	1985–1990	5.7	1.0	(17)	0.7	(12)	0.1	(1)	1.2	(22)	2.7	(47)
	1990–1995	3.2	1.0	(31)	0.1	(4)	0.1	(3)	2.4	(75)	−0.4	(−13)
	1995–2000	4.5	0.7	(16)	1.0	(22)	0.3	(8)	2.4	(53)	0.1	(1)
	2000–2005	4.7	1.1	(23)	0.2	(3)	0.2	(5)	1.5	(32)	1.7	(37)
	2005–2010	4.9	0.9	(19)	0.5	(11)	0.1	(2)	2.0	(42)	1.3	(26)
	2010–2015	5.7	0.7	(12)	0.4	(8)	0.1	(2)	3.0	(53)	1.4	(25)
	2015–2020	3.4	0.7	(20)	0.4	(13)	0.2	(5)	4.2	(124)	−2.1	(−62)
	1970–2020	4.3	1.0	(24)	0.5	(11)	0.2	(4)	2.9	(67)	−0.2	(−6)
Sri Lanka	1970–1975	3.5	0.8	(23)	0.3	(9)	0.0	(0)	2.0	(57)	0.4	(11)
	1975–1980	4.6	0.9	(19)	0.2	(5)	0.0	(0)	2.8	(62)	0.6	(14)
	1980–1985	4.8	0.1	(3)	0.9	(18)	0.0	(1)	3.1	(65)	0.6	(13)
	1985–1990	3.6	1.5	(43)	0.3	(7)	0.0	(0)	0.7	(18)	1.1	(32)
	1990–1995	5.5	0.4	(7)	0.8	(15)	0.0	(1)	0.6	(12)	3.7	(66)
	1995–2000	4.9	1.9	(39)	0.1	(3)	0.1	(2)	1.4	(30)	1.3	(27)
	2000–2005	4.6	0.1	(1)	0.9	(20)	0.1	(3)	2.0	(42)	1.6	(34)
	2005–2010	6.5	0.4	(6)	−0.2	(−3)	0.1	(2)	4.1	(64)	2.1	(32)
	2010–2015	4.4	0.0	(0)	0.3	(6)	0.1	(1)	4.2	(95)	−0.1	(−3)
	2015–2020	2.1	0.2	(8)	0.5	(25)	0.1	(3)	2.9	(136)	−1.5	(−71)
	1970–2020	4.5	0.6	(14)	0.4	(9)	0.1	(1)	2.4	(54)	1.0	(22)
Turkey	1970–1975	5.0	1.1	(22)	0.2	(4)	0.1	(2)	5.9	(118)	−2.3	(−47)
	1975–1980	2.8	0.4	(16)	0.3	(11)	0.1	(2)	4.8	(169)	−2.8	(−99)
	1980–1985	5.3	0.5	(10)	0.1	(2)	0.1	(2)	2.7	(52)	1.8	(34)
	1985–1990	4.9	0.9	(18)	0.3	(7)	0.2	(5)	3.6	(73)	−0.1	(−3)
	1990–1995	2.7	0.5	(17)	0.3	(12)	0.1	(4)	3.5	(128)	−1.6	(−61)
	1995–2000	4.2	−0.2	(−4)	0.6	(14)	0.3	(7)	3.0	(72)	0.4	(11)
	2000–2005	5.0	0.8	(15)	0.9	(19)	0.1	(2)	2.9	(58)	0.3	(6)
	2005–2010	3.7	0.6	(15)	0.5	(14)	0.2	(7)	3.8	(104)	−1.5	(−40)
	2010–2015	6.8	0.9	(14)	0.7	(11)	0.3	(4)	3.4	(50)	1.5	(22)
	2015–2020	4.8	−0.6	(−11)	0.8	(16)	0.1	(3)	3.2	(66)	1.3	(26)
	1970–2020	4.5	0.5	(11)	0.5	(11)	0.2	(4)	3.7	(81)	−0.3	(−7)

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		IT		Non–IT			
Vietnam	1970–1975	3.3	3.1	(94)	0.5	(14)	0.0	(0)	1.2	(35)	−1.4	(−43)
	1975–1980	4.9	1.7	(35)	0.6	(13)	0.0	(1)	3.8	(77)	−1.2	(−25)
	1980–1985	3.4	1.8	(51)	0.4	(11)	0.0	(1)	3.8	(111)	−2.5	(−74)
	1985–1990	3.2	1.6	(49)	−0.1	(−3)	0.0	(1)	2.7	(83)	−1.0	(−30)
	1990–1995	7.5	1.1	(14)	0.1	(1)	0.0	(0)	4.6	(61)	1.7	(23)
	1995–2000	7.0	1.1	(15)	0.1	(2)	0.1	(1)	6.2	(87)	−0.4	(−5)
	2000–2005	6.8	0.3	(4)	1.2	(18)	0.1	(1)	5.3	(78)	−0.1	(−2)
	2005–2010	5.9	1.4	(25)	0.9	(15)	0.1	(2)	5.0	(84)	−1.6	(−27)
	2010–2015	5.1	0.1	(3)	0.5	(10)	0.2	(4)	3.2	(62)	1.1	(22)
	2015–2020	5.5	0.2	(3)	0.9	(16)	0.2	(3)	2.9	(53)	1.4	(25)
	1970–2020	5.3	1.2	(23)	0.5	(10)	0.1	(1)	3.9	(73)	−0.4	(−8)
APO21	1970–1975	4.9	1.3	(26)	0.3	(6)	0.1	(3)	2.9	(59)	0.3	(7)
	1975–1980	4.4	1.5	(34)	0.4	(9)	0.1	(3)	2.4	(55)	0.0	(−1)
	1980–1985	4.7	1.2	(26)	0.5	(10)	0.2	(5)	2.1	(45)	0.6	(13)
	1985–1990	5.7	1.2	(20)	0.6	(11)	0.3	(6)	2.1	(37)	1.4	(25)
	1990–1995	4.2	0.9	(21)	0.5	(13)	0.2	(5)	2.1	(50)	0.4	(11)
	1995–2000	3.2	0.7	(24)	0.5	(17)	0.3	(8)	1.5	(49)	0.1	(2)
	2000–2005	4.2	0.8	(19)	0.6	(15)	0.2	(5)	1.3	(32)	1.2	(29)
	2005–2010	4.2	0.7	(16)	0.7	(16)	0.2	(4)	1.9	(46)	0.8	(19)
	2010–2015	4.0	0.5	(12)	0.8	(19)	0.1	(3)	1.9	(48)	0.7	(18)
	2015–2020	2.6	0.4	(17)	0.4	(15)	0.1	(5)	2.0	(76)	−0.4	(−14)
	1970–2020	4.2	0.9	(22)	0.5	(13)	0.2	(5)	2.0	(48)	0.5	(12)
East Asia	1970–1975	4.7	1.4	(29)	0.4	(9)	0.2	(4)	3.0	(63)	−0.2	(−4)
	1975–1980	5.4	1.6	(30)	0.7	(13)	0.1	(3)	2.1	(39)	0.8	(16)
	1980–1985	5.8	1.9	(33)	0.4	(8)	0.3	(5)	2.0	(35)	1.2	(20)
	1985–1990	5.9	1.3	(21)	0.4	(7)	0.4	(6)	2.4	(41)	1.4	(24)
	1990–1995	5.0	0.4	(9)	0.9	(19)	0.2	(4)	2.1	(42)	1.3	(27)
	1995–2000	4.3	0.9	(21)	0.4	(9)	0.3	(7)	2.0	(48)	0.7	(16)
	2000–2005	5.1	0.9	(17)	0.8	(15)	0.3	(6)	2.3	(45)	0.9	(18)
	2005–2010	6.7	−0.1	(−2)	0.9	(13)	0.2	(3)	3.4	(50)	2.3	(35)
	2010–2015	5.2	−0.2	(−5)	0.6	(12)	0.3	(6)	3.5	(67)	1.0	(19)
	2015–2020	3.3	−0.1	(−4)	−0.3	(−8)	0.3	(9)	2.9	(89)	0.5	(14)
	1970–2020	5.1	0.8	(15)	0.5	(10)	0.3	(5)	2.6	(50)	1.0	(19)
ASEAN	1970–1975	6.5	1.5	(23)	0.5	(8)	0.1	(1)	3.5	(54)	0.9	(13)
	1975–1980	7.0	1.5	(21)	0.4	(6)	0.1	(2)	4.5	(64)	0.5	(8)
	1980–1985	3.9	1.3	(33)	0.5	(14)	0.2	(5)	4.3	(112)	−2.5	(−65)
	1985–1990	7.1	1.1	(16)	0.7	(10)	0.2	(3)	3.5	(49)	1.5	(22)
	1990–1995	7.3	0.8	(11)	1.0	(14)	0.3	(5)	4.8	(66)	0.3	(4)
	1995–2000	2.5	0.9	(34)	0.8	(33)	0.2	(8)	2.9	(116)	−2.3	(−91)
	2000–2005	5.0	0.5	(11)	1.1	(22)	0.3	(6)	1.9	(37)	1.3	(25)
	2005–2010	5.1	1.0	(20)	0.7	(13)	0.3	(6)	2.7	(53)	0.4	(8)
	2010–2015	4.8	0.3	(6)	1.1	(24)	0.3	(7)	3.0	(63)	0.1	(1)
	2015–2020	3.0	0.5	(16)	0.7	(22)	0.2	(7)	2.9	(96)	−1.2	(−41)
	1970–2020	5.2	0.9	(18)	0.8	(14)	0.2	(4)	3.4	(65)	−0.1	(−2)
CLMV	1970–1975	2.4	2.1	(87)	0.4	(15)	0.0	(0)	1.4	(58)	−1.4	(−59)
	1975–1980	4.4	1.3	(29)	0.6	(14)	0.0	(1)	3.0	(69)	−0.6	(−13)
	1980–1985	3.6	1.5	(41)	0.4	(12)	0.1	(1)	3.2	(90)	−1.6	(−44)
	1985–1990	2.9	1.5	(50)	0.1	(4)	0.0	(1)	2.2	(76)	−0.9	(−31)
	1990–1995	6.6	1.2	(18)	0.1	(2)	0.0	(1)	3.9	(59)	1.4	(21)
	1995–2000	7.2	1.3	(17)	0.2	(3)	0.1	(1)	5.5	(76)	0.1	(2)
	2000–2005	6.6	0.6	(9)	1.0	(15)	0.1	(2)	4.7	(72)	0.2	(3)
	2005–2010	5.8	1.2	(21)	0.8	(15)	0.1	(2)	4.9	(84)	−1.3	(−23)
	2010–2015	5.2	0.4	(7)	0.5	(11)	0.2	(3)	3.8	(73)	0.3	(6)
	2015–2020	4.2	0.1	(1)	0.6	(14)	0.1	(3)	3.2	(77)	0.2	(4)
	1970–2020	4.9	1.1	(23)	0.5	(10)	0.1	(2)	3.6	(73)	−0.4	(−7)

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		IT		Non–IT			
US	1970–1975	2.6	0.6	(25)	0.1	(3)	0.1	(5)	1.5	(57)	0.3	(11)
	1975–1980	3.6	1.5	(43)	0.0	(0)	0.2	(6)	1.1	(32)	0.7	(19)
	1980–1985	3.2	0.9	(28)	0.2	(6)	0.3	(11)	0.8	(26)	0.9	(29)
	1985–1990	3.2	1.1	(34)	0.2	(7)	0.4	(11)	1.0	(31)	0.5	(17)
	1990–1995	2.5	0.5	(21)	0.3	(13)	0.3	(11)	0.6	(23)	0.8	(33)
	1995–2000	4.2	1.0	(24)	0.4	(10)	0.7	(16)	1.0	(24)	1.1	(26)
	2000–2005	2.5	0.2	(6)	0.4	(15)	0.4	(15)	0.8	(33)	0.8	(31)
	2005–2010	1.0	−0.4	(−38)	0.3	(34)	0.3	(34)	0.5	(56)	0.1	(14)
	2010–2015	2.1	0.8	(40)	0.2	(10)	0.3	(13)	0.3	(16)	0.4	(21)
	2015–2020	1.1	−0.2	(−18)	0.3	(29)	0.3	(28)	0.5	(47)	0.1	(13)
	1970–2020	2.6	0.6	(24)	0.2	(9)	0.3	(13)	0.8	(32)	0.6	(22)
Asia25	1970–1975	4.8	1.4	(29)	0.3	(7)	0.1	(3)	2.9	(61)	0.0	(0)
	1975–1980	4.6	1.5	(33)	0.6	(12)	0.1	(2)	2.5	(54)	−0.1	(−2)
	1980–1985	5.2	1.5	(29)	0.5	(10)	0.2	(4)	2.3	(43)	0.7	(13)
	1985–1990	5.8	1.2	(21)	0.5	(9)	0.3	(5)	2.4	(41)	1.4	(24)
	1990–1995	5.2	0.7	(13)	0.7	(14)	0.2	(3)	2.4	(46)	1.2	(23)
	1995–2000	4.2	0.9	(21)	0.5	(12)	0.2	(6)	2.2	(52)	0.4	(9)
	2000–2005	5.4	0.9	(16)	0.8	(14)	0.3	(5)	2.3	(42)	1.2	(23)
	2005–2010	6.3	0.3	(5)	0.7	(11)	0.2	(3)	3.3	(53)	1.7	(28)
	2010–2015	5.2	0.2	(3)	0.6	(12)	0.3	(5)	3.4	(66)	0.7	(14)
	2015–2020	3.3	0.2	(6)	0.0	(−1)	0.3	(8)	2.9	(87)	0.0	(0)
	1970–2020	5.0	0.9	(17)	0.5	(10)	0.2	(4)	2.7	(53)	0.7	(15)
South Asia	1970–1975	2.1	1.6	(79)	0.3	(16)	0.0	(1)	1.1	(54)	−1.0	(−50)
	1975–1980	3.5	1.8	(51)	0.6	(16)	0.0	(1)	1.5	(44)	−0.4	(−11)
	1980–1985	5.0	1.4	(29)	0.7	(14)	0.0	(1)	1.4	(29)	1.4	(27)
	1985–1990	5.7	1.4	(24)	0.9	(15)	0.1	(1)	1.7	(30)	1.6	(29)
	1990–1995	5.0	1.2	(25)	0.5	(10)	0.1	(2)	1.8	(36)	1.4	(28)
	1995–2000	5.4	1.0	(18)	0.8	(15)	0.1	(2)	2.0	(36)	1.5	(28)
	2000–2005	6.1	1.2	(19)	0.6	(9)	0.2	(3)	2.1	(35)	2.0	(34)
	2005–2010	7.1	0.7	(9)	0.9	(13)	0.3	(4)	3.3	(47)	1.9	(27)
	2010–2015	5.9	0.6	(11)	0.7	(13)	0.2	(4)	3.0	(51)	1.3	(22)
	2015–2020	3.6	0.6	(16)	0.4	(12)	0.2	(6)	2.7	(73)	−0.3	(−8)
	1970–2020	4.9	1.2	(23)	0.6	(13)	0.1	(3)	2.1	(42)	0.9	(19)
ASEAN6	1970–1975	7.2	1.4	(19)	0.7	(10)	0.1	(1)	3.7	(52)	1.3	(18)
	1975–1980	7.4	1.7	(22)	0.5	(7)	0.1	(2)	4.7	(63)	0.4	(6)
	1980–1985	3.9	1.3	(33)	0.7	(18)	0.2	(6)	4.5	(114)	−2.7	(−70)
	1985–1990	7.5	1.1	(15)	1.1	(14)	0.2	(3)	3.6	(48)	1.5	(20)
	1990–1995	7.3	0.7	(9)	1.5	(21)	0.4	(5)	4.9	(67)	−0.2	(−2)
	1995–2000	2.0	0.7	(37)	1.1	(57)	0.2	(11)	2.8	(140)	−2.8	(−144)
	2000–2005	4.8	0.5	(11)	1.2	(24)	0.3	(7)	1.6	(34)	1.2	(25)
	2005–2010	5.0	1.0	(19)	0.6	(12)	0.3	(7)	2.5	(49)	0.6	(13)
	2010–2015	4.8	0.2	(5)	1.4	(30)	0.3	(7)	3.0	(62)	−0.2	(−4)
	2015–2020	2.8	0.6	(23)	0.7	(25)	0.2	(8)	2.8	(101)	−1.6	(−57)
	1970–2020	5.3	0.9	(18)	1.0	(18)	0.2	(5)	3.4	(64)	−0.2	(−5)

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2022.

Table 22 Role of TFP and Capital Deepening in Labor Productivity Growth

		Labor Productivity	Labor Quality		Capital deepening				TFP	
					IT		Non–IT			
Bangladesh	1970–1975	−7.4	0.2	(−2)	0.0	(0)	−1.4	(19)	−6.1	(83)
	1975–1980	0.4	0.8	(217)	0.0	(13)	−0.1	(−16)	−0.4	(−114)
	1980–1985	0.7	0.5	(74)	0.1	(9)	1.0	(156)	−0.9	(−139)
	1985–1990	1.7	0.7	(41)	0.1	(5)	0.9	(55)	0.0	(0)
	1990–1995	1.4	0.5	(37)	0.1	(5)	1.5	(107)	−0.7	(−49)
	1995–2000	3.3	0.1	(4)	0.2	(5)	3.2	(96)	−0.1	(−4)
	2000–2005	3.5	0.4	(12)	0.4	(13)	2.7	(78)	−0.1	(−2)
	2005–2010	4.8	0.3	(6)	0.6	(14)	3.3	(69)	0.5	(11)
	2010–2015	4.6	0.8	(17)	0.4	(9)	3.6	(78)	−0.2	(−5)
	2015–2020	4.9	0.4	(9)	0.3	(6)	4.5	(92)	−0.3	(−7)
	1970–2020	1.8	0.5	(27)	0.2	(12)	1.9	(108)	−0.8	(−47)
Brunei	1970–1975	−0.1	0.3	(−429)	−0.1	(196)	−1.5	(2102)	1.3	(−1769)
	1975–1980	5.7	0.3	(4)	0.3	(6)	−2.0	(−35)	7.1	(124)
	1980–1985	−6.6	0.4	(−5)	0.1	(−1)	5.1	(−77)	−12.2	(184)
	1985–1990	−7.5	0.4	(−5)	−0.1	(1)	−0.9	(12)	−6.9	(92)
	1990–1995	−0.8	0.2	(−27)	0.3	(−39)	3.5	(−457)	−4.8	(624)
	1995–2000	−0.4	0.0	(−12)	0.0	(−9)	−0.2	(53)	−0.3	(69)
	2000–2005	−1.5	0.2	(−12)	0.0	(−3)	−0.6	(40)	−1.1	(75)
	2005–2010	−1.5	0.2	(−13)	0.2	(−12)	1.4	(−94)	−3.4	(218)
	2010–2015	−0.6	0.0	(4)	0.2	(−27)	3.6	(−602)	−4.4	(725)
	2015–2020	−1.9	−0.1	(6)	0.0	(0)	−0.5	(28)	−1.2	(66)
	1970–2020	−1.5	0.2	(−12)	0.1	(−6)	0.8	(−52)	−2.6	(170)
China	1970–1975	1.4	0.4	(29)	0.0	(2)	2.4	(165)	−1.4	(−96)
	1975–1980	2.8	0.7	(24)	0.0	(1)	1.8	(65)	0.3	(10)
	1980–1985	4.8	0.4	(9)	0.1	(1)	1.9	(39)	2.4	(51)
	1985–1990	4.0	0.4	(10)	0.1	(2)	3.1	(77)	0.5	(11)
	1990–1995	8.8	0.9	(11)	0.1	(2)	3.9	(45)	3.8	(43)
	1995–2000	5.4	0.4	(7)	0.2	(5)	4.3	(79)	0.5	(9)
	2000–2005	6.5	0.8	(12)	0.7	(11)	4.4	(68)	0.6	(9)
	2005–2010	11.0	0.9	(8)	0.5	(5)	6.6	(60)	3.0	(27)
	2010–2015	7.6	0.6	(8)	0.6	(8)	5.7	(76)	0.7	(9)
	2015–2020	4.7	−0.3	(−7)	0.5	(10)	4.0	(86)	0.5	(10)
	1970–2020	5.7	0.5	(9)	0.3	(5)	3.8	(67)	1.1	(19)
Fiji	1970–1975	1.9	0.9	(46)	0.0	(2)	0.8	(44)	0.1	(8)
	1975–1980	1.0	1.3	(140)	0.0	(2)	1.6	(164)	−2.0	(−206)
	1980–1985	−1.7	0.9	(−52)	0.0	(−3)	0.4	(−26)	−3.1	(181)
	1985–1990	1.9	1.4	(72)	0.2	(12)	−0.5	(−25)	0.8	(40)
	1990–1995	−0.5	1.3	(−270)	0.1	(−12)	−0.2	(48)	−1.6	(334)
	1995–2000	1.2	0.7	(58)	−0.1	(−5)	1.0	(77)	−0.4	(−30)
	2000–2005	−0.4	0.6	(−165)	0.0	(−7)	−0.7	(180)	−0.3	(91)
	2005–2010	1.4	0.2	(15)	0.1	(8)	0.3	(24)	0.7	(53)
	2010–2015	1.8	0.1	(5)	0.1	(6)	−0.8	(−47)	2.4	(136)
	2015–2020	−3.1	0.2	(−6)	0.1	(−4)	0.0	(1)	−3.4	(109)
	1970–2020	0.3	0.8	(220)	0.1	(20)	0.2	(56)	−0.7	(−195)
India	1970–1975	0.4	0.3	(78)	0.0	(3)	0.3	(80)	−0.3	(−61)
	1975–1980	0.6	0.5	(82)	0.0	(3)	0.6	(96)	−0.5	(−80)
	1980–1985	2.9	0.8	(26)	0.0	(1)	0.5	(18)	1.6	(54)
	1985–1990	3.9	0.9	(23)	0.1	(1)	1.0	(25)	2.0	(51)
	1990–1995	3.1	0.5	(14)	0.1	(3)	1.0	(32)	1.6	(51)
	1995–2000	4.1	1.0	(23)	0.1	(3)	1.2	(30)	1.8	(43)
	2000–2005	4.6	0.6	(13)	0.1	(3)	1.3	(28)	2.6	(56)
	2005–2010	6.9	1.2	(18)	0.3	(4)	2.9	(43)	2.5	(36)
	2010–2015	5.2	0.8	(15)	0.2	(4)	2.5	(48)	1.7	(33)
	2015–2020	2.6	0.4	(14)	0.2	(9)	2.2	(84)	−0.2	(−7)
	1970–2020	3.4	0.7	(20)	0.1	(3)	1.4	(40)	1.3	(37)
Iran	1970–1975	7.0	0.6	(8)	0.1	(1)	2.9	(42)	3.5	(49)
	1975–1980	−6.2	0.1	(−2)	0.0	(0)	2.0	(−32)	−8.3	(133)
	1980–1985	1.5	0.1	(6)	0.1	(4)	0.8	(52)	0.6	(38)
	1985–1990	−2.1	0.7	(−32)	0.0	(−1)	−2.4	(112)	−0.5	(22)
	1990–1995	1.2	0.5	(43)	0.1	(5)	−1.6	(−137)	2.2	(189)
	1995–2000	0.7	0.3	(49)	0.1	(8)	−2.3	(−347)	2.6	(390)
	2000–2005	3.4	0.5	(13)	0.2	(6)	−0.6	(−18)	3.4	(98)
	2005–2010	6.1	0.4	(6)	0.2	(3)	3.4	(56)	2.1	(35)
	2010–2015	−1.5	0.3	(−22)	0.1	(−6)	1.1	(−70)	−3.1	(199)
	2015–2020	0.0	0.1	(692)	0.0	(−150)	0.5	(3827)	−0.5	(−4269)
	1970–2020	1.0	0.4	(35)	0.1	(7)	0.4	(37)	0.2	(20)
Bhutan	1970–1975	−0.4	0.1	(−36)	0.0	(−4)	1.2	(−320)	−1.7	(460)
	1975–1980	4.1	−0.2	(−4)	0.0	(1)	0.4	(10)	3.8	(93)
	1980–1985	3.0	0.7	(21)	0.1	(2)	1.4	(47)	0.9	(29)
	1985–1990	4.7	1.5	(32)	0.1	(1)	1.4	(29)	1.8	(37)
	1990–1995	4.7	1.5	(33)	0.2	(5)	3.1	(67)	−0.2	(−5)
	1995–2000	2.4	0.6	(24)	0.7	(29)	1.3	(54)	−0.2	(−7)
	2000–2005	1.7	0.8	(44)	−0.1	(−8)	3.3	(194)	−2.2	(−130)
	2005–2010	6.1	1.1	(18)	0.3	(5)	1.4	(24)	3.2	(53)
	2010–2015	7.0	0.9	(12)	0.2	(3)	4.9	(71)	1.0	(14)
	2015–2020	1.1	1.5	(140)	0.0	(0)	2.6	(241)	−3.1	(−282)
	1970–2020	3.4	0.8	(25)	0.2	(4)	2.1	(61)	0.3	(10)
Cambodia	1970–1975	−6.1	0.3	(−5)	0.0	(0)	1.0	(−17)	−7.4	(122)
	1975–1980	−5.0	0.4	(−8)	0.0	(0)	0.7	(−14)	−6.0	(121)
	1980–1985	−1.3	0.2	(−14)	0.0	(−1)	−1.5	(117)	0.0	(−2)
	1985–1990	4.7	0.2	(4)	0.0	(0)	−1.2	(−26)	5.8	(122)
	1990–1995	1.1	0.3	(28)	0.0	(1)	−1.2	(−112)	2.0	(183)
	1995–2000	3.3	0.7	(22)	0.1	(2)	0.6	(17)	2.0	(60)
	2000–2005	5.9	0.6	(10)	0.0	(1)	1.7	(29)	3.5	(60)
	2005–2010	2.1	0.4	(19)	0.0	(1)	2.7	(134)	−1.1	(−54)
	2010–2015	2.5	1.7	(67)	0.1	(2)	2.4	(96)	−1.6	(−66)
	2015–2020	2.7	0.2	(8)	0.0	(1)	2.2	(81)	0.3	(10)
	1970–2020	1.0	0.5	(50)	0.0	(2)	0.7	(74)	−0.3	(−26)
ROC	1970–1975	6.4	0.1	(2)	0.3	(4)	2.9	(46)	3.1	(48)
	1975–1980	8.1	1.1	(14)	0.2	(3)	2.8	(35)	3.9	(49)
	1980–1985	5.5	0.2	(4)	0.3	(6)	2.3	(43)	2.6	(47)
	1985–1990	7.8	0.8	(10)	0.3	(4)	2.4	(31)	4.3	(56)
	1990–1995	5.9	0.6	(11)	0.2	(4)	2.4	(40)	2.7	(45)
	1995–2000	5.5	0.6	(11)	0.6	(11)	2.3	(42)	2.0	(35)
	2000–2005	3.8	0.9	(22)	0.2	(6)	1.3	(35)	1.4	(37)
	2005–2010	3.7	0.9	(25)	0.0	(1)	1.0	(26)	1.8	(49)
	2010–2015	0.8	0.6	(79)	0.0	(2)	−0.2	(−32)	0.4	(51)
	2015–2020	3.1	0.4	(13)	0.1	(2)	1.0	(32)	1.6	(53)
	1970–2020	5.1	0.6	(12)	0.2	(4)	1.8	(36)	2.4	(47)
Hong Kong	1970–1975	3.1	0.1	(4)	0.1	(4)	1.6	(52)	1.2	(39)
	1975–1980	7.3	0.7	(10)	0.2	(3)	1.9	(26)	4.5	(61)
	1980–1985	3.6	0.6	(16)	0.3	(7)	2.1	(59)	0.7	(18)
	1985–1990	7.6	1.0	(14)	0.3	(4)	2.2	(28)	4.1	(54)
	1990–1995	4.8	0.9	(19)	0.4	(7)	2.1	(44)	1.5	(30)
	1995–2000	−0.1	0.5	(−500)	0.5	(−554)	0.6	(−660)	−1.7	(1814)
	2000–2005	3.1	0.3	(9)	0.3	(10)	0.6	(21)	1.9	(61)
	2005–2010	3.5	0.3	(8)	0.3	(9)	0.8	(25)	2.0	(59)
	2010–2015	2.3	0.6	(27)	0.3	(12)	0.4	(16)	1.0	(44)
	2015–2020	1.4	0.5	(33)	0.2	(11)	0.6	(41)	0.2	(16)
	1970–2020	3.7	0.5	(15)	0.3	(8)	1.3	(35)	1.5	(42)
Indonesia	1970–1975	4.4	0.8	(18)	0.0	(0)	1.8	(42)	1.7	(39)
	1975–1980	3.7	0.6	(15)	0.1	(3)	2.9	(79)	0.1	(3)
	1980–1985	0.6	0.5	(81)	0.1	(13)	2.6	(443)	−2.5	(−437)
	1985–1990	4.8	1.2	(26)	0.2	(4)	2.9	(59)	0.5	(11)
	1990–1995	6.2	2.5	(40)	0.2	(3)	3.9	(63)	−0.3	(−6)
	1995–2000	−2.1	1.0	(−46)	0.1	(−5)	1.6	(−74)	−4.9	(228)
	2000–2005	3.1	1.4	(46)	0.2	(5)	1.6	(51)	−0.1	(−2)
	2005–2010	2.2	0.6	(29)	0.1	(4)	1.4	(62)	0.1	(6)
	2010–2015	4.5	2.2	(48)	0.2	(4)	3.5	(77)	−1.3	(−29)
	2015–2020	0.9	1.1	(133)	0.1	(15)	1.9	(225)	−2.4	(−273)
	1970–2020	2.8	1.2	(42)	0.1	(4)	2.4	(85)	−0.9	(−32)
Japan	1970–1975	5.1	1.1	(21)	0.3	(5)	3.0	(59)	0.8	(15)
	1975–1980	3.6	0.8	(23)	0.2	(5)	1.2	(33)	1.4	(39)
	1980–1985	3.5	0.6	(18)	0.4	(10)	1.2	(34)	1.3	(38)
	1985–1990	4.2	0.6	(14)	0.5	(11)	1.4	(35)	1.6	(39)
	1990–1995	1.8	0.4	(24)	0.3	(15)	1.3	(70)	−0.2	(−9)
	1995–2000	2.0	0.4	(20)	0.4	(19)	0.9	(43)	0.4	(18)
	2000–2005	1.8	0.5	(27)	0.3	(15)	0.4	(21)	0.7	(37)
	2005–2010	0.6	0.4	(67)	0.2	(29)	0.3	(56)	−0.3	(−52)
	2010–2015	1.1	0.2	(16)	0.1	(11)	−0.1	(−11)	0.9	(85)
	2015–2020	−0.2	0.3	(−157)	0.1	(−62)	0.2	(−128)	−0.7	(447)
	1970–2020	2.3	0.5	(22)	0.3	(11)	1.0	(42)	0.6	(25)

		Labor Productivity	Labor Quality		Capital deepening: IT		Capital deepening: Non–IT		TFP	
Korea	1970–1975	5.8	0.2	(4)	0.1	(2)	2.4	(41)	3.1	(53)
	1975–1980	4.7	0.6	(12)	0.3	(7)	4.6	(97)	−0.7	(−15)
	1980–1985	6.7	1.7	(26)	0.3	(5)	2.6	(38)	2.1	(31)
	1985–1990	6.7	1.4	(21)	0.5	(7)	2.7	(40)	2.1	(31)
	1990–1995	6.4	1.6	(25)	0.3	(5)	3.0	(47)	1.4	(23)
	1995–2000	5.6	0.7	(12)	0.6	(10)	2.5	(44)	1.8	(33)
	2000–2005	4.6	1.2	(27)	0.4	(9)	2.2	(49)	0.7	(15)
	2005–2010	4.7	1.0	(21)	0.2	(4)	2.3	(49)	1.2	(26)
	2010–2015	1.7	0.6	(33)	0.0	(2)	1.0	(57)	0.2	(9)
	2015–2020	4.2	0.4	(11)	0.2	(4)	2.4	(57)	1.2	(29)
	1970–2020	5.1	0.9	(19)	0.3	(6)	2.6	(50)	1.3	(26)
Malaysia	1970–1975	4.4	0.4	(9)	0.0	(1)	2.0	(45)	1.9	(44)
	1975–1980	4.9	0.8	(16)	0.1	(2)	2.9	(60)	1.0	(21)
	1980–1985	1.9	0.9	(45)	0.1	(7)	3.8	(199)	−2.9	(−151)
	1985–1990	3.3	0.7	(22)	0.2	(6)	0.8	(24)	1.6	(48)
	1990–1995	6.6	1.2	(18)	0.4	(6)	4.7	(72)	0.3	(5)
	1995–2000	0.6	0.6	(95)	0.4	(64)	1.3	(204)	−1.7	(−263)
	2000–2005	3.4	0.9	(26)	0.7	(22)	−0.2	(−5)	1.9	(57)
	2005–2010	2.0	0.5	(24)	0.5	(25)	0.3	(13)	0.8	(38)
	2010–2015	2.3	0.4	(18)	0.4	(16)	1.0	(46)	0.5	(20)
	2015–2020	1.8	0.7	(39)	0.2	(12)	1.9	(102)	−1.0	(−52)
	1970–2020	3.1	0.7	(23)	0.3	(10)	1.9	(59)	0.3	(8)
Myanmar	1970–1975	0.7	−0.2	(−22)	0.0	(2)	0.7	(94)	0.2	(26)
	1975–1980	4.9	0.6	(12)	0.1	(3)	3.5	(73)	0.6	(12)
	1980–1985	2.0	0.5	(26)	0.1	(5)	3.0	(148)	−1.6	(−78)
	1985–1990	−1.7	0.6	(−38)	0.0	(−2)	0.0	(0)	−2.3	(140)
	1990–1995	2.3	0.2	(9)	0.1	(3)	1.8	(78)	0.2	(10)
	1995–2000	5.0	0.5	(10)	0.2	(5)	3.4	(66)	1.0	(19)
	2000–2005	3.6	0.7	(19)	0.1	(3)	3.0	(82)	−0.1	(−4)
	2005–2010	3.7	0.7	(18)	0.1	(4)	4.2	(115)	−1.3	(−37)
	2010–2015	4.7	0.6	(12)	0.2	(4)	5.8	(124)	−1.9	(−40)
	2015–2020	−1.4	−0.1	(6)	0.1	(−8)	4.2	(−303)	−5.7	(406)
	1970–2020	2.4	0.4	(17)	0.1	(5)	2.9	(124)	−1.1	(−46)
Pakistan	1970–1975	1.2	0.7	(58)	0.0	(2)	0.5	(42)	0.0	(−2)
	1975–1980	2.4	0.9	(38)	0.0	(0)	1.2	(50)	0.3	(12)
	1980–1985	3.8	0.1	(4)	0.0	(1)	1.6	(43)	2.0	(52)
	1985–1990	3.8	1.1	(28)	0.1	(2)	1.6	(41)	1.1	(29)
	1990–1995	3.6	0.8	(22)	0.0	(1)	1.9	(52)	0.9	(24)
	1995–2000	2.7	0.3	(13)	0.0	(1)	1.6	(57)	0.8	(30)
	2000–2005	1.8	0.7	(37)	0.1	(6)	0.1	(7)	0.9	(50)
	2005–2010	−0.2	0.2	(−72)	0.0	(−16)	−0.7	(287)	0.2	(−100)
	2010–2015	2.7	0.6	(23)	0.0	(2)	−0.1	(−3)	2.1	(79)
	2015–2020	1.6	1.0	(59)	0.1	(7)	0.6	(36)	0.0	(−2)
	1970–2020	2.3	0.6	(27)	0.0	(2)	0.8	(35)	0.8	(35)
Singapore	1970–1975	4.0	0.4	(11)	0.2	(5)	2.9	(73)	0.5	(11)
	1975–1980	3.0	0.6	(22)	0.2	(6)	1.0	(34)	1.1	(38)
	1980–1985	3.3	1.3	(39)	0.6	(17)	2.5	(76)	−1.1	(−32)
	1985–1990	2.9	0.7	(23)	0.6	(22)	0.0	(1)	1.5	(53)
	1990–1995	3.9	1.7	(43)	0.5	(12)	0.9	(24)	0.8	(21)
	1995–2000	3.8	1.0	(26)	0.5	(13)	1.8	(48)	0.5	(13)
	2000–2005	3.8	1.0	(27)	0.5	(12)	1.0	(26)	1.3	(34)
	2005–2010	1.5	0.4	(26)	0.2	(13)	−1.1	(−68)	2.0	(129)
	2010–2015	2.1	0.5	(26)	0.5	(23)	0.7	(34)	0.3	(16)
	2015–2020	2.8	0.5	(17)	0.7	(26)	1.4	(49)	0.2	(8)
	1970–2020	3.1	0.8	(26)	0.4	(14)	1.1	(36)	0.7	(23)
Thailand	1970–1975	3.1	1.4	(46)	0.0	(2)	1.3	(43)	0.3	(9)
	1975–1980	0.9	1.1	(117)	0.1	(15)	−0.5	(−55)	0.2	(23)
	1980–1985	3.1	1.8	(59)	0.3	(9)	2.1	(68)	−1.1	(−35)
	1985–1990	6.3	1.7	(27)	0.3	(5)	2.1	(33)	2.2	(35)
	1990–1995	6.2	1.8	(29)	0.6	(10)	5.0	(79)	−1.1	(−18)
	1995–2000	1.2	1.9	(163)	0.1	(9)	2.0	(173)	−2.8	(−244)
	2000–2005	5.2	1.8	(35)	0.4	(7)	0.6	(13)	2.3	(45)
	2005–2010	2.4	0.8	(34)	0.6	(26)	0.8	(32)	0.2	(8)
	2010–2015	4.8	1.6	(33)	0.6	(14)	2.3	(47)	0.3	(6)
	2015–2020	2.6	0.6	(23)	0.1	(3)	2.2	(83)	−0.2	(−9)
	1970–2020	3.6	1.5	(41)	0.3	(9)	1.8	(50)	0.0	(1)

		Labor Productivity	Labor Quality		Capital deepening: IT		Capital deepening: Non–IT		TFP	
Lao PDR	1970–1975	1.7	0.1	(7)	0.0	(−1)	0.4	(24)	1.2	(69)
	1975–1980	1.8	0.1	(7)	0.0	(1)	1.4	(78)	0.3	(14)
	1980–1985	2.4	0.2	(7)	0.1	(2)	1.5	(63)	0.7	(27)
	1985–1990	0.0	0.1	(376)	0.0	(81)	0.6	(1585)	−0.7	(−1943)
	1990–1995	0.9	0.1	(15)	0.1	(14)	1.4	(159)	−0.8	(−87)
	1995–2000	5.0	0.5	(10)	0.1	(2)	3.5	(69)	0.9	(18)
	2000–2005	3.2	0.5	(14)	0.1	(4)	1.4	(46)	1.1	(36)
	2005–2010	4.5	0.8	(17)	0.3	(6)	2.6	(58)	0.9	(19)
	2010–2015	1.7	0.6	(34)	0.1	(9)	4.1	(247)	−3.2	(−190)
	2015–2020	3.6	0.0	(1)	0.1	(1)	5.0	(138)	−1.4	(−40)
	1970–2020	2.5	0.3	(12)	0.1	(4)	2.2	(89)	−0.1	(−5)
Mongolia	1970–1975	5.1	2.6	(51)	0.1	(1)	2.1	(41)	0.3	(6)
	1975–1980	3.1	0.7	(23)	0.1	(4)	3.1	(98)	−0.8	(−25)
	1980–1985	4.0	0.4	(11)	0.1	(4)	3.4	(86)	0.0	(−1)
	1985–1990	−0.7	0.3	(−41)	0.0	(−5)	−0.1	(19)	−0.9	(127)
	1990–1995	−1.2	−1.2	(99)	0.0	(−4)	0.5	(−42)	−0.6	(47)
	1995–2000	4.0	0.1	(3)	0.1	(3)	0.0	(0)	3.7	(94)
	2000–2005	4.0	1.0	(24)	0.3	(7)	−0.9	(−23)	3.7	(92)
	2005–2010	6.0	0.3	(5)	0.4	(7)	4.4	(73)	0.9	(15)
	2010–2015	6.2	1.1	(17)	0.0	(0)	3.0	(48)	2.1	(34)
	2015–2020	0.9	0.8	(89)	0.2	(28)	0.6	(71)	−0.8	(−87)
	1970–2020	3.1	0.6	(19)	0.1	(5)	1.6	(51)	0.8	(25)
Nepal	1970–1975	0.0	0.2	(−1024)	0.0	(−152)	−0.3	(1670)	0.1	(−394)
	1975–1980	0.4	0.2	(69)	0.0	(10)	0.4	(99)	−0.3	(−78)
	1980–1985	2.4	1.9	(78)	0.0	(2)	1.8	(72)	−1.3	(−52)
	1985–1990	4.0	1.7	(43)	0.0	(1)	1.9	(47)	0.4	(10)
	1990–1995	2.5	1.7	(69)	0.0	(1)	1.3	(52)	−0.5	(−21)
	1995–2000	2.4	1.8	(75)	0.1	(2)	1.4	(56)	−0.8	(−34)
	2000–2005	2.1	1.2	(61)	0.0	(2)	1.4	(70)	−0.7	(−33)
	2005–2010	3.2	0.7	(22)	0.0	(0)	1.8	(55)	0.7	(23)
	2010–2015	1.9	−0.4	(−24)	0.0	(1)	2.0	(109)	0.3	(15)
	2015–2020	2.2	0.1	(4)	0.0	(2)	1.8	(86)	0.2	(9)
	1970–2020	2.1	0.9	(44)	0.0	(1)	1.3	(64)	−0.2	(−9)
Philippines	1970–1975	1.9	0.2	(9)	0.1	(5)	1.4	(74)	0.2	(13)
	1975–1980	2.8	0.7	(26)	0.1	(2)	3.4	(120)	−1.4	(−49)
	1980–1985	−3.6	0.4	(−11)	0.2	(−6)	1.8	(−50)	−6.0	(167)
	1985–1990	3.3	0.7	(21)	0.0	(1)	−0.2	(−5)	2.7	(82)
	1990–1995	0.8	0.1	(15)	0.1	(8)	1.1	(127)	−0.4	(−50)
	1995–2000	2.8	1.0	(35)	0.3	(11)	1.5	(52)	0.1	(2)
	2000–2005	2.0	0.2	(8)	0.2	(8)	−0.1	(−5)	1.7	(89)
	2005–2010	2.7	0.5	(19)	0.1	(2)	0.8	(30)	1.3	(49)
	2010–2015	3.9	0.4	(11)	0.1	(3)	1.9	(50)	1.4	(36)
	2015–2020	1.6	0.4	(27)	0.2	(10)	3.1	(195)	−2.1	(−131)
	1970–2020	1.8	0.5	(25)	0.1	(7)	1.5	(81)	−0.2	(−13)
Sri Lanka	1970–1975	1.8	0.3	(19)	0.0	(0)	1.1	(60)	0.4	(21)
	1975–1980	2.8	0.2	(8)	0.0	(1)	1.9	(69)	0.6	(22)
	1980–1985	4.5	0.9	(20)	0.0	(1)	3.0	(65)	0.6	(14)
	1985–1990	0.5	0.3	(53)	0.0	(−1)	−0.9	(−184)	1.1	(232)
	1990–1995	4.8	0.8	(17)	0.0	(1)	0.2	(5)	3.7	(77)
	1995–2000	1.0	0.1	(13)	0.1	(5)	−0.5	(−45)	1.3	(127)
	2000–2005	4.4	0.9	(21)	0.1	(3)	1.7	(40)	1.6	(36)
	2005–2010	5.4	−0.2	(−4)	0.1	(2)	3.5	(64)	2.1	(38)
	2010–2015	4.4	0.3	(6)	0.1	(1)	4.2	(96)	−0.1	(−3)
	2015–2020	1.6	0.5	(32)	0.1	(4)	2.6	(156)	−1.5	(−93)
	1970–2020	3.1	0.4	(13)	0.1	(2)	1.7	(54)	1.0	(31)
Turkey	1970–1975	1.1	0.2	(20)	0.1	(9)	3.1	(285)	−2.3	(−214)
	1975–1980	1.2	0.3	(27)	0.1	(4)	3.6	(300)	−2.8	(−231)
	1980–1985	3.0	0.1	(3)	0.1	(3)	1.0	(34)	1.8	(60)
	1985–1990	1.1	0.3	(31)	0.2	(18)	0.7	(63)	−0.1	(−12)
	1990–1995	0.9	0.3	(35)	0.1	(9)	2.1	(237)	−1.6	(−182)
	1995–2000	4.8	0.6	(12)	0.3	(7)	3.4	(72)	0.4	(9)
	2000–2005	2.7	0.9	(34)	0.1	(3)	1.4	(53)	0.3	(11)
	2005–2010	2.0	0.5	(25)	0.2	(10)	2.8	(137)	−1.5	(−73)
	2010–2015	4.2	0.7	(18)	0.2	(5)	1.7	(42)	1.5	(35)
	2015–2020	6.3	0.8	(13)	0.2	(2)	4.1	(65)	1.3	(20)
	1970–2020	2.7	0.5	(18)	0.1	(5)	2.4	(88)	−0.3	(−11)

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		Labor Productivity	Labor Quality		Capital deepening				TFP	
					IT		Non–IT			
Vietnam	1970–1975	−2.1	0.5	(−22)	0.0	(1)	−1.1	(53)	−1.4	(68)
	1975–1980	1.9	0.6	(33)	0.0	(1)	2.5	(132)	−1.2	(−66)
	1980–1985	−0.1	0.4	(−318)	0.0	(−22)	2.0	(−1698)	−2.5	(2138)
	1985–1990	0.3	−0.1	(−33)	0.0	(6)	1.4	(414)	−1.0	(−287)
	1990–1995	5.3	0.1	(2)	0.0	(0)	3.4	(65)	1.7	(33)
	1995–2000	4.4	0.1	(3)	0.1	(1)	4.6	(104)	−0.4	(−9)
	2000–2005	6.1	1.2	(20)	0.1	(1)	4.9	(80)	−0.1	(−2)
	2005–2010	2.5	0.9	(37)	0.1	(5)	3.0	(122)	−1.6	(−63)
	2010–2015	4.8	0.5	(10)	0.2	(4)	3.0	(63)	1.1	(23)
	2015–2020	5.2	0.9	(17)	0.2	(3)	2.8	(53)	1.4	(27)
	1970–2020	2.8	0.5	(18)	0.1	(2)	2.6	(94)	−0.4	(−14)
APO21	1970–1975	2.4	0.5	(21)	0.1	(4)	1.5	(61)	0.3	(13)
	1975–1980	1.7	0.7	(43)	0.1	(5)	0.9	(53)	0.0	(−2)
	1980–1985	2.4	0.9	(37)	0.2	(8)	0.7	(29)	0.6	(26)
	1985–1990	3.5	1.2	(35)	0.2	(7)	0.6	(16)	1.4	(41)
	1990–1995	2.5	1.1	(43)	0.1	(6)	0.8	(33)	0.4	(18)
	1995–2000	1.7	1.1	(63)	0.2	(12)	0.4	(21)	0.1	(4)
	2000–2005	2.5	1.3	(52)	0.1	(5)	−0.1	(−4)	1.2	(47)
	2005–2010	2.8	1.4	(50)	0.1	(3)	0.5	(18)	0.8	(29)
	2010–2015	3.0	1.6	(53)	0.1	(2)	0.6	(21)	0.7	(23)
	2015–2020	1.7	0.8	(47)	0.1	(5)	1.2	(69)	−0.4	(−21)
	1970–2020	2.4	1.1	(44)	0.1	(6)	0.7	(29)	0.5	(22)
East Asia	1970–1975	2.3	0.7	(31)	0.1	(6)	1.7	(72)	−0.2	(−8)
	1975–1980	2.7	1.2	(44)	0.1	(4)	0.6	(21)	0.8	(31)
	1980–1985	2.5	0.8	(31)	0.2	(9)	0.4	(15)	1.2	(46)
	1985–1990	3.6	0.8	(21)	0.3	(8)	1.1	(31)	1.4	(40)
	1990–1995	4.2	1.7	(41)	0.2	(4)	1.0	(23)	1.3	(32)
	1995–2000	2.6	0.7	(28)	0.2	(9)	0.9	(36)	0.7	(27)
	2000–2005	3.4	1.6	(46)	0.2	(6)	0.7	(22)	0.9	(27)
	2005–2010	6.9	1.8	(26)	0.2	(3)	2.6	(38)	2.3	(34)
	2010–2015	5.6	1.2	(22)	0.3	(5)	3.1	(55)	1.0	(18)
	2015–2020	3.6	−0.5	(−14)	0.3	(9)	3.3	(92)	0.5	(13)
	1970–2020	3.8	1.0	(27)	0.2	(6)	1.5	(41)	1.0	(27)
ASEAN	1970–1975	2.8	1.3	(46)	0.0	(1)	0.6	(22)	0.9	(31)
	1975–1980	3.2	1.0	(31)	0.1	(3)	1.6	(49)	0.5	(17)
	1980–1985	0.6	1.4	(233)	0.2	(26)	1.6	(262)	−2.5	(−421)
	1985–1990	4.2	1.7	(41)	0.2	(4)	0.8	(19)	1.5	(37)
	1990–1995	5.3	2.5	(47)	0.3	(5)	2.2	(42)	0.3	(6)
	1995–2000	0.4	2.1	(561)	0.1	(31)	0.5	(129)	−2.3	(−621)
	2000–2005	3.7	2.7	(75)	0.2	(5)	−0.5	(−14)	1.3	(34)
	2005–2010	2.4	1.7	(71)	0.2	(9)	0.1	(3)	0.4	(17)
	2010–2015	4.1	2.9	(70)	0.2	(5)	0.9	(23)	0.1	(1)
	2015–2020	1.9	1.5	(81)	0.1	(7)	1.4	(77)	−1.2	(−65)
	1970–2020	2.9	1.9	(66)	0.2	(5)	0.9	(32)	−0.1	(−3)
CLMV	1970–1975	−1.5	0.7	(−46)	0.0	(1)	−0.7	(49)	−1.4	(96)
	1975–1980	2.0	1.2	(61)	0.0	(1)	1.3	(67)	−0.6	(−29)
	1980–1985	0.5	0.9	(183)	0.0	(9)	1.1	(237)	−1.6	(−329)
	1985–1990	0.2	0.2	(131)	0.0	(13)	0.8	(440)	−0.9	(−484)
	1990–1995	4.2	0.2	(5)	0.0	(1)	2.6	(62)	1.4	(33)
	1995–2000	4.4	0.5	(12)	0.1	(2)	3.7	(83)	0.1	(3)
	2000–2005	5.3	2.2	(43)	0.1	(1)	2.8	(52)	0.2	(4)
	2005–2010	3.0	1.9	(65)	0.1	(4)	2.3	(76)	−1.3	(−44)
	2010–2015	4.3	1.2	(28)	0.2	(4)	2.6	(61)	0.3	(7)
	2015–2020	4.1	1.2	(30)	0.1	(3)	2.5	(63)	0.2	(5)
	1970–2020	2.6	1.0	(39)	0.1	(3)	1.9	(72)	−0.4	(−14)

		Labor Productivity	Labor Quality		Capital deepening				TFP	
					IT		Non–IT			
US	1970–1975	1.6	0.1	(5)	0.1	(7)	1.1	(71)	0.3	(17)
	1975–1980	1.1	0.0	(1)	0.2	(18)	0.2	(20)	0.7	(61)
	1980–1985	1.7	0.2	(11)	0.3	(18)	0.3	(17)	0.9	(54)
	1985–1990	1.4	0.2	(15)	0.3	(22)	0.4	(25)	0.5	(38)
	1990–1995	1.6	0.3	(19)	0.3	(15)	0.3	(15)	0.8	(50)
	1995–2000	2.5	0.4	(16)	0.6	(24)	0.4	(17)	1.1	(43)
	2000–2005	2.2	0.4	(17)	0.4	(17)	0.7	(32)	0.8	(35)
	2005–2010	1.6	0.3	(21)	0.4	(22)	0.8	(49)	0.1	(8)
	2010–2015	0.6	0.2	(36)	0.2	(34)	−0.3	(−43)	0.4	(73)
	2015–2020	1.4	0.3	(23)	0.3	(23)	0.6	(44)	0.1	(10)
	1970–2020	1.6	0.2	(15)	0.3	(19)	0.5	(29)	0.6	(37)
Asia25	1970–1975	2.2	0.6	(30)	0.1	(4)	1.4	(65)	0.0	(1)
	1975–1980	1.8	1.0	(56)	0.1	(4)	0.8	(44)	−0.1	(−4)
	1980–1985	2.4	1.0	(41)	0.2	(7)	0.5	(22)	0.7	(29)
	1985–1990	3.5	1.0	(28)	0.2	(6)	0.9	(25)	1.4	(41)
	1990–1995	3.9	1.4	(37)	0.1	(3)	1.1	(28)	1.2	(31)
	1995–2000	2.4	1.0	(41)	0.2	(8)	0.9	(35)	0.4	(16)
	2000–2005	3.6	1.6	(44)	0.2	(5)	0.6	(16)	1.2	(35)
	2005–2010	5.6	1.5	(27)	0.2	(3)	2.2	(40)	1.7	(31)
	2010–2015	4.8	1.3	(26)	0.2	(5)	2.6	(54)	0.7	(15)
	2015–2020	2.9	0.0	(−1)	0.2	(8)	2.7	(93)	0.0	(0)
	1970–2020	3.3	1.0	(31)	0.2	(5)	1.4	(42)	0.7	(22)
South Asia	1970–1975	−0.3	0.5	(−150)	0.0	(−3)	0.2	(−68)	−1.0	(322)
	1975–1980	0.9	0.8	(87)	0.0	(2)	0.5	(53)	−0.4	(−42)
	1980–1985	2.9	1.0	(35)	0.0	(1)	0.5	(16)	1.4	(48)
	1985–1990	3.7	1.3	(35)	0.1	(1)	0.7	(19)	1.6	(45)
	1990–1995	3.1	0.8	(25)	0.1	(2)	0.9	(28)	1.4	(45)
	1995–2000	3.8	1.3	(34)	0.1	(3)	0.9	(24)	1.5	(40)
	2000–2005	4.1	1.0	(25)	0.1	(3)	0.9	(21)	2.0	(50)
	2005–2010	5.9	1.7	(30)	0.2	(4)	2.0	(34)	1.9	(32)
	2010–2015	4.8	1.3	(27)	0.2	(4)	2.0	(41)	1.3	(28)
	2015–2020	2.6	0.8	(29)	0.2	(8)	2.0	(74)	−0.3	(−11)
	1970–2020	3.1	1.0	(33)	0.1	(3)	1.0	(33)	0.9	(30)
ASEAN6	1970–1975	3.6	1.7	(48)	0.0	(1)	0.6	(16)	1.3	(35)
	1975–1980	3.0	1.4	(48)	0.1	(3)	1.0	(35)	0.4	(15)
	1980–1985	0.6	1.8	(323)	0.2	(29)	1.3	(230)	−2.7	(−482)
	1985–1990	4.6	2.8	(60)	0.2	(4)	0.1	(3)	1.5	(33)
	1990–1995	5.6	3.9	(69)	0.3	(4)	1.6	(29)	−0.2	(−3)
	1995–2000	0.1	2.8	(2287)	0.1	(90)	0.0	(14)	−2.8	(−2291)
	2000–2005	3.5	3.0	(87)	0.2	(6)	−0.9	(−27)	1.2	(34)
	2005–2010	2.4	1.6	(68)	0.2	(10)	−0.1	(−4)	0.6	(26)
	2010–2015	4.2	3.8	(90)	0.2	(5)	0.4	(9)	−0.2	(−5)
	2015–2020	1.3	1.7	(134)	0.1	(10)	1.0	(84)	−1.6	(−127)
	1970–2020	2.9	2.5	(85)	0.2	(6)	0.5	(18)	−0.2	(−9)

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2022.

Table 23 Industry Shares of Value Added

——Shares of industry GDP at current prices by Industry

	1980				1990				2000				2010				2020			
	Agriculture	Manufacturing	Service	Others	Agriculture	Manufacturing	Service	Others	Agriculture	Manufacturing	Service	Others	Agriculture	Manufacturing	Service	Others	Agriculture	Manufacturing	Service	Others
Bahrain	0.7	10.9	45.6	42.8	0.7	11.1	58.0	30.2	0.6	11.4	55.1	32.9	0.3	14.6	54.2	30.8	0.3	18.7	58.2	22.8
Bangladesh	32.0	13.8	37.3	6.3	29.3	12.7	40.7	7.6	23.8	14.7	44.7	8.6	17.3	19.0	44.4	9.5	12.4	21.4	53.4	12.8
Bhutan	42.5	3.1	45.8	8.6	34.3	8.5	40.7	16.5	27.4	8.4	36.6	27.6	15.6	9.3	38.8	36.3	19.8	6.1	44.9	29.3
Brunei	0.2	19.4	9.3	71.1	0.9	13.8	35.8	49.5	1.0	18.3	34.3	46.4	0.7	14.6	31.9	52.7	1.2	15.5	40.7	42.6
Cambodia	43.8	10.0	40.7	5.5	49.9	8.6	37.5	4.0	37.8	16.9	39.1	6.2	36.0	15.6	40.7	7.6	24.4	17.6	38.6	19.4
China	26.3	32.7	31.4	9.6	24.4	28.2	38.2	9.2	13.6	29.7	44.5	12.1	9.1	30.5	46.6	13.8	7.7	25.1	55.8	11.4
ROC	7.8	34.4	46.2	11.6	4.2	32.3	55.0	8.4	2.1	25.8	66.3	5.8	1.6	29.1	64.5	4.8	1.6	33.0	60.2	5.2
Fiji	21.0	10.8	58.7	9.5	17.7	10.5	63.8	8.1	16.3	13.3	62.6	7.9	11.7	15.3	67.1	5.9	21.3	14.0	59.1	5.6
Hong Kong	0.8	20.5	70.5	8.2	0.2	14.9	77.3	7.6	0.1	4.8	87.3	7.8	0.1	1.8	93.0	5.2	0.1	1.0	93.5	5.4
India	35.6	17.8	38.5	8.1	29.1	17.2	43.5	10.1	23.1	15.3	50.8	10.8	18.0	14.9	54.4	12.7	19.1	12.8	58.1	10.1
Indonesia	19.2	10.8	46.0	24.1	15.1	16.7	54.9	13.4	12.2	21.2	51.9	14.7	14.2	22.4	42.4	21.1	14.2	20.6	46.1	19.1
Iran	13.1	12.3	49.5	25.2	15.1	18.5	49.0	17.4	11.0	14.6	47.8	26.7	5.9	13.4	46.3	34.4	7.2	19.9	43.2	29.7
Japan	3.5	27.4	57.7	11.4	2.4	26.5	59.4	11.6	1.5	22.2	67.1	9.1	1.2	20.7	71.6	6.5	1.0	19.8	71.8	7.4
Korea	16.0	24.7	48.0	11.3	8.4	27.7	51.4	12.5	4.3	29.3	57.2	9.2	2.4	30.2	60.1	7.3	2.0	27.1	62.4	8.5
Kuwait	0.3	5.6	27.1	67.0	1.6	11.2	49.1	38.1	0.6	6.5	44.2	48.7	0.4	5.3	41.4	52.9	0.4	5.7	60.1	33.8
Lao PDR	65.5	3.8	23.3	7.5	61.2	5.1	24.3	9.4	52.5	10.7	24.6	12.2	31.4	9.8	40.4	18.4	24.1	9.1	35.3	31.5
Malaysia	23.8	17.7	40.3	18.2	15.5	22.9	45.2	16.4	8.6	29.2	46.5	15.7	10.2	23.7	48.9	17.2	8.3	22.5	55.4	13.8
Mongolia	8.1	16.6	56.7	18.7	9.6	19.4	50.6	20.3	24.7	7.4	52.6	15.3	13.1	7.6	50.0	29.4	14.3	8.6	44.7	32.4
Myanmar	46.5	9.5	40.8	3.1	54.7	7.7	35.0	2.5	53.4	8.4	31.2	7.0	24.7	5.4	19.6	50.3	23.7	10.8	34.6	31.0
Nepal	50.8	4.8	39.2	5.2	42.9	6.7	43.5	7.0	34.1	8.7	48.3	8.8	33.5	5.8	52.0	8.7	24.9	5.4	61.4	8.2
Oman	2.5	0.6	28.2	68.7	2.9	2.9	40.5	53.6	2.2	5.6	39.4	52.7	1.4	10.4	35.9	52.4	2.4	7.6	52.2	37.7
Pakistan	34.5	10.1	48.6	6.9	28.8	12.1	51.3	7.8	29.4	10.6	52.6	7.3	24.3	13.6	55.1	6.9	24.4	12.1	56.9	6.6
Philippines	21.7	28.3	36.0	13.9	19.0	27.5	43.0	10.5	13.9	25.3	51.1	9.7	13.7	21.9	53.9	10.4	10.2	17.7	61.4	10.7
Qatar	0.5	3.3	23.5	72.7	0.8	13.0	42.8	43.5	0.4	5.4	29.5	64.7	0.1	8.9	32.4	58.6	0.3	7.5	50.0	42.1
Saudi Arabia	1.0	4.1	27.8	67.1	5.7	8.5	45.3	40.5	4.9	9.6	41.2	44.3	2.6	11.0	39.1	47.3	2.6	12.5	55.8	29.0
Singapore	1.6	27.5	62.2	8.7	0.3	25.6	67.3	6.8	0.1	27.7	65.1	7.1	0.0	22.0	71.8	6.2	0.0	20.9	75.2	3.9
Sri Lanka	20.2	21.3	47.9	10.5	17.4	19.9	53.6	9.0	11.6	20.3	59.9	8.2	9.5	20.1	60.9	9.6	9.1	17.1	63.1	10.7
Thailand	19.3	23.3	50.6	6.7	10.0	27.1	53.1	9.8	8.5	28.4	54.8	8.3	10.5	30.9	49.6	9.0	8.7	25.5	58.1	7.8
Turkey	21.1	22.2	48.2	8.5	13.9	28.1	47.8	10.2	11.2	20.9	58.9	9.0	10.2	17.1	62.0	10.7	7.5	21.5	61.0	10.0
UAE	0.5	3.7	30.8	65.0	1.1	7.1	42.1	49.7	2.2	12.0	46.2	39.6	0.8	7.9	46.7	44.6	0.9	9.7	58.2	31.2
Vietnam	41.7	17.2	35.3	5.7	41.5	5.6	43.1	9.8	26.2	12.7	42.6	18.5	21.0	14.8	42.8	21.3	16.5	18.5	46.7	18.3
(region)																				
APO21	15.1	22.2	50.4	12.3	11.9	23.1	53.7	11.3	10.1	20.8	58.4	10.7	9.9	19.8	58.4	11.9	10.6	18.8	59.5	11.1
Asia25	16.8	23.7	47.5	12.0	14.1	23.9	51.0	11.0	11.2	23.0	54.7	11.1	9.7	23.9	53.7	12.8	9.3	21.5	57.8	11.3
Asia31	14.9	21.3	45.3	18.5	13.4	22.7	50.5	13.4	10.7	22.1	53.9	13.3	9.2	23.1	53.0	14.8	9.0	21.0	57.7	12.3
East Asia	10.0	28.7	50.4	10.9	9.4	27.1	52.7	10.8	7.1	26.0	56.6	10.2	6.4	27.7	54.8	11.2	6.0	24.4	59.3	10.3
South Asia	34.9	16.3	41.0	7.8	29.0	16.1	45.5	9.5	23.9	14.7	51.4	10.0	18.5	15.1	54.7	11.7	18.8	13.5	57.7	10.0
ASEAN	21.5	17.7	43.5	17.2	16.3	20.2	51.4	12.1	12.7	23.3	51.2	12.8	13.0	22.9	47.4	16.7	11.7	20.8	52.6	14.9
ASEAN6	18.9	18.1	44.4	18.6	13.7	21.5	52.4	12.5	10.3	24.6	52.6	12.6	11.6	24.4	48.6	15.5	10.6	21.4	54.0	13.9
CLMV	44.4	14.2	36.3	5.2	46.2	6.2	39.8	7.8	33.9	12.0	39.1	15.1	23.3	12.9	38.4	25.4	18.4	16.9	44.0	20.7
GCC	0.9	4.1	28.4	66.6	4.4	8.3	44.9	42.5	3.6	9.6	42.2	44.6	1.7	9.8	40.6	47.9	1.9	10.9	56.0	31.2
(reference)																				
US	2.2	21.0	66.9	9.9	1.6	17.7	72.7	8.0	1.0	15.1	76.6	7.3	1.1	12.3	79.1	7.6	0.8	10.9	81.5	6.8
Australia	5.8	18.4	57.3	18.4	3.4	13.7	66.5	16.4	3.8	12.0	70.3	13.9	2.5	7.9	69.2	20.5	2.4	6.0	70.3	21.3

Unit: Percentage (average annual growth rate).
Sources: Official national accounts in each country, including author adjustments.
Note: Services are defined as the total of industries 6–9. Others are defined as the total of industries 2, 4, and 5 of nine industries, which consist of 1–agriculture; 2–mining; 3–manufacturing; 4–electricity, gas, and water supply; 5–construction; 6–wholesale and retail trade, hotels, and restaurants; 7–transport, storage, and communications; 8–finance, real estate, and business activities; and 9–community, social, and personal services. See the Online Appendix for the concordance with the ISIC, Revisions 3 and 4.

Table 24 Industry Origins of Economic Growth

——Growth rates and contributions to economic growth by industry in 2010–2020

	1. Agriculture		2. Mining		3. Manufacturing		4. Electricity, gas, and water supply		5. Construction		6. Wholesale and retail trade, hotels, and restaurants		7. Transport, storage, and communications		8. Finance, real estate, and business activities		9. Community, social, and personal services		Total economy
Bahrain	2.1	(0.0)	1.0	(0.3)	2.3	(0.4)	4.0	(0.1)	2.6	(0.2)	0.0	(0.0)	1.6	(0.1)	1.9	(0.4)	4.5	(0.8)	2.2
Bangladesh	4.0	(0.6)	9.1	(0.2)	10.2	(2.1)	8.3	(0.1)	9.5	(0.8)	7.7	(1.2)	6.7	(0.6)	6.4	(0.8)	5.0	(0.8)	7.2
Bhutan	3.0	(0.5)	−1.4	(0.1)	0.9	(0.1)	2.5	(0.4)	1.6	(0.5)	9.4	(0.8)	6.8	(0.7)	4.2	(0.3)	4.7	(0.6)	4.0
Brunei	2.3	(0.0)	−2.6	(−1.3)	3.6	(0.5)	3.8	(0.0)	4.6	(0.1)	2.2	(0.1)	0.4	(0.0)	1.6	(0.1)	0.6	(0.1)	−0.3
Cambodia	1.3	(0.4)	18.3	(0.3)	7.2	(1.2)	6.6	(0.0)	14.2	(1.5)	4.1	(0.6)	6.4	(0.5)	7.8	(0.7)	4.9	(0.5)	5.7
China	3.8	(0.3)	1.0	(0.0)	6.8	(1.9)	7.3	(0.2)	6.9	(0.5)	6.8	(0.7)	8.5	(0.6)	5.0	(0.9)	8.2	(1.3)	6.4
ROC	−0.4	(−0.0)	−2.1	(−0.0)	4.6	(1.4)	1.8	(0.0)	1.1	(0.0)	2.4	(0.5)	2.9	(0.2)	3.0	(0.5)	1.2	(0.2)	2.9
Fiji	3.1	(0.5)	−8.0	(−0.1)	1.1	(0.2)	7.5	(0.1)	3.1	(0.1)	−1.6	(−0.2)	0.3	(0.1)	1.8	(0.3)	2.2	(0.3)	1.3
Hong Kong	−1.6	(−0.0)	−1.6	(−0.0)	−0.6	(−0.0)	−1.7	(−0.0)	3.7	(0.1)	−0.5	(−0.0)	0.3	(0.1)	2.4	(0.9)	2.2	(0.4)	1.5
India	3.6	(0.6)	1.2	(0.0)	5.4	(0.8)	5.2	(0.1)	3.2	(0.2)	4.9	(0.9)	4.1	(0.3)	7.7	(1.3)	5.1	(0.7)	5.0
Indonesia	3.7	(0.5)	1.0	(0.1)	3.8	(0.8)	4.1	(0.0)	5.4	(0.5)	4.1	(0.7)	6.8	(0.6)	6.0	(0.6)	5.1	(0.5)	4.3
Iran	2.9	(0.2)	−4.9	(−1.2)	0.0	(0.0)	4.6	(0.2)	0.2	(0.0)	−0.7	(−0.1)	4.0	(0.3)	3.9	(0.6)	2.3	(0.3)	0.4
Japan	−2.9	(−0.0)	−0.7	(−0.0)	0.2	(0.0)	−1.0	(−0.0)	2.1	(0.1)	−1.1	(−0.1)	−0.5	(−0.0)	1.0	(0.2)	0.6	(0.2)	0.3
Korea	0.4	(0.0)	−3.3	(−0.0)	2.4	(0.7)	1.6	(0.0)	1.5	(0.1)	2.1	(0.2)	2.5	(0.2)	3.4	(0.8)	2.6	(0.5)	2.5
Kuwait	0.5	(0.0)	0.7	(0.7)	0.1	(0.0)	6.3	(0.1)	−4.0	(−0.1)	−0.9	(−0.1)	−0.6	(−0.1)	0.4	(0.1)	3.7	(0.6)	1.3
Lao PDR	2.5	(0.7)	3.4	(0.4)	6.6	(0.6)	14.0	(0.9)	15.8	(1.3)	5.9	(1.0)	7.4	(0.3)	6.7	(0.5)	4.9	(0.5)	6.2
Malaysia	1.5	(0.1)	−0.6	(−0.0)	4.0	(0.9)	3.8	(0.1)	4.7	(0.2)	5.0	(0.9)	5.8	(0.5)	4.1	(0.5)	5.1	(0.7)	3.8
Mongolia	8.1	(1.1)	5.1	(0.9)	6.5	(0.5)	5.4	(0.1)	−0.3	(−0.0)	5.7	(0.9)	5.0	(0.4)	7.8	(1.0)	2.2	(0.3)	5.4
Myanmar	−0.7	(−0.2)	−13.0	(−2.3)	5.4	(0.3)	6.4	(0.1)	5.3	(0.3)	0.8	(0.0)	2.2	(0.1)	23.6	(0.1)	6.2	(0.3)	−1.3
Nepal	2.4	(0.7)	5.7	(0.0)	2.8	(0.2)	6.0	(0.1)	4.5	(0.3)	3.1	(0.5)	5.2	(0.4)	2.8	(0.4)	4.8	(0.7)	3.5
Oman	9.9	(0.2)	1.1	(0.5)	2.2	(0.2)	11.9	(0.2)	8.3	(0.6)	5.7	(0.5)	6.0	(0.3)	4.9	(0.5)	4.8	(0.8)	3.6
Pakistan	2.3	(0.6)	1.6	(0.0)	2.5	(0.3)	5.2	(0.1)	2.8	(0.1)	3.0	(0.6)	3.1	(0.4)	4.0	(0.3)	6.8	(1.1)	3.4
Philippines	1.7	(0.2)	0.3	(0.0)	3.9	(0.8)	4.9	(0.2)	5.4	(0.3)	4.5	(0.9)	4.8	(0.3)	6.7	(1.3)	4.2	(0.5)	4.5
Qatar	10.7	(0.0)	0.7	(0.6)	3.4	(0.3)	7.5	(0.0)	9.9	(0.7)	3.1	(0.2)	2.4	(0.1)	6.7	(0.9)	5.4	(0.5)	3.3
Saudi Arabia	1.4	(0.0)	1.4	(0.7)	2.2	(0.2)	1.0	(0.0)	2.1	(0.1)	2.3	(0.2)	3.7	(0.2)	3.7	(0.4)	2.8	(0.4)	2.3
Singapore	2.3	(0.0)	0.0	( )	3.3	(0.7)	1.0	(0.0)	−2.3	(−0.0)	2.7	(0.6)	2.9	(0.3)	4.3	(1.3)	1.8	(0.2)	3.1
Sri Lanka	2.1	(0.2)	4.8	(0.1)	2.5	(0.5)	5.2	(0.1)	5.7	(0.4)	3.9	(0.5)	4.2	(0.6)	7.6	(1.0)	3.2	(0.7)	4.0
Thailand	0.8	(0.1)	−0.7	(−0.0)	0.7	(0.2)	2.4	(0.1)	2.6	(0.1)	3.1	(0.6)	3.1	(0.2)	5.5	(0.6)	2.3	(0.4)	2.2
Turkey	3.1	(0.2)	3.8	(0.0)	5.6	(1.0)	6.1	(0.2)	5.0	(0.5)	5.6	(0.9)	4.8	(0.6)	4.7	(0.7)	5.2	(0.9)	5.0
UAE	3.1	(0.0)	2.2	(0.8)	3.9	(0.3)	4.8	(0.1)	0.0	(0.0)	3.4	(0.4)	2.4	(0.2)	3.8	(0.6)	4.9	(0.5)	3.0
Vietnam	2.8	(0.5)	−0.3	(−0.0)	9.9	(1.6)	9.2	(0.4)	6.8	(0.4)	7.1	(1.1)	6.3	(0.2)	5.3	(0.7)	9.0	(1.0)	6.0
(region)																			
APO21	3.0	(0.3)	−0.7	(−0.0)	3.3	(0.6)	3.7	(0.1)	3.7	(0.2)	3.3	(0.5)	4.4	(0.4)	4.7	(0.8)	2.9	(0.5)	3.4
Asia25	3.3	(0.3)	−0.3	(−0.0)	5.1	(1.2)	5.3	(0.1)	5.1	(0.3)	4.4	(0.6)	5.8	(0.4)	4.8	(0.8)	5.0	(0.9)	4.6
Asia31	3.2	(0.3)	0.4	(0.0)	5.0	(1.1)	5.2	(0.1)	4.9	(0.3)	4.3	(0.6)	5.8	(0.4)	4.8	(0.8)	4.9	(0.9)	4.5
East Asia	3.4	(0.2)	0.9	(0.0)	5.4	(1.4)	5.5	(0.1)	5.6	(0.3)	4.4	(0.5)	6.1	(0.4)	4.1	(0.7)	5.1	(1.0)	4.8
South Asia	3.4	(0.6)	1.9	(0.0)	5.5	(0.8)	5.4	(0.1)	3.8	(0.3)	4.8	(0.9)	5.5	(0.4)	7.4	(1.2)	5.2	(0.8)	5.1
ASEAN	2.5	(0.3)	−0.5	(−0.0)	3.5	(0.8)	4.8	(0.1)	5.1	(0.3)	4.1	(0.7)	6.2	(0.5)	5.5	(0.7)	4.4	(0.5)	3.9
ASEAN6	2.6	(0.3)	0.4	(0.0)	3.0	(0.7)	3.6	(0.1)	4.7	(0.3)	3.9	(0.7)	6.2	(0.5)	5.5	(0.7)	3.9	(0.5)	3.8
CLMV	2.0	(0.4)	−4.1	(−0.2)	9.2	(1.3)	9.4	(0.3)	7.6	(0.5)	6.2	(0.9)	5.9	(0.3)	5.5	(0.6)	8.1	(0.9)	4.9
GCC	2.1	(0.0)	1.4	(0.7)	2.5	(0.2)	3.7	(0.1)	2.5	(0.1)	2.7	(0.2)	3.9	(0.2)	3.6	(0.4)	3.5	(0.5)	2.6
(reference)																			
US	1.8	(0.0)	2.7	(0.1)	0.2	(0.1)	1.6	(0.0)	1.4	(0.1)	1.7	(0.2)	4.0	(0.3)	2.2	(0.7)	0.2	(0.1)	1.6
Australia	−0.1	(−0.0)	5.2	(0.4)	3.0	(0.0)	0.3	(0.0)	1.0	(0.1)	2.2	(0.3)	1.5	(0.1)	2.4	(0.7)	3.0	(0.7)	2.3

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2022.

Table 25 Industry Origins of Labor Productivity Growth

——Growth rates and contributions to labor productivity by industry in 2010–2020

	1. Agriculture		2. Mining		3. Manufacturing		4. Electricity, gas, and water supply		5. Construction		6. Wholesale and retail trade, hotels, and restaurants		7. Transport, storage, and communications		8. Finance, real estate, and business activities		9. Community, social, and personal services		Total economy
Bahrain	0.2	(0.0)	−3.0	(0.2)	−0.1	(0.1)	0.1	(0.1)	−0.6	(−0.5)	−2.9	(−0.4)	−2.4	(−0.2)	−1.9	(0.3)	1.3	(−0.3)	−0.9
Bangladesh	4.8	(0.9)	10.8	(0.2)	6.6	(1.6)	8.0	(0.1)	6.3	(0.6)	5.4	(0.9)	3.3	(0.4)	3.1	(0.7)	1.9	(0.4)	5.7
Brunei	−9.8	(−0.7)	−6.8	(−1.5)	0.7	(0.3)	8.3	(0.1)	2.4	(−0.7)	−3.6	(−1.4)	−1.9	(−0.1)	1.1	(0.1)	1.8	(0.4)	−3.5
Cambodia	4.8	(1.9)	24.8	(0.3)	6.3	(1.1)	−1.1	(−0.0)	4.9	(1.1)	−3.6	(−1.1)	0.0	(0.3)	−2.0	(0.6)	−3.6	(−0.8)	3.4
China	8.9	(1.7)	7.0	(0.1)	7.0	(2.0)	7.0	(0.2)	7.0	(0.5)	4.4	(0.5)	4.4	(0.4)	4.4	(0.9)	4.4	(0.4)	6.5
ROC	−0.3	(−0.0)	−2.1	(−0.0)	4.0	(1.3)	1.0	(0.0)	−0.3	(−0.1)	3.7	(0.7)	−3.1	(−0.4)	1.9	(0.5)	−0.7	(−0.2)	1.9
Fiji	4.9	(0.6)	−8.3	(−0.1)	4.0	(0.6)	1.9	(−0.1)	0.2	(−0.1)	−4.2	(−0.8)	−1.9	(−0.2)	−4.8	(−0.0)	1.2	(0.1)	0.1
Hong Kong	−1.4	(−0.0)	0.0	( )	2.0	(0.1)	−1.5	(−0.0)	2.3	(0.0)	2.3	(0.7)	0.1	(0.0)	−0.3	(0.4)	0.1	(−0.2)	1.1
India	4.2	(0.9)	8.8	(0.1)	4.3	(0.6)	−3.3	(0.1)	0.5	(−0.1)	2.2	(0.6)	1.0	(0.2)	7.5	(1.3)	2.3	(0.5)	4.2
Indonesia	5.0	(0.9)	0.7	(0.1)	2.0	(0.5)	2.0	(0.0)	2.2	(0.3)	0.7	(−0.1)	5.9	(0.5)	−6.5	(0.2)	0.5	(−0.4)	2.3
Iran	2.6	(0.2)	−10.2	(−1.1)	−1.9	(−0.3)	−0.7	(0.2)	−1.7	(−0.3)	−1.6	(−0.2)	3.0	(0.2)	0.5	(0.4)	0.4	(−0.1)	−1.0
Japan	−1.1	(−0.0)	0.8	(0.0)	−0.2	(−0.0)	−0.9	(−0.0)	2.7	(0.2)	−0.2	(−0.0)	−1.1	(−0.1)	−0.1	(0.1)	−0.7	(−0.4)	−0.1
Korea	1.3	(0.1)	1.6	(0.0)	1.7	(0.6)	2.3	(0.0)	0.2	(0.0)	1.9	(0.2)	0.9	(0.1)	1.9	(0.6)	0.5	(0.0)	1.4
Kuwait	1.8	(0.0)	−1.1	(0.7)	0.7	(0.0)	4.6	(0.1)	−5.2	(−0.2)	0.2	(0.1)	−0.4	(−0.0)	−1.2	(−0.1)	−0.2	(−1.6)	−1.0
Malaysia	1.7	(0.1)	−4.2	(−0.1)	2.5	(0.6)	2.2	(0.1)	4.1	(0.1)	0.4	(−0.3)	3.4	(0.4)	−0.9	(−0.0)	4.1	(0.5)	1.5
Mongolia	10.4	(1.7)	0.9	(0.7)	3.2	(0.3)	4.2	(0.1)	−4.9	(−0.3)	4.4	(0.7)	5.6	(0.4)	0.4	(0.9)	−1.0	(−0.5)	3.9
Nepal	1.7	(0.2)	2.2	(0.0)	0.6	(0.0)	2.3	(0.1)	0.3	(0.1)	−0.5	(0.2)	0.7	(0.3)	−3.7	(0.4)	1.8	(0.6)	1.9
Oman	8.0	(0.0)	−10.8	(0.2)	−4.3	(−0.5)	−14.9	(0.1)	7.9	(0.1)	−0.8	(−0.6)	−9.8	(−0.1)	1.0	(0.1)	2.8	(0.2)	−0.4
Pakistan	1.4	(0.2)	−10.6	(−0.0)	−1.1	(−0.2)	3.2	(0.1)	−1.2	(−0.2)	0.5	(0.2)	−0.9	(0.1)	4.1	(0.3)	3.1	(0.7)	1.1
Philippines	2.9	(0.5)	0.6	(0.0)	2.9	(0.7)	5.9	(0.2)	−1.8	(−0.2)	2.0	(0.3)	1.9	(0.1)	1.1	(1.0)	−0.1	(−0.4)	2.2
Qatar	5.9	(0.0)	9.6	(0.7)	3.7	(0.2)	−2.4	(−0.1)	6.2	(−0.7)	−3.4	(−0.7)	−10.1	(−1.0)	6.6	(0.8)	−2.3	(−1.5)	−2.3
Saudi Arabia	6.5	(0.1)	1.9	(0.8)	−0.6	(−0.0)	−1.7	(−0.0)	0.3	(−0.3)	2.1	(0.1)	2.7	(0.1)	11.3	(0.5)	1.2	(−0.2)	1.0
Singapore	−7.1	(−0.0)	0.0	( )	4.7	(0.9)	15.4	(0.0)	−3.0	(−0.1)	1.7	(0.4)	−0.1	(0.0)	2.2	(1.2)	−1.1	(−0.8)	1.5
Sri Lanka	4.0	(0.7)	8.7	(0.2)	2.6	(0.5)	1.4	(0.0)	1.9	(0.2)	3.5	(0.5)	3.0	(0.5)	8.2	(1.0)	2.4	(0.5)	4.0
Thailand	2.9	(0.8)	−5.2	(−0.0)	−0.1	(0.1)	−1.2	(−0.0)	3.0	(0.1)	2.7	(0.5)	0.5	(0.2)	0.8	(0.5)	1.2	(0.2)	2.3
Turkey	4.1	(0.4)	0.3	(0.0)	4.4	(0.8)	0.1	(0.1)	4.7	(0.4)	3.8	(0.5)	3.0	(0.5)	0.3	(0.3)	1.0	(0.1)	3.3
UAE	−5.8	(−0.6)	3.6	(0.8)	4.4	(0.4)	7.1	(0.2)	0.2	(0.0)	0.2	(−0.3)	0.4	(0.0)	5.4	(0.7)	6.7	(1.0)	2.3
Vietnam	6.0	(1.8)	4.4	(0.1)	4.7	(0.7)	6.2	(0.4)	2.8	(0.1)	4.0	(0.6)	3.2	(0.1)	−2.4	(0.6)	7.2	(0.9)	5.2
(region)																			
APO21	3.8	(0.6)	2.3	(0.0)	1.6	(0.4)	−1.1	(0.1)	1.0	(0.0)	1.0	(0.2)	1.8	(0.2)	1.9	(0.7)	0.2	(0.1)	2.3
Asia25	5.5	(1.1)	4.4	(0.0)	4.3	(1.1)	2.5	(0.1)	3.5	(0.2)	2.1	(0.3)	2.7	(0.3)	2.7	(0.8)	1.7	(0.3)	4.0
Asia31	5.5	(1.0)	5.0	(0.1)	4.3	(1.0)	2.5	(0.1)	3.4	(0.2)	2.0	(0.3)	2.6	(0.3)	2.7	(0.7)	1.6	(0.2)	3.9
East Asia	8.4	(1.4)	6.8	(0.1)	5.5	(1.5)	5.2	(0.1)	5.7	(0.3)	2.6	(0.3)	2.6	(0.2)	3.0	(0.7)	1.7	(0.1)	4.8
South Asia	3.9	(0.8)	8.0	(0.1)	3.9	(0.6)	−1.5	(0.1)	1.0	(0.0)	2.2	(0.6)	2.2	(0.3)	6.8	(1.2)	2.3	(0.5)	4.1
ASEAN	4.2	(0.9)	−0.6	(−0.0)	1.3	(0.5)	2.3	(0.1)	1.7	(0.1)	1.1	(0.1)	3.9	(0.4)	−0.6	(0.5)	0.9	(0.0)	2.5
ASEAN6	4.1	(0.7)	−0.1	(−0.0)	1.6	(0.5)	2.0	(0.1)	1.7	(0.1)	1.2	(0.1)	4.3	(0.4)	−2.0	(0.4)	0.2	(−0.2)	2.2
CLMV	4.1	(1.3)	−2.9	(−0.1)	5.2	(0.7)	5.5	(0.3)	3.1	(0.2)	2.1	(0.2)	2.4	(0.1)	7.0	(0.6)	5.7	(0.6)	4.0
GCC	1.2	(0.0)	2.1	(0.7)	0.2	(0.1)	1.1	(0.0)	0.7	(−0.2)	0.9	(−0.1)	0.3	(0.0)	6.0	(0.5)	1.7	(−0.2)	0.8
(reference)																			
US	2.0	(0.0)	5.0	(0.1)	0.6	(0.1)	2.0	(0.0)	−0.4	(−0.0)	1.6	(0.2)	2.2	(0.2)	0.8	(0.4)	0.0	(0.0)	1.0
Australia	−0.2	(−0.0)	3.3	(0.4)	0.5	(0.0)	0.1	(0.0)	−0.4	(−0.0)	1.8	(0.1)	−0.2	(−0.0)	0.4	(0.4)	0.7	(−0.1)	0.8

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2022.

Table 26 Real Income and Terms of Trade

——Growth of real income, real GDP, trading gain, and net primary income transfer from abroad

2000–2005					2005–2010					2010–2015					2015–2020					2019–2020				
	Real income	Real GDP	Trading gain	Net primary income from abroad		Real income	Real GDP	Trading gain	Net primary income from abroad		Real income	Real GDP	Trading gain	Net primary income from abroad		Real income	Real GDP	Trading gain	Net primary income from abroad		Real income	Real GDP	Trading gain	Net primary income from abroad
Mongolia	10.6	6.4	4.4	−0.2	Myanmar	12.1	4.7	7.3	0.0	Mongolia	10.7	10.0	0.8	−0.1	Vietnam	6.2	5.5	0.6	0.1	ROC	5.0	3.2	1.5	0.4
Iran	9.5	7.0	2.7	−0.3	China	11.0	10.8	0.2	0.1	Lao PDR	8.3	3.4	4.5	0.4	Bangladesh	6.2	6.4	0.1	−0.3	Nepal	4.8	5.9	−0.4	−0.6
China	9.4	8.4	0.9	0.1	Bhutan	9.2	9.9	0.1	−0.8	Myanmar	7.7	6.2	1.0	0.5	Nepal	5.5	5.5	0.2	−0.1	Bangladesh	3.5	3.4	0.0	0.0
Cambodia	9.1	9.4	−0.2	−0.1	Cambodia	8.8	6.1	2.7	0.0	China	7.2	7.0	0.2	0.0	Lao PDR	5.2	5.6	−0.3	0.0	Turkey	2.5	1.2	0.8	0.5
Myanmar	8.3	5.6	2.8	−0.1	India	8.3	8.1	0.3	−0.1	Bangladesh	6.7	7.2	−0.1	−0.3	Mongolia	5.0	2.7	2.8	−0.5	Vietnam	2.4	2.6	−0.9	0.7
Malaysia	7.4	5.5	1.2	0.8	Singapore	7.5	7.3	−1.0	1.3	Turkey	6.4	6.7	−0.3	0.0	Cambodia	5.0	5.0	−0.1	0.1	Lao PDR	2.3	3.1	−0.8	0.0
Vietnam	7.3	6.8	0.6	−0.1	Lao PDR	7.4	7.0	1.1	−0.8	India	6.1	6.5	−0.3	0.0	Turkey	4.5	4.7	−0.3	0.1	Pakistan	1.6	−0.4	0.9	1.0
India	6.7	6.9	−0.3	0.1	Bangladesh	7.1	7.1	−0.5	0.6	Cambodia	6.0	4.6	1.8	−0.3	China	4.3	4.5	−0.1	0.0	China	0.2	−0.2	0.8	−0.4
Bangladesh	6.3	6.1	−0.1	0.2	Sri Lanka	6.7	6.5	0.2	0.0	Bhutan	5.7	6.5	−0.5	−0.3	Pakistan	4.3	3.3	0.6	0.3	Korea	−0.8	−1.1	0.4	−0.1
Bhutan	6.1	6.4	0.0	−0.3	Vietnam	6.7	5.9	1.2	−0.4	Philippines	5.4	5.7	−0.3	0.0	India	3.8	3.2	0.6	0.0	Iran	−1.2	2.1	−3.1	−0.2
Lao PDR	5.6	5.5	−0.3	0.3	Mongolia	5.8	6.3	0.9	−1.4	Vietnam	5.3	5.1	0.8	−0.5	Indonesia	3.2	3.4	−0.3	0.1	Indonesia	−1.6	−2.3	0.3	0.4
Sri Lanka	5.4	4.6	0.6	0.1	Malaysia	5.7	4.8	0.6	0.3	Malaysia	5.1	5.2	−0.2	0.1	ROC	2.4	2.9	−0.5	0.1	Sri Lanka	−2.8	−1.7	−1.3	0.1
Thailand	4.7	5.2	0.0	−0.5	Nepal	5.4	4.3	1.1	0.0	Sri Lanka	4.9	4.4	0.8	−0.3	Malaysia	2.4	2.3	0.0	0.1	Mongolia	−3.1	−5.4	1.6	0.6
Turkey	4.6	4.9	0.3	−0.6	Philippines	5.2	4.9	0.1	0.3	Indonesia	4.9	5.3	−0.3	−0.1	Bhutan	2.4	2.2	0.0	0.2	Thailand	−3.9	−5.8	0.4	1.4
Korea	4.5	5.1	−0.7	0.0	Indonesia	5.2	5.5	−0.7	0.4	Pakistan	4.0	3.8	−0.2	0.4	Thailand	2.3	1.7	−0.1	0.6	Japan	−4.1	−4.7	0.9	−0.3
Pakistan	4.2	4.4	−0.8	0.6	Iran	5.1	5.3	−0.3	0.2	Thailand	3.4	3.1	0.6	−0.2	Philippines	2.2	3.3	−0.4	−0.7	Cambodia	−4.9	−4.3	−0.6	0.0
Philippines	4.0	4.7	−0.8	0.1	Thailand	4.0	3.9	0.0	0.1	ROC	3.4	2.9	0.6	−0.1	Korea	1.8	2.1	−0.4	0.1	Malaysia	−4.9	−5.0	−0.5	0.6
Indonesia	3.9	4.5	−1.0	0.4	Korea	3.9	4.4	−0.6	0.2	Korea	3.0	2.7	0.3	0.0	Sri Lanka	1.8	2.0	−0.2	−0.1	India	−5.1	−5.7	1.1	−0.4
Singapore	3.9	5.1	0.0	−1.2	Hong Kong	3.3	3.8	−0.8	0.3	Hong Kong	2.8	2.8	0.1	−0.1	Iran	1.6	1.0	0.6	0.0	Hong Kong	−5.3	−5.9	−0.1	0.7
Nepal	3.2	2.9	0.0	0.1	Turkey	3.3	3.7	−0.4	−0.1	Fiji	2.7	3.3	0.0	−0.6	Singapore	1.1	2.4	0.2	−1.5	Bhutan	−6.1	−9.1	−0.1	3.1
Hong Kong	3.0	4.1	−1.0	−0.1	Pakistan	2.6	3.1	−0.9	0.4	Singapore	2.4	4.6	−0.9	−1.3	Hong Kong	1.0	0.2	0.0	0.8	Singapore	−6.3	−3.7	−1.6	−1.0
ROC	2.7	4.1	−1.6	0.2	ROC	1.9	4.2	−2.3	0.1	Nepal	2.4	1.5	0.7	0.2	Japan	−0.3	−0.4	0.1	−0.1	Philippines	−10.9	−9.8	1.0	−2.1
Fiji	1.8	2.0	0.3	−0.5	Fiji	0.4	0.7	0.0	−0.2	Japan	1.2	1.1	−0.1	0.2	Fiji	−1.6	−1.1	−0.1	−0.5	Fiji	−18.8	−18.5	−0.1	−0.3
Japan	1.0	1.2	−0.3	0.2	Japan	−0.4	0.0	−0.4	0.1	Iran	−3.5	−0.6	−3.0	0.0	Myanmar	−12.6	−3.0	−8.4	−1.2	Myanmar	−46.7	−26.7	−14.3	−5.7
Bahrain	9.9	8.4	1.5	0.0	Bahrain	10.2	7.7	3.8	−1.4	Bahrain	3.1	3.7	−1.3	0.8	Bahrain	1.0	2.2	−0.9	−0.3	Bahrain	−10.0	−3.8	−4.9	−1.3
Kuwait	12.0	12.8	0.3	−1.2	Kuwait	3.4	1.4	2.5	−0.5	Kuwait	−1.3	3.6	−5.4	0.5	Kuwait	2.0	−1.5	1.6	1.9	Kuwait	−4.6	−10.8	−1.2	7.4
Oman	8.2	3.7	4.3	0.2	Oman	6.6	3.5	3.6	−0.5	Oman	2.6	4.2	−2.2	0.5	Oman	−1.7	−2.0	1.2	−0.9	Oman	−13.9	−14.5	0.9	−0.3
Qatar	12.0	9.1	5.2	−2.3	Qatar	14.8	13.3	1.0	0.6	Qatar	5.4	6.3	−2.6	1.7	Qatar	−2.6	−0.1	−2.6	0.0	Qatar	−16.9	−4.8	−12.5	0.4
Saudi Arabia	9.2	4.0	5.3	−0.1	Saudi Arabia	5.4	2.5	2.6	0.2	Saudi Arabia	1.9	5.0	−3.2	0.2	Saudi Arabia	−0.6	0.2	−0.6	−0.2	Saudi Arabia	−14.6	−3.5	−11.1	0.0
UAE	6.5	4.9	1.6	−0.1	UAE	3.1	2.9	0.5	−0.3	UAE	5.4	6.1	−0.8	0.1	UAE	−0.4	0.2	−0.5	−0.1	UAE	−7.6	−6.1	−0.9	−0.6
Brunei	6.1	1.1	5.0	0.0	Brunei	1.3	0.1	1.3	−0.1	Brunei	1.2	0.9	−0.8	1.1	Brunei	−0.4	1.8	−2.0	−0.1	Brunei	−5.9	1.1	−8.7	1.6
(reference)					(reference)					(reference)					(reference)					(reference)				
Australia	4.3	3.3	1.2	−0.2	Australia	4.2	2.8	1.4	0.0	Australia	1.7	2.7	−1.4	0.3	Australia	3.4	1.8	1.4	0.3	Australia	5.0	1.8	2.1	1.1
France	1.6	1.7	0.0	0.0	France	1.0	0.8	0.0	0.1	France	1.1	1.0	0.2	0.0	France	−0.3	−0.2	0.0	−0.1	France	−8.4	−8.1	0.2	−0.5
Germany	1.0	0.6	0.1	0.3	Germany	1.3	1.1	−0.1	0.2	Germany	1.9	1.8	0.1	0.1	Germany	0.7	0.5	0.1	0.1	Germany	−4.8	−5.1	0.7	−0.4
Italy	1.0	0.9	0.0	0.1	Italy	−0.5	−0.3	−0.1	−0.1	Italy	−0.7	−0.7	0.1	−0.1	Italy	−0.3	−1.0	0.3	0.4	Italy	−8.0	−9.4	1.0	0.4
UK	3.0	2.5	0.4	0.2	UK	0.2	0.4	0.0	−0.3	UK	1.7	1.9	0.3	−0.5	UK	−0.1	−0.3	0.1	0.2	UK	−10.7	−10.1	0.4	−0.9
US	2.5	2.5	0.0	0.0	US	1.1	1.0	0.0	0.2	US	2.2	2.1	0.2	0.0	US	1.2	1.1	0.1	0.0	US	−3.6	−3.5	0.1	−0.2
EU15	1.9	1.7	0.1	0.1	EU15	0.7	0.7	0.0	0.0	EU15	1.0	1.0	0.1	−0.1	EU15	0.3	0.1	0.1	0.1	EU15	−7.1	−7.2	0.5	−0.4
					EU27	−0.5	0.9	0.0	−1.4	EU27	0.4	1.1	0.1	−0.9	EU27	−0.9	0.5	0.2	−1.6	EU27	−5.0	−5.3	0.6	−0.3

Unit: Percentage (average annual growth rate).
Sources: Official national accounts in each country, including author adjustments.

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