APO Productivity Databook 2023

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Contents

Boxes

Tables

Figures

Country Abbreviation

APO21	21 APO member economies:
BAN	Bangladesh
CAM	Cambodia
ROC	Republic of China (ROC)
FIJ	Fiji
HKG	Hong Kong
IND	India
IDN	Indonesia
IRN	Islamic Republic of Iran (Iran)
JPN	Japan
KOR	Republic of Korea (Korea)
LAO	Lao PDR
MAL	Malaysia
MGL	Mongolia
NEP	Nepal
PAK	Pakistan
PHL	Philippines
SIN	Singapore
SRI	Sri Lanka
THA	Thailand
TUR	Turkiye
VIE	Vietnam

Asia25	APO21 plus the following four countries:
BTN	the Kingdom of Bhutan (Bhutan)
BRN	Brunei Darussalam (Brunei)
CHN	the People's Republic of China (China)
MYA	Myanmar

Asia31	Asia25 plus the following six countries:
BHR	the Kingdom of Bahrain (Bahrain)
KWT	State of Kuwait (Kuwait)
OMN	Sultanate of Oman (Oman)
QAT	State of Qatar (Qatar)
SAU	Kingdom of Saudi Arabia (Saudi Arabia)
UAE	United Arab Emirates (UAE)

Reference	the following seven countries:
USA	United States of America (US)
AUS	Australia
NZL	New Zealand
GBR	United Kingdom (UK)
FRA	France
DEU	Germany
ITA	Italy

*Names in brackets are used in the text.

Abbreviation

ADB	Asian Development Bank
ANRD	Asia Natural Resources Database
APO	Asian Productivity Organization
APO-PDB	APO Productivity Database
ASEAN	Association of Southeast Asian Nations: 10 countries of Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The ASEAN is separated into two groups in Databook, i.e., the ASEAN6 and CLMV.
ASEAN6	Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand
B&C	Building and construction
CLMV	Cambodia, Lao PDR, Myanmar, and Vietnam
CPI	Consumer price index
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
COE	Compensation of employees
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
GVC	Global value chains
ICP	International Comparisons Program
ICT	Information and communication technology
ILO	International Labour Organization
IMF	International Monetary Fund
IOT	Input-Output Table
IPEF	Indo-Pacific Economic Framework: 14 countries of the United States, Japan, Australia, New Zealand, Republic of Korea, India, Fiji, and seven ASEAN countries (Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam)
IPNs	International production networks
IPP	Intellectual property products
ISIC	International Standard Industry Classification of All Economic Activities
KEO	Keio Economic Observatory, Keio University
LDCs	Least developed countries
M&E	Machinery and equipment
MER	Mineral and energy resources
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: 15 countries of ten ASEAN countries, Australia, China, Japan, Republic of Korea, and New Zealand
R&D	Research and development
SNA	System of National Accounts
SUT	Supply and Use Tables
TFP	Total factor productivity
UN	United Nations
UNSD	United Nations Statistics Division
WTO	World Trade Organization

Foreword

In an era characterized by rapid technological advances, globalization, and dynamic shifts in economic landscapes, understanding and harnessing national productivity potential are paramount. The *APO Productivity Databook* is a testament to the collective dedication and rigorous pursuit of knowledge by the researchers, economists, and analysts who have contributed to this comprehensive study. The Asia-Pacific, with its diverse cultures, languages, and economies, is a region of immense vitality and potential. It spans the spectrum from emerging markets to established economic powerhouses, each with its unique set of challenges and opportunities. The data contained in this annual publication serve as critical resources for policymakers, academics, and business leaders seeking to navigate this complex terrain.

The 2023 edition of the *APO Productivity Databook* provides a useful reference on the quality of economic growth and productivity, comparable across countries at different development stages in the Asia-Pacific. Productivity gains, which enable an economy to produce more with 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. Monitoring and improving national productivity capability are important public policy targets. This 16th edition covers more than half a century's history of Asian economic development, from 1970 to 2021, with projections of economic growth and labor productivity improvements up to 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 eight economic groups, the APO21, Asia25, East Asia, South Asia, CLMV, ASEAN6, IPEC, and RCEP, are included for easy comparisons.

It is crucial to acknowledge the collaborative spirit that underpins this publication series. 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 databooks. The APO will continue working with national statistics offices in its members to improve data quality. It is hoped that the 2023 *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 2023

1 Introduction

1.1 Databook 2023

This sixteenth edition of the *APO Productivity Databook* aims to provide a useful reference on 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. Monitoring and improving national productivity capability are important public policy targets. This edition covers more than half a century's history of Asian economic development, from 1970 to 2021, with our projections of economic growth and labor productivity improvements out to 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[1]. 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, Turkiye, 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, New Zealand, 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: APO-PDB), which have been developed by a joint research effort between the APO and the Keio Economic Observatory (KEO), Keio University, since 2007. The productivity accounts in APO-PDB 2023 are developed for the Asia25 economies, consisting of the APO21 plus Bhutan, Brunei, China, and Myanmar, along with the US as a reference economy.

The Databook provides sources of economic growth in each economy – the contributions of capital and labor inputs and total factor productivity (TFP). In addition to the productivity account in each economy, the regional growth accounts are developed in the APO-PDB 2023 for eight economy groups: the ASEAN6, the APO21, Asia25, CLMV, East Asia, the IPEC, the RCEP, and South Asia.[2] In developing the regional productivity accounts, consideration is given to the price differentials among economies on capital and labor inputs and outputs by following the framework in Nomura (2018). The level comparison of country outputs is based on the 2017 benchmark estimates on the purchasing power parities (PPP), published in 2020 by the International Comparisons Program (World Bank 2020a).

The data in APO-PDB 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 22 economies, either partially or fully. Because of the varying SNA adoptions among the economies can result in discrepancies between data definitions and coverage, data harmonization is necessary for comparative productivity analyses. The APO-PDB reconciles these national account variations based on their specific concepts and definitions. This reconciliation follows the 2008 SNA and provides harmonized estimates for better international comparison. Compared to the previous edition of Databook (APO 2022), some significant revisions have been made in the official national accounts in some Asian countries. The 2008 SNA was

1: See the Country Abbreviation on page 8 for the list of country and country groups.
2: 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. The IPEF and RCEP were first introduced in this edition of the Databook with the addition of New Zealand as a reference country.

just introduced in Vietnam with the revision published in August 2022.[3] In addition, the new benchmark-revision national accounts were published in Pakistan[4] and Sri Lanka.[5] The APO-PDB 2023 follows the latest estimates and tries to construct retrospective harmonized estimates back to 1970, 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 capital input, 23 types of assets (Table 8.3), including land and inventory, are defined.[6] A distinct feature of the APO-PDB 2023 is that mineral and energy resources (MER) are considered capital inputs based on the time-series data developed at KEO since 2020 (Section 8.2.7). This revision in the definition of capital input impacts the TFP estimates for some resource-rich countries in Asia (see Box 10). Another revision is a consideration of property taxes by type of assets in the user cost of capital formula (Section 8.2.8). One feature of capital measurement in the APO-PDB, which covers low-income countries in Asia, is that it considers damage to the productive capital stock caused by natural disasters (Section 8.2.4). This is a major revision introduced in the APO-PDB 2021.

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 labor 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. The APO-PDB 2023 follows the Asia QALI Database 2023.[7]

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. To understand the dynamics of the long-term

3: With the introduction of the 2008 SNA, a benchmark revision was made. In 2010, the starting year of the revised estimates, Vietnam's GDP at current market prices was revised upward by 27%. The retroactive estimates back to 1970, considering conceptual differences and other factors, are given in Nomura (2023b).

4: Pakistan Bureau of Statistics (PBS) introduced the 2008 SNA in 2013, and the backward estimates based on the 2008 SNA are available from 2000 (Section 8.1.1). As of April 2021, PBS published the 2015–16 benchmark-year national accounts. This latest account considerably impacts GDP at current market prices, revising it up by 13% in 2016, compared to the previous 2005–06 benchmark-year account used in the past Databook.

5: Sri Lanka Department of the Census & Statistics (DCS) introduced the 2008 SNA in 2016, and the backward estimates based on the 2008 SNA are available from 2010. As of May 2022, the DCS published the 2015 benchmark-year national accounts. This latest account considerably impacts GDP at current market prices, revising it up by 6% in 2015, compared to the previous 2010 benchmark-year account used in the past Databook.

6: The assets in APO-PDB 2023 are defined by 11 types of produced assets (including ICT and R&D capital), seven types of land, inventory, and four types of MER (Section 8.2). Compared to APO-PDB 2022, three additional land types (for other economic use, forest use, and inland water use) have been added as capital inputs. However, it has a smaller impact on growth accounting. In most Asian countries, developing the data on average land prices at the national level is challenging. The land stock data has been developed for each Asia25 economy since 2016 at KEO and has been continuously improved to reflect micro-data as it has become available (Section 8.2.6). Although there are still issues regarding data quality, APO-PDB 2023 follows the latest estimates.

7: The reports of the Asia QALI Database are provided by Nomura and Akashi (2017) for six South Asian countries and Nomura (2023b) for Vietnam. Section 8.3 provides a brief explanation. Based on this detailed data, the labor input in the Databook is decomposed into hours worked and labor quality (as a default) or college and non-college labor inputs (Box 6).

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 4 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. This edition of the Databook includes estimates for 2021 as the final year. Some tables provided in Chapter 9 present estimates that reflect the damage and the recovery process of the Covid-19 pandemic (in 2019–2020 and 2020–2021, respectively).

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 comparison of industry structure is presented in Chapter 6.[8] Chapter 0 analyzes the income side of GDP by measuring real income growth and evaluating an improvement or deterioration in the terms of trade. Chapter 8 presents the methodological note on the frameworks and assumptions used in this edition of the Databook. Some supplementary tables are provided in Chapter 9. Finally, the Appendix provides the country profiles on productivity indicators from 1970 to 2021 and our projections through 2030 for the APO21 economies and five regions: APO21, Asia25, East Asia, South Asia, and the ASEAN.

The official national accounts and metadata information used to construct the APO-PDB 2023 have been collected by national experts in APO member economies and research members at KEO. The 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 2023; and the population prospects published by the United Nations (2022). The APO Productivity Databook/Database project is managed by Koji Nomura, under the consultancy of Professor W. Erwin Diewert (University of British Columbia) and Dr. Mun S. Ho (Harvard University), and with coordination by Dr. Asaithambi Manickam at APO. Professor Dale W. Jorgenson, who passed away on June 8, 2022, provided invaluable guidance and encouragement as a consultant from the beginning of this project. We want to express our sincere gratitude to him and our intention to continue his tireless quest for better measurements. This edition's text, tables, and figures were authored by Koji Nomura and Fukunari Kimura, with support from research assistants at KEO; Sho Inaba, Shiori Nakayama, Mansaku Yoshida, Tomoko Nagashima, and Yuri Nomura. The Databook is grateful to Trina Ott for her draft review.

8: In constructing APO-PDB, we have comprehensively examined the problems of time-series connections of industry data in each Asian country. Nevertheless, there are still many problems with the quality of industry-level data, and we have yet to develop an industry-level productivity account at basic prices in APO-PDB, which are fully consistent with the aggregate productivity account.

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2 Current Trends

In 2021, Asian countries overall presented a relatively strong growth performance after the outburst of Covid-19. Although Covid-19 was lingering and generated multiple waves of infection in many countries, most of the Asian countries aggressively captured the recovery momentum with rebounding internal and external demand. Particularly in the case of international production networks (IPNs) in machinery industries, firms located in East Asia quickly overcame negative supply shocks and negative demand shocks. They took advantage of "positive" demand shocks due to the worldwide demand for work-at-home and stay-at-home type products such as personal computers, displays, electric tools, and others. While facing multiple unexpected challenges, such as the shortage of semiconductors and a turmoil in marine transportation, the economic activities in Asia were overall vigorous. However, the recovery from Covid-19 was unbalanced. Some sectors such as tourism and face-to-face services experienced prolonged difficulties in a so-called K-shaped recovery.

The Asian countries mostly continued to ride the growth momentum wave in 2022. One of the emerging concerns was the repercussion of the macroeconomic management particularly in developed countries. The US somewhat mishandled the heated recovery of demand from Covid-19 and started experiencing demand-pull inflation. When the Russia-Ukraine War began in February 2022, and the cost-push inflation, especially in food and energy, quickly spread throughout the world. From the viewpoint of newly developed and developing countries, the rising interest rates were one of the concerns for their management of macroeconomic fundamentals. The rise of food and energy prices was another concern. In the latter half of 2022, the Chinese economy showed a slow recovery from Covid-19, partially due to its zero-corona policy and additional lockdowns, and positive demand shocks coming from Covid-19 were ended. Meanwhile, increasing geopolitical tensions generated uncertainties for the private sector.

This Databook focuses on the data up to 2021, and thus based on it, the growth trend is quickly reviewed in the following. In Asia31 and East Asia, the average annual growth of GDP at constant prices decreased from 5.2% and 5.1% in 2010–2015 to 4.0% and 4.2% in 2015–2021, respectively, while the growth rates were –1.5% and 0.0% in 2019–2020, and in 7.3% and 7.2% in 2020–2021. With a relatively slow spread of the pandemic, Asian countries were hit less severely than advanced economies in 2020. Some Asian countries, including Cambodia, Vietnam, Bangladesh, ROC, Iran, Turkiye, and China, recorded positive growth even in 2019–2020. "Positive" demand shocks enabled exports of East Asian countries to come back quickly. In 2021, the emergence of mutant variants generated multiple waves of infection in Asian countries at different timings and with different intensity. However, the growth rates in most of the Asian countries showed strong recovery.

Advanced economies were hit hard by Covid-19, particularly in the first wave in 2020. In the US the average annual growth of GDP at constant prices dropped slightly from 2.1% in 2010–2015 to 2.0% in 2015–2021, with –2.9% in 2019–2020 and 5.7% in 2020–2021. The European economy had a tougher time. The average annual growth rate of GDP at constant prices in EU15 and EU27 was 1.0% and 1.0% in 2010–2015 to 1.0% and 1.3% in 2015–2021 with –7.2% and –5.8% in 2019–2020 and 5.5% and 5.2% in 2020–2021, respectively. The annual growth of GDP at constant market prices in Japan was 1.1% in 2010–2015 and 0.1% in 2015–2020 with –4.4% in 2019–2020 and 2.2% in 2020–2021, although the pandemic was relatively well contained in 2020.

The growth slowdown of the Chinese economy started earlier, but the containment of Covid-19 in the very first wave was effective. China achieved 6.9% in 2010–2015 but 5.4% in 2015–2021, in the average annual growth of GDP at constant market prices, with 1.0% in 2019–2020 and 8.5% in 2020–2021. The impact of the US-China trade war and numerous structural economic problems also decelerated the growth. However, the economy performed relatively well compared with other countries during the pandemic period. Korea lost pace, having 2.7% in 2010–2015 and 2.5% in 2015–2021 with –0.8% in 2019–2020 and 4.0% in 2020–2021.

In the long-run trend, economic growth has been steady in most of the Asian economies. Latecomers in ASEAN, Cambodia, Lao PDR, and Myanmar, have kept growing in the past two decades, reaching $1,710, $2,610, and $530 in the per capita GDP using exchange rate in 2021, 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 $3,720 per capita GDP using exchange rate in 2021, while the formation of industrial agglomeration and productivity growth were a high priority on the agenda.

The Philippines and Indonesia are in the process of forming efficient industrial agglomeration with $3,560 and $4,470 in the per capital GDP using exchange rate in 2021. Thailand, Malaysia, and Singapore reached $7,400, $11,400, and $77,700 in the per capita GDP using exchange rate in 2021, 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 yet, some have been successful in connecting with slow global value chains in labor-intensive industries, such as garment and footwear. The per capita GDP using exchange rate in 2021 in Nepal, Pakistan, India, and Bangladesh was $1,210, $1,660, $2,250, and $2,450, respectively.

Overall, most of the newly developed and developing economies in Asia have potential to continue strong growth performance. Covid-19 caused serious damage in some portion of their economy and society, which made upgrading the quality, as well as the expansion of healthcare systems, an important political agenda. Additionally, the usage of digital technology accelerated during the pandemic, creating the opportunity for a more aggressive approach for disruptive innovation and digital transformation.

Box 1 Covid-19 Deaths and Economic Consequences

While Covid-19 was a serious tragedy for the world, the health damage due to the pandemic 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.[9]

Figure 2.1 presents the confirmed Covid-19 deaths and estimated excess deaths, per million people, as of December 31, 2021, for Asian countries and the reference countries. Countries are sorted based on the estimated excess deaths per million. As for the confirmed Covid-19 deaths, the UK is the highest among countries, with 2,626 deaths per million, followed by the US, Italy, France, Iran, and Germany. On the other hand, the estimated excess deaths per million are the highest in Indonesia with 3,901 per million, followed by India, Iran, and Italy. Estimated excess deaths may be higher than confirmed Covid-19 deaths if, for example, many Covid-19 deaths are not counted as such or insufficient treatments are provided for patients with other diseases or injuries in overburdened health systems. Some countries such as Indonesia, India, Iran, Turkiye, and the Philippines recorded large gaps. This probably reflects the under-reporting of Covid-19 deaths and the overburdened hospitals and healthcare facilities. Strengthening the healthcare systems should be the priority for these countries. On the other hand, estimated excess deaths can be less than the confirmed Covid-19 deaths

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9: Msemburi et al. (2023) at WHO estimates 14.83 million excess deaths globally, 2.74 times more deaths than the 5.42 million reported due to Covid-19 for 2020 and 2021.

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if the restricted human mobility reduced the risks of traffic accidents, occupational injuries, or the infection of other diseases. In Asia, the number of excess deaths is clearly negative in Bhutan, Vietnam, Sri Lanka, and China, and almost zero in Japan.

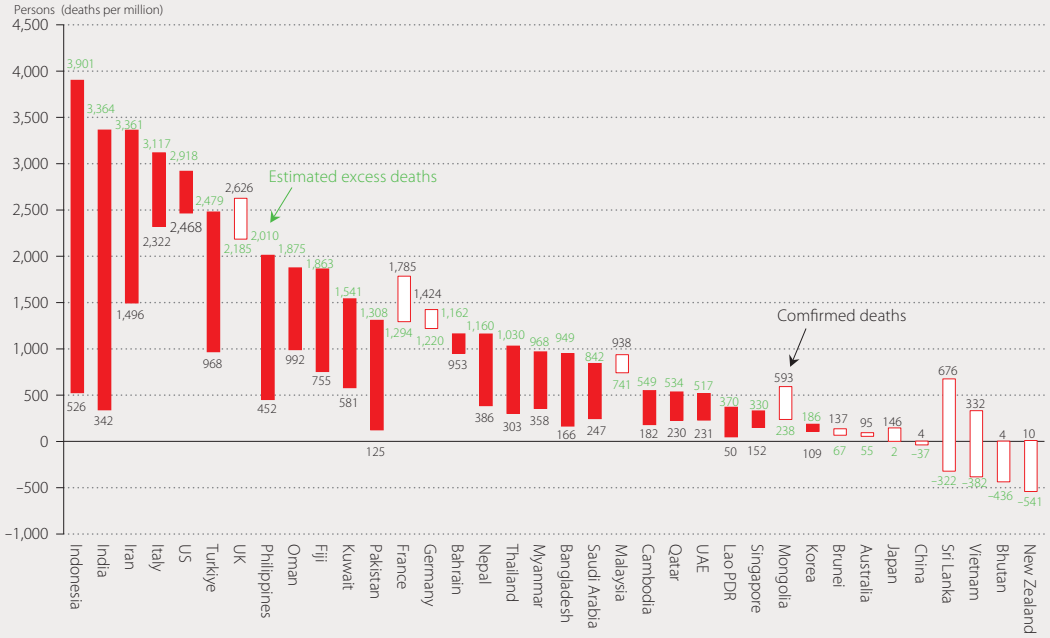

Figure 2.1 Confirmed Covid-19 Deaths and Estimated Excess Deaths

Unit: Persons (deaths per million). Sources: WHO Covid-19 Dashboard and WHO Estimates of Excess Mortality Associated With Covid-19 Pandemic for estimates of Covid-19 deaths (as of April 5, 2023); World Bank Open Data for population. Note: Cumulative confirmed deaths and estimated excess deaths as of December 31, 2021.

Figure 2.2 presents the GDP growth rates and estimated excess deaths per million, showing changes from 2020 to 2021.[10] GDP growth turned positive in most countries in 2021, but there are significant differences in the change in estimated excess deaths, with US and European countries turning their economic growth rates from negative to positive (from quadrant 2 to quadrant 1) while keeping excess death rates much the same or slightly lower. On the other hand, most Asian countries were relatively successful in stopping the infection in 2020, but the impact on GDP was as negative as in the Western countries, with some exceptions such as Vietnam, Cambodia, and Turkiye. In addition, excess mortality rates in Asia generally started to increase in 2021, with the GDP recovery (to quadrant 1). This may be due to the emergence of mutant variants which deepened the pandemic in 2021. The lack of exercise—due to excessive self-restraint in some countries—may explain the health problems of older people (Tanaka, Son, and Iijima 2023).

10: The previous edition of Databook (APO 2022) included only selected countries that publish the Quarterly National Accounts (QNA), but this year's edition consists of all Asia31 economies.

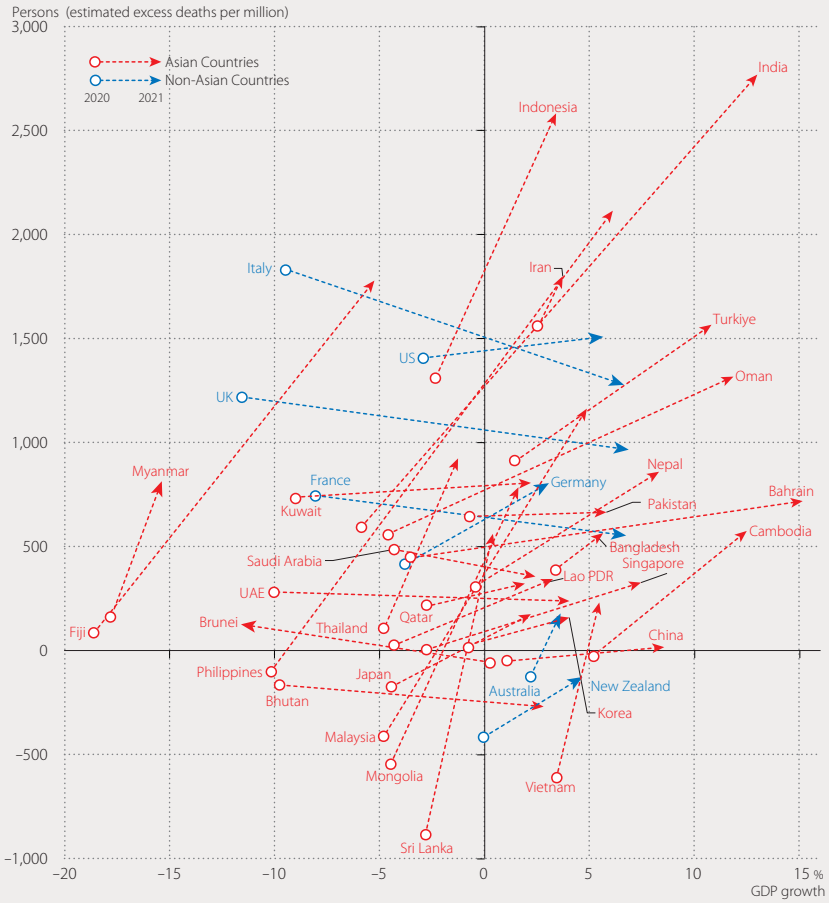

Figure 2.2 Covid-19 Excess Deaths and Economic Growth in 2020 and 2021

——Flow of excess death and GDP growth of Asia31 and reference economies

Unit: Persons (excess deaths) and year-on-year growth rates. Sources: WHO estimates of excess mortality associated with Covid-19 Pandemic (as of April 5, 2023), World Bank Open Data, and official national accounts in each country, including adjustments in APO-PDB.

In 2023 and onward, although growth seems to slow in economies in developed countries, they do not appear to sink to the level of recession. Newly developed and developing economies in Asia seem to maintain vitality despite slight dips in growth rates due to stagnant demand for exports. They may face uncertainties such as the hike of energy and food prices. Increasing geopolitical tensions and the weakening of the rules-based trading regime also pose challenges.

Figure 2.3 presents the monthly prices of final energy consumption for some industrialized countries after the Covid-19 pandemic. The pandemic-induced sharp decline in energy demand led to a decrease in energy prices in 2020. However, as global demand rebounded in 2021, energy prices surpassed pre-pandemic levels. This was largely due to a lack of investment in fossil fuel production up to that point. When the Ukrainian crisis began in February 2022 the rise in energy prices accelerated. However, the composition of final energy mix consumed and energy dependence on Russia differs among these countries

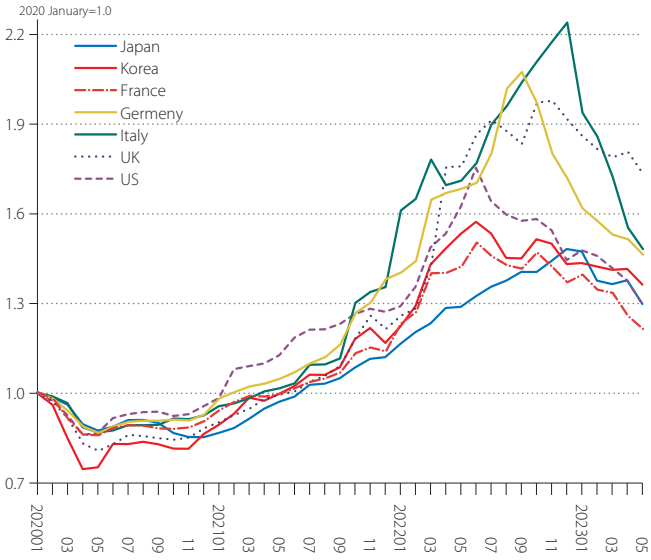

Figure 2.3 Monthly Energy Prices after Covid-19, Jan 2020–May 2023
——Price Index of Final Energy Consumption

Unit: Index (prices in each country in 2020 January=1.0). Sources: Energy Cost Monitoring (ECM) developed at Nomura Lab at KEO, Keio University (https://www.ruec.world/). Note: Energy prices are subsidized.

(e.g., France, which relies on nuclear power, is less affected) and subsidy policies differ (the energy prices in Figure 2.3 are subsidized). The trends in the seven countries are roughly similar; energy prices peak in mid-2022 in the US and Korea and around the end of 2022 in the remainder.

The war in Ukraine has created substantial changes in trade flows. Figure 2.4 shows the change in nominal value of imports from Russia by Asian countries and some reference countries between 2021 and 2022 (in log scale). The US halved its imports from Russia while the UK also reduced its imports by 72%. On the other hand, in Asia, India's imports increased by 4.7 times, the UAE and Sri Lanka by 2.2 times, Malaysia by 99%, and Indonesia by 74%. China, the largest trading partner of Russia, also saw a 45% increase in this period. Although the absolute amounts may not be huge, Asia becomes a "vent for surplus" for Russia's exports including energy.

Figure 2.5 shows the evolution of monthly wheat import prices for some Asian countries since January 2020. The number of countries is limited here due to the availability of trade statistics, but the price hikes due to the Ukrainian crisis can be seen clearly, which peaked roughly in late 2022. Compared to the increase in energy prices (Figure 2.3), the increase in wheat prices is even larger. Especially in developing countries, the damage of higher food prices is more severe.

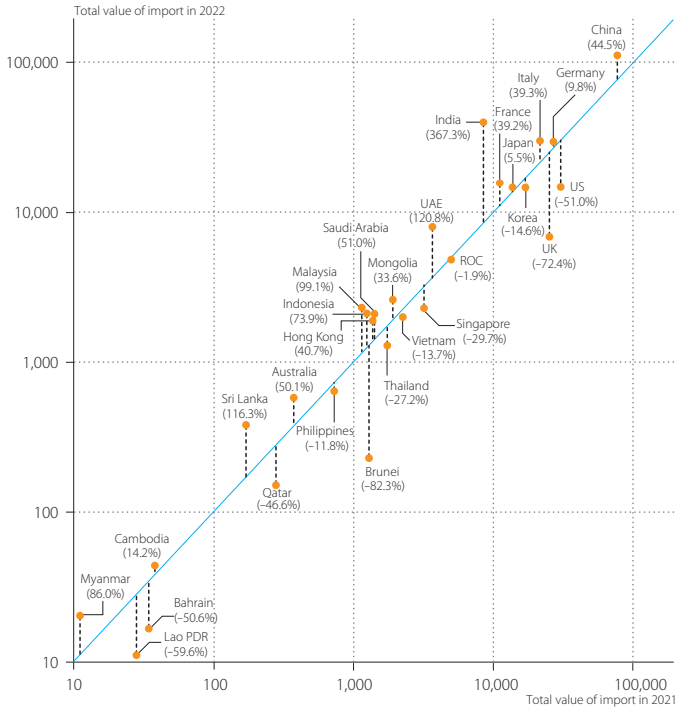

Figure 2.4 Russia's Trade Partner Shift in Asia: Changes through the Ukraine Crisis, 2021–2022
——Total import value from the Russian Federation

Unit: Millions of US dollars. Sources: The United Nations Comtrade database, ASEAN Statistics Division, and official trade statistics in Korea, Mongolia, ROC, Saudi Arabia, and UAE. Note: Both axes are logarithmic scales with base 10. Numbers in parentheses are the growth rate of total import value in 2021–2022.

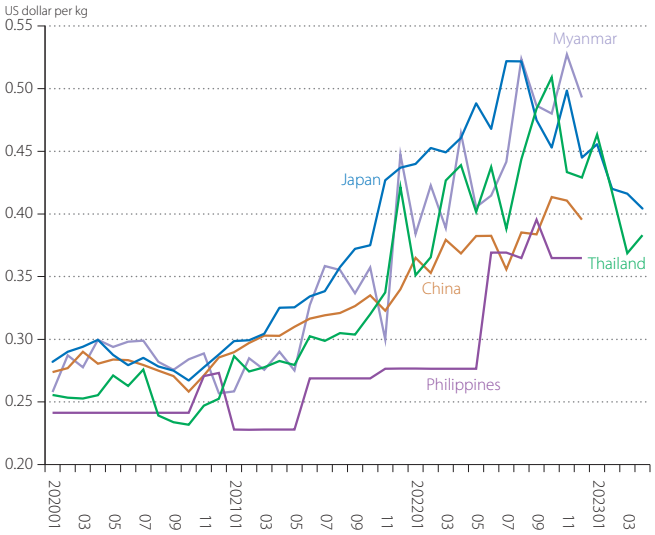

Figure 2.5 Wheat Import Prices in Selected Asian Countries, Jan 2020–Apr 2023
——Import Prices for Wheat from the World

Unit: US dollar per kg. Sources: The United Nations Comtrade database (including adjustments in APO-PDB) and official trade statistics in Thailand.

For both energy and food prices, although the price hike already peaked, the price level appears to have held at a high point. Importing developing countries must carefully watch the commodity markets and keep the external balance and people's welfare stable.

The second source of uncertainties is the increasing geopolitical tensions and the weakening of the rules-based trading regime. Mass media in G7 countries has been occupied by debates over geopolitical tensions and their influence on global economic activities. Geopolitical tensions, particularly in the context of the US-China confrontation, have expanded their scope; starting from the US-China tariff war, the issue became the technological competition between the superpowers, linked to hard national security, and even went to arguments over human rights and political systems. Many advocates claim that the era of globalization has ended, and the world would eventually be divided into two. On the other hand, if we calmly look at international trade statistics, trade is still very active, and the world economy looks appears healthy. The international trade between the US and China recorded the highest ever in 2022, for both exports and imports. Although the scope of the US-China confrontation, particularly the US export control on high-tech related products, seems to be expanded further, it is important to get the sense of magnitude of the effects of such trade controls.

Unlike the case of tariff war in which the items with tariffs and their export/import values can be readily matched, it is not easy to quantify the effects of export controls on international trade. The scope of export controls is typically set very widely with actual strict export restrictions or bans implemented for a very narrow range of transactions. In addition. the borderline of items under strict control is scarcely disclosed by the government, even ex-post, due to security reasons. This imperfect information generates uncertainties for private activities. Because a part of the US export controls is applied for firms outside of the US regardless of firm nationalities (i.e., extra-territoriality applies), non-American firms are also concerned about the regulation. That is why many people claim that global supply chains will eventually be decoupled into two.

However, if we carefully analyze international trade statistics, the effects of the US export controls are not clear at the industry or macro level; only at the level of specific products or at the firm level, the effects are statistically identified (Ando, Hayakawa, and Kimura 2023). Indeed, Jake Sullivan, National Security Advisor to President Joseph R. Biden, in his speech at the Brookings Institution on April 27, 2023, said "we are protecting our foundational technologies with a small yard and high fence," which indicates the intention of the White House to maintain a decent balance between restrictions for national security and the benefits from usual economic activities. Complete decoupling is not likely to occur; some part of decoupling will come under the name of de-risking, and the "rest" of the economy can stay active.

The effects of the US export controls can be found in some specific products or firms in Japan, Korea, and the ROC, but there is no evidence so far that firms located in ASEAN for example get negative effects. Rather, newly developed and developing countries may attract some production activities to replace operations in China. Asian countries must enjoy the active "rest" of the economy. To do so, it is important to maintain the rules-based trading regime. One problem of the US-China confrontation is that the two superpowers as well as other developed countries introduce trade and industrial policies, for example on semiconductors and electric vehicles, possibly inconsistent with the WTO (World Trade Organization) commitments or the existing trade norms, which may potentially weaken the rules-based trading regime. Asian newly developed and developing countries must stand up and protect the rules-based trading regime at least for the "rest" of the economy outside strict export controls.

Asian countries, particularly in East Asia, have led the world in utilizing IPNs for accelerating economic development, and the rules-based trading regime has been one of the important pre-requisites. To defend a stable and predictable economic environment, Asian countries can do many things. One is to support the WTO to regain its rulemaking and rule-enforcing functions, including the enhancement of voices for reviving the now stopped Appellate Body of its dispute settlement mechanism. Another is to utilize mega-FTAs for further liberalization, the reduction of policy risks, and the support for the rules-based trading regime.

Box 2 Forging Economic Alliances: Expectations of IPEF and RCEP

Mass media in G7 countries reveals on-going debates over geopolitical tensions. However, US export control on high-tech products, which is currently the most aggravated front of the US-China confrontation, seems to limit its scope, even though further trade restrictions may be introduced. In the "rest" of the economy, outside trade restrictions due to national security concerns, must be kept active and vigorous under the rules-based trading regime. In this context, the recent advancement of forming multiple mega-FTAs (free trade agreements) in East Asia must be monitored.

East Asia, including Northeast Asia and Southeast Asia, is the region in which the development of international production networks (IPNs) in the machinery industry has been most advanced in the world. East Asia has continued to form mega-FTAs despite enhancing geopolitical tensions and the sudden Covid-19 pandemic. The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) was signed by 11 countries (Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam) in March 2018 and went into effect with six signatories in December 2018. The last ratifying country, Brunei, joined in July 2023, at which point the agreement went into effect for all initial negotiation members. In the same month, the UK formally signed the accession agreement to CPTPP, which marked the geographical extension of CPTPP from regional to global. CPTPP is a high-quality FTA that includes high-level liberalization commitments and the advanced international rulemaking. Therefore, this may work as a coalition of middle powers supporting the rules-based trading regime.

Whether a country can join CPTPP is regarded as a test on whether the country can commit and implement necessary policy reform. Up to now, China, the ROC, Ecuador, Costa Rica, Uruguay, and Ukraine have submitted formal requests for accession. In the accession process to CPTPP, "aspirant economies must: (a) demonstrate the means by which they will comply with all of the existing rules contained in the CPTPP; and (b) undertake to deliver the highest standard of market access offers on goods, services, investment, financial services, government procurement, state-owned enterprises and temporary entry for business persons," (Annex to CPTPP/COM/2019/D002, Jan. 19, 2019) and all existing members' approvals are needed for the decision on whether to commence the accession process by the TPP Commission and whether to support the TPP Commission's approval.

The Regional Comprehensive Economic Partnership (RCEP) agreement has been built up with the ASEAN economic integration at the core. ASEAN plus six countries negotiated over the agreement, but at the last moment, India walked away, and thus 15 countries (10 ASEAN Member States, Australia, China, Korea, Japan, and New Zealand) signed in November 2020. In January 2023, the agreement went into effect for Indonesia as the 14th ratifying country. The only remaining country for ratification is Myanmar. ASEAN took an initiative for the design and implementation of the agreement. Although the level of liberalization and the rule-making aspects of RCEP fall short of CPTPP, it covers the entire East Asian international production networks and includes the commitment of annual ministerial meetings, a joint committee, four committees, and a secretariat, which makes communication among member countries rich for reducing policy risks and supporting the rules-based trading regime. Candidates for accession include Hong Kong, Bangladesh, and Sri Lanka.

A recent salient move is the negotiation over the Indo-Pacific Economic Framework (IPEF). The starting point is akin to the US strategy against China by promoting "friend-shoring." However, it is challenging for the US to force ASEAN Member States and others to choose sides and isolate China. Thus, the focus of the negotiation shifts to what can be done in the agreement; and how it can contribute to the region. Trade liberalization or, market access, typically at the core of an FTA to attract participating countries' interests, is not included in the negotiation because of the US domestic politics. Thus, IPEF cannot be called an FTA in the GATT/WTO definition. Four pillars are posed for the negotiation: (i) trade, (ii) supply chains, (iii) clean energy, decarbonization, and infrastructure, and (iv) tax and anti-corruption. The first pillar includes cooperation in the digital economy, the second pillar works for the resilience of supply chains, the third pillar involves infrastructure development and technical assistance for decarbonization, and the last pillar promotes fair competition. In September 2022, the negotiation over IPEF formally began with 14 countries, including the US, Japan, Australia, New Zealand, Korea, India, Fiji, and seven ASEAN Member States (Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam). India did not join the negotiation over the first pillar.

IPEF and RCEP are sometimes regarded as international forums that are led by the US and China, respectively, and could result in deepening the US-China confrontation. However, this is unlikely the case because members are largely overlapped. IPEF has the US, India, and Fiji while RCEP has China, Cambodia, Lao PDR, and Myanmar. These are differences, and the other members belong to both groupings. This fact may enable two initiatives to be complementary rather than deepen the confrontation. Figure 2.6 depicts labor productivity distributions across countries in IPEF and RCEP in which the presence of the US and China mostly explains the differences between the two regions. The overlapping countries are casting votes to make the two initiatives reduce policy risks and claim the rules-based trading regime.

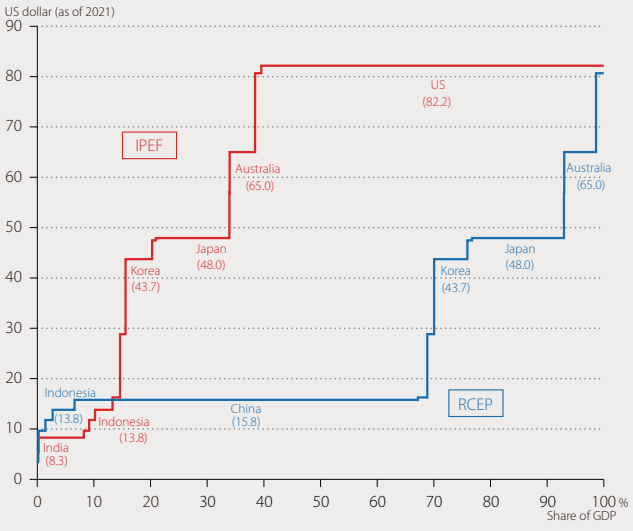

Figure 2.6 Productivity Distributions in Countries Participating in IPEF and RCEP in 2021

——GDP per hour (using 2017 PPP), reference year 2021, and GDP share (using exchange rate)

Unit: US dollar per hour and percentage (share of market-price GDP at current prices). Sources: Official national accounts and APO Productivity Database 2023. Note: Numbers in parentheses are the per-hour labor productivity level in 2021.

3 Economic Landscape of Asia

Highlights

- The economic scale of Asia31 was 38.7 trillion US dollars in 2021 in terms of exchange-rate-based GDP, which is 66% greater than the US (Table 9.1). Japan was the largest economy in Asia until 2008 and was then overtaken by China the next year. (Figure 3.3).
- Using PPP-based GDP, Asia31 is 46% of the world economy (Figure 3.2) and 2.9 times that of the US in 2021 (Figure 3.5). China has overtaken Japan as the largest Asian economy since 1999 and exceeded the US since 2016. In 2009, India surpassed Japan, replacing it as the second-largest economy in Asia. In the same year, ASEAN also reached Japan (Table 9.2).
- The growth rate of the Asia31 economy was 4.0% per year on average from 2015 to 2021 (Figure 3.6 and Table 9.3). The growth in China and India accounted for 53% and 18% of this regional growth, respectively (Figure 3.7). In our projections from 2021 to 2030 China's contribution is expected to fall to 39% and India's to expand to 28%.
- Japan was the highest among Asian countries in per capita GDP at market prices until Singapore overtook it in 1991. In this measure, the ROC and Korea overtook Japan in 2009 and 2018, respectively (Figure 3.12).
- The average per capita GDP of Asia31 was $15,800 at current market prices in 2021, which is only 22% of the US level (Table 9.6). The Chinese per capita GDP rose to $19,700 in the same year. The ASEAN6, South Asia, and CLMV regional averages were $15,600, $7,340, and $8,520, respectively (Figure 3.13). A huge per capita GDP gap between most Asian countries and the US is mostly explained by the inferior performance of labor productivity (Figure 3.16).

From the mid-1980s, the story of the world economy was dominated by Asia, featuring its steady rise in economic prominence. Figure 3.1 compares the growth rates of three regional economies in the entire observation period 1970–2021 and our projection period 2021–2030 (as shown with dotted lines). Unsurprisingly, the center of gravity in the global economy is gradually shifting towards Asia. In 2021, the Asian economy contributed 48% (44% for Asia25) of world output, compared with 16% for the US and 14% for the EU27, as shown in Figure 3.2. According to our projection for Asia25 and the rest of the world, the Asian share in world output will continue to rise, reaching 53% (49% for Asia25) by 2030.[11] In contrast, the output share 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, this chapter details the 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.

11: Our projections of economic growth for Asia25 are provided in Box 12. Where available, these reflect the economic growths until the first quarter of 2023.

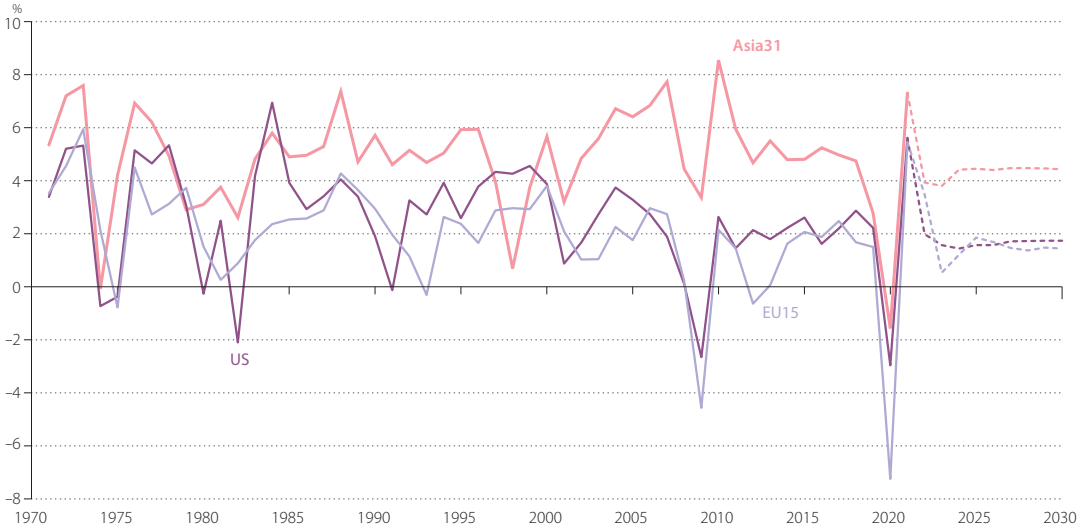

Figure 3.1 GDP Growth of Asia, the EU, and the US, 1970–2030
——Growth in GDP at constant prices from 1970 to 2021 and our projection to 2030

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12). Note: Our projections are drawn with dotted lines.

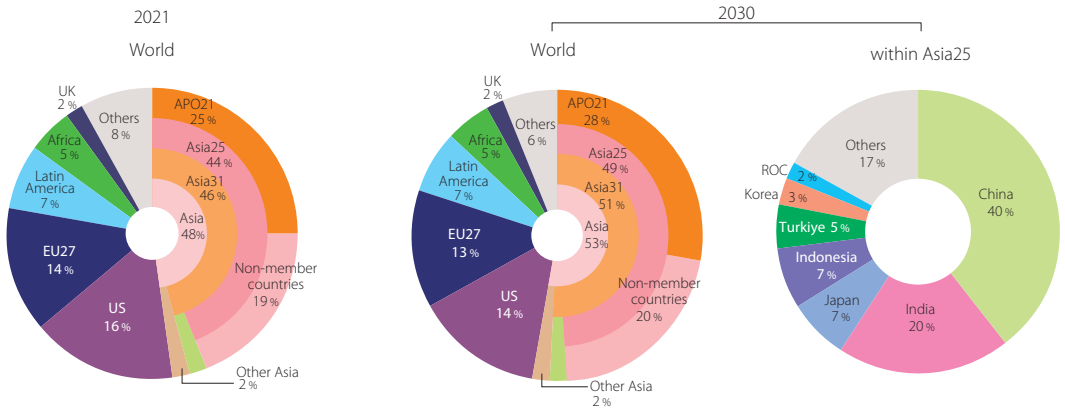

Figure 3.2 Asia in World GDP in 2021 and Projection for 2030
——Share of GDP using the 2017 PPP, the reference year 2021

Unit: Percentage. Sources: Our estimates for the Asia25 economies, IMF (2023) for the rest of the world, and our projections (Box 12).

3.1 Economic Growth

Figure 3.3 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.[12] The chart covers the entire observation

12: The exchange rates used in this Databook are adjusted, 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.

period 1970–2021 and our projection period 2021–2030 (as shown with dotted lines). A snapshot comparison of all Asian countries is provided in Table 9.1. By this measure, Asia31 was 66% and 82% greater than the US and the EU15, respectively, in 2021. Japan was the largest economy in Asia until 2008. In the following year, China overtook Japan's position to become the second-largest economy in the world, next to the US.[13] The turn in Japan's fortunes came in the early 1990s. After that, Japan's stagnation and vibrant growth in developing Asia rapidly eroded Japan's prominence in the regional economy.

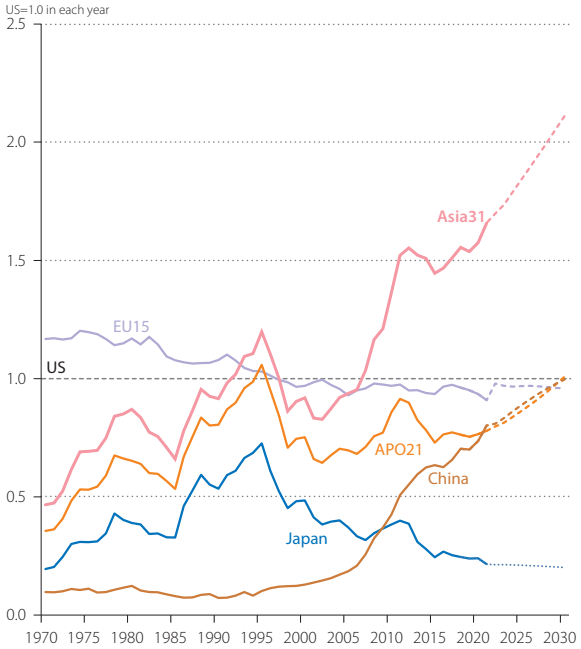

Figure 3.3 GDP using Exchange Rate of Asia and the EU relative to the US, 1970–2030

——Index of GDP at current market prices from 1970 to 2021 and our projection to 2030, using exchange rate

Unit: Index (the US=1.0). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12). Note: Our projections are drawn with dotted lines (exchange rates are assumed to be unchanged after 2021).

Comparisons based on exchange rates, however, appear arbitrary as movements in exchange rates can be volatile and subject to substantial short-term 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.[14]

Figure 3.4 presents the price level index (PLI) for GDP. This is measured as the ratio of the PPP for GDP, based on the 2017 International Comparisons Program (ICP) round (World Bank 2020a),[15] to the market exchange rate (footnote 12). The figure gives the PLI for 2017 (marked with circles) and 2021 (vertical bars). In the context of conversion rates, this figure shows how much the exchange rates have failed to reflect countries' price differentials relative to the US. Except for Iran, Australia, and New Zealand, market exchange rates systematically under-represent the relative price differentials in 2021 for all the countries.[16] Thus, the exchange-rate-based GDP considerably underestimates the economic scales in real terms for most countries. The PPP-based conversions allow for proper consideration of international price differences and better measurement of the economies' relative sizes.

13: The productivity account for China was considerably revised in APO-PDB 2023, based on our study with Professor W. Erwin Diewert (University of British Columbia). See 8.4 for a brief explanation of our revision.

14: 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 correct 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.

15: Revisions to cross-country level comparisons may be large, especially compared to revisions in cross-country growth comparisons. The revisions of the PPPs in ICP 2017 from ICP 2011, which has been used in Databooks 2014–2019, is discussed in Section 8.5.

16: The PPP estimates for 2021 are our estimates using the 2017 PPP and relative price changes in GDP deflators. Iran's GDP deflator rose to 4.8 times between 2017 and 2021. This is significantly higher than the 1.3 times in the US. Thus, Iran's PPP was considerably higher in 2021; 40% higher in the PLI indicates an overvalued exchange rate in Iran; in other words, Iran is losing price competitiveness under this market exchange rate. Japan also suffered from a further excessive yen appreciation in the mid-1990s, leading to significant stagnation (Hamada and Nomura 2023).

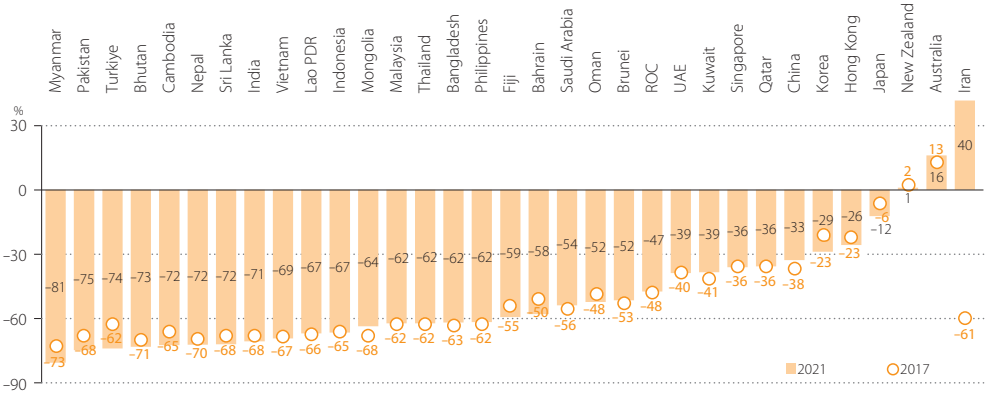

Figure 3.4 Price Level Index for GDP in 2021
——Price Level Index (PLI) for GDP in 2017 and 2021, the reference country the US

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.

After correcting international price differentials, we see that Asia31 has been expanding rapidly. Figure 3.5 presents the level comparisons of real GDP for Asian regions, using PPP as conversion rates, while Table 9.2 presents cross-country comparisons. Based on GDP using constant PPP, the weight of the world economy is even more tilted toward Asia in Figure 3.5 than portrayed by GDP using exchange rates in Figure 3.3. This reflects that nearly all Asian countries have larger relative sizes after international price differentials have been properly considered. The size of Asia31 was 2.9 times that of the US in 2021 (compared to 1.7 times using exchange rates) and overtook the US in 1975 (compared to 2007). Figure 3.5 also shows the rapid expansion of the relative size of the South Asian economy, 79% of which was accounted for by India in 2021. The size of the South Asian economy is expected to approach the EU15 by 2030. ASEAN also showed strength in its catch-up effort.

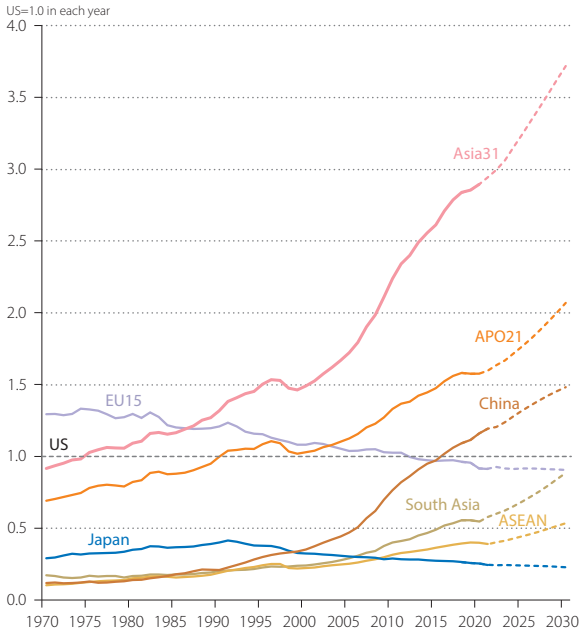

Figure 3.5 GDP of Asia and the EU relative to the US, 1970–2030
——Index of GDP at current market prices from 1970 to 2021 and our projection to 2030, using the 2017 PPP

Unit: Index (the US=1.0). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12). Note: Our projections are drawn with dotted lines.

Figure 3.6 shows regional comparisons of real GDP growth, while Table 9.3 provides the numbers. Since the mid-1990s, the growth rates within Asia have been more pronounced in the CLMV and South Asia. These trends are expected to accelerate in the late 2020s. However, the drivers of intraregional growth, reflecting the size of the economies, differ significantly. Figure 3.7 presents the contributions to Asia31 GDP growth for the top 15 countries. China and India have emerged as the driving forces, propelling

Asia forward since 1990 (Table 9.2). Growth in China and India accounts for 53% and 18% of the Asia31 growth in 2015–2021. 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 39%, while the part of the Indian economy is expected to expand significantly to 28%. The contribution of Indonesia and Vietnam is also likely to increase.

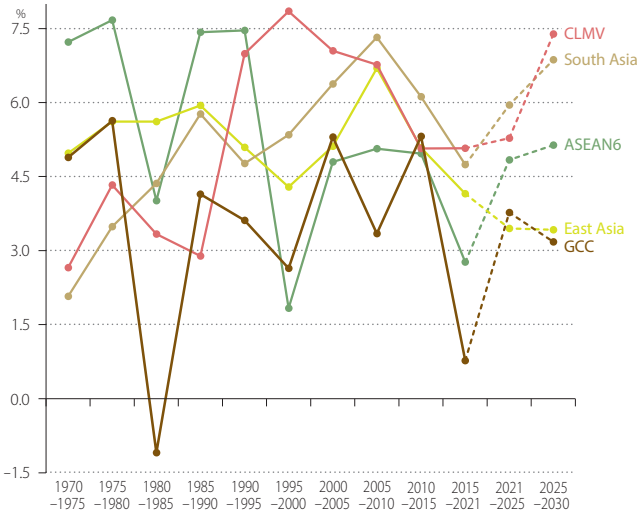

Figure 3.6 GDP Growth by Region, 1970–2030
——GDP growth from 1970 to 2021 and our projection to 2030, using the 2017 PPP

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12). Note: Our projections are drawn with dotted lines.

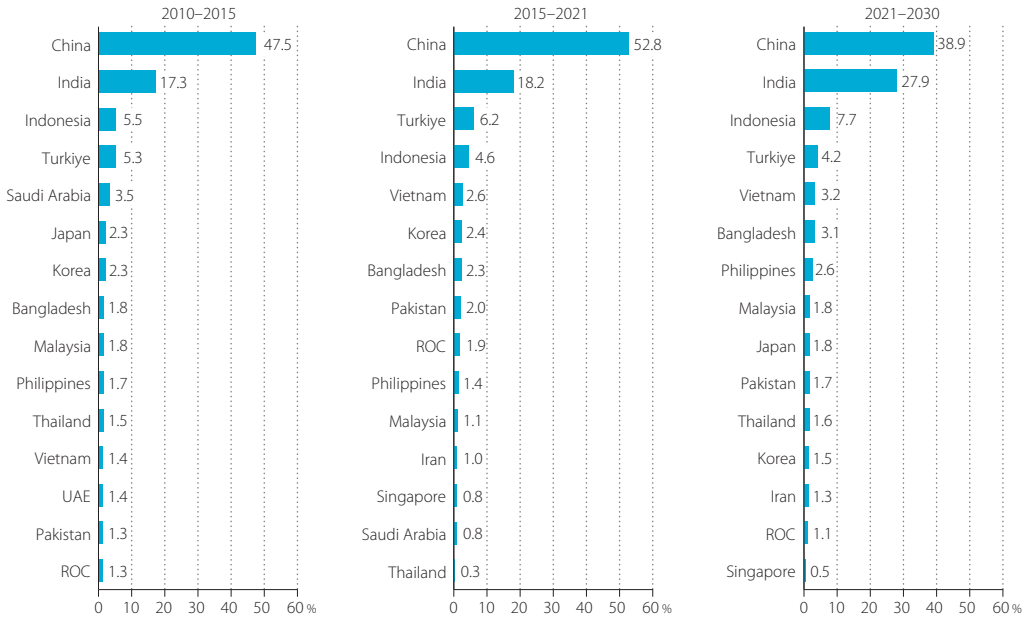

Figure 3.7 Country Contributions to GDP Growth in Asia, 2010–2030
——Contribution share to the growth of gross regional products in 2010–2015, 2015–2021, and 2021–2030

Unit: Percentage point (average annual contributions) (the Asia31 growth=100). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12). Notes: Only the top 15 countries are presented. The average annual GDP growth rate in Asia31 is 5.2% in 2010–2015, 4.0% in 2015–2021, and 2.1% in our projection period 2021–2030.

3.2 Per Capita GDP

Figure 3.8 presents the share of the current world population, illustrating that Asia is the most populous region in the world. In 2021, Asia accounted for 59% of the world's population (56% for Asia31). In

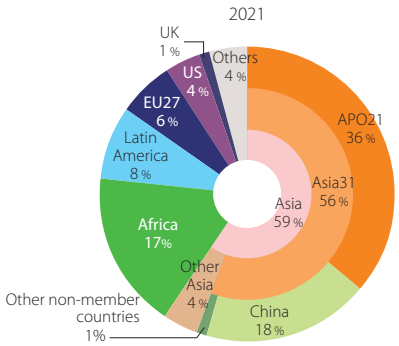

Figure 3.8 Asia in World Population in 2021

Unit: Percentage. Source: United Nations (2022). Note: See Box 3 for the future projection of populations.

addition, there is a significant difference in the population among Asian economies, as shown in Table 9.4. The populations were more than 100 million in seven countries in 2021, but were less than 10 million in 12 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 that the US per capita GDP. Conversely, the Asian Tigers (Hong Kong, Korea, Singapore, and the ROC) are close to, or exceed, US levels.

Box 3 Examining the Population Trends in Asia

The world's population is estimated at 7.9 billion in 2021, of which Asian countries account for 59%, according to the United Nations (2022). China and India each account for 18.1% and 17.8% of the world's population, respectively.[17] 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 not captured by the overall population size or growth. As 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.

The growth rate of the world's population has slowed from its peak of around 2.0% in the 1970s to today's 0.9% per year. With falling fertility rates, the UN projects that the world's population growth rate will decelerate to 0.79% per year by 2050 and further to 0.14% by 2100. Even so, the world population will increase by one-fifth

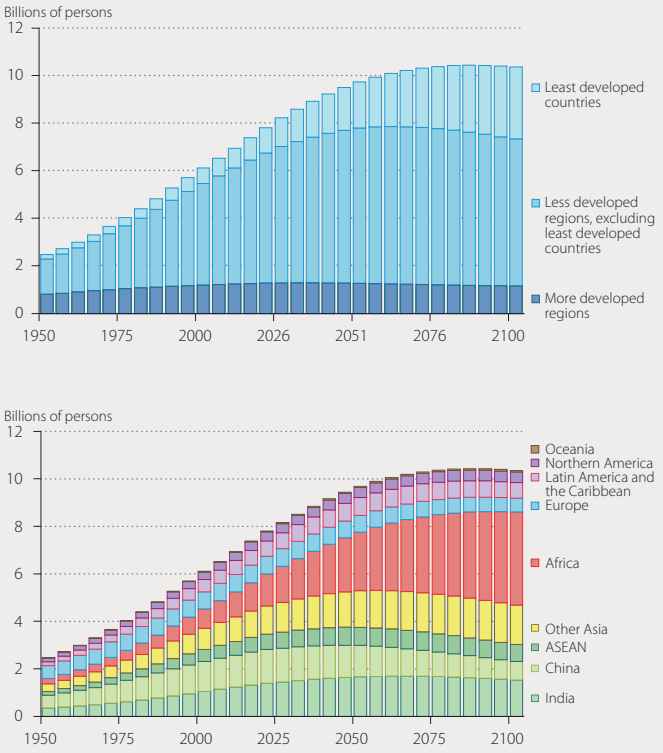

Figure 3.9 Distribution of the World's Population in Different Regions, 1950–2100

Unit: Billions of persons. Source: United Nations (2022).

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17: Based on the latest estimates, India's population by mid-2023 is estimated to be 1.4286 billion, overtaking China's 1.4257 billion (United Nations Population Fund 2023).

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from today's 7.9 billion to 9.7 billion in 2050 and an additional 6.9% to 10.4 billion by 2100. These estimates are based on the medium-fertility variant. Still, with only a slight variation in fertility, particularly in the more populous countries, the total could be higher (10.5 billion by 2050 and 14.8 billion in 2100) or lower (8.9 billion in 2050 and 7.0 billion in 2100). Figure 3.9 depicts this shift in the world population distribution, with the share from the more developed regions gradually declining from 16% in 2020 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 14% to a projected 20% in 2050 and 29% in 2100, up from 8% in 1950.

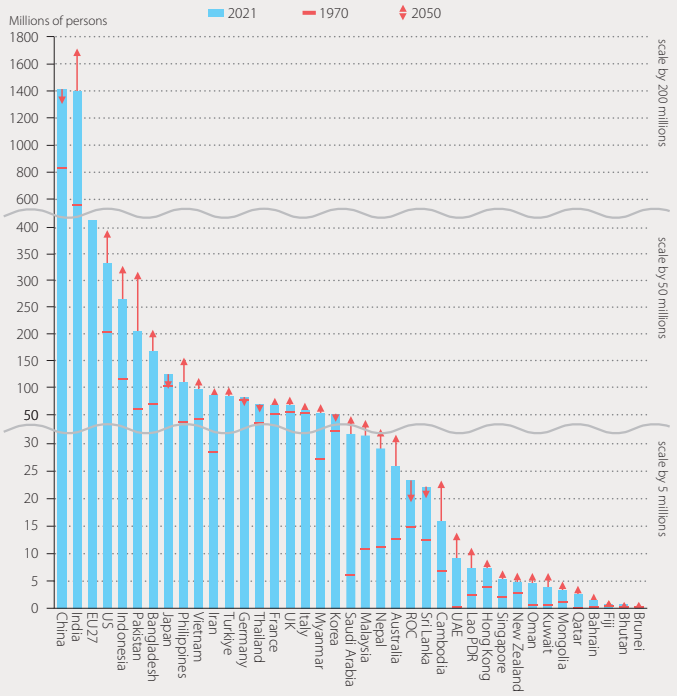

Figure 3.10 Asian Countries' Population Size in 2021 and Projection in 2050

Unit: Millions of persons. Source: United Nations (2022).

According to the projection, Asia's share will decline from 59% today to 55% in 2050 and 45% in 2100, while Africa's share will rise from 17% to 26% and 38%, respectively. Figure 3.10 shows the 2021 population size of individual Asian countries compared with the 1970 level and the 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 most likely would have been. In 2023, India is estimated to overtake China as the most populous country in the world (footnote 17).

Figure 3.11 shows per capita GDP at current prices, using exchange rates as conversion rates, among Japan and the Asian Tigers relative to the US. A snapshot comparison is also presented in Table 9.5. It is worth noting that

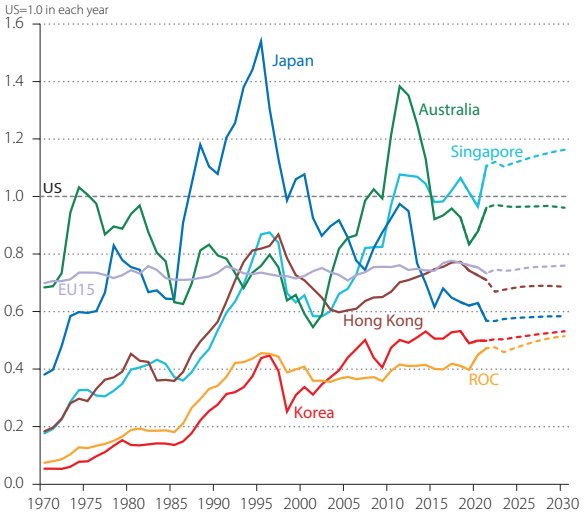

Figure 3.11 Per Capita GDP using Exchange Rate of Japan and Asian Tigers, 1970–2030

——Index of GDP at current market prices per person from 1970 to 2021 and our projection to 2030, using exchange rate

Unit: Index (the US=1.0). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12). Note: Our projections are drawn with dotted lines (exchange rates are assumed to be unchanged after 2021).

snapshot comparisons can appear arbitrary due to the volatile nature of exchange rates. The comparisons in Table 9.5 changed considerably when PPPs are used. Figure 3.12 and Table 9.6 give the per capita GDP at constant market prices using PPP and shows that Japan was the highest among Asian countries until Singapore overtook it in 1991.[18]

Compared to Figure 3.11, Figure 3.12 highlights the ROC's and Korea's dramatic development efforts, which overtook Japan in 2009 and 2018, respectively. In other words, both countries' current per capita production levels are also strongly characterized as being achieved against a background of cheap exchange rates. According to the PLI in 2021 (Figure 3.4), the exchange rate is undervalued by 29% in Korea and 47% in ROC.

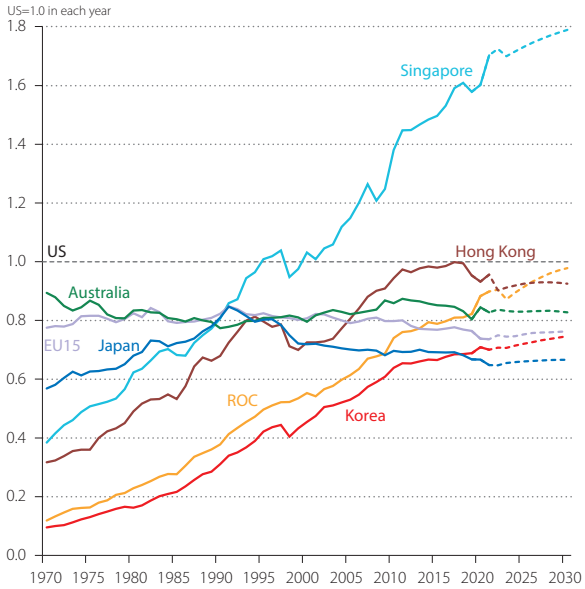

Figure 3.12 Per Capita GDP of Japan and Asian Tigers, 1970–2030
——Index of GDP at current market prices per person from 1970 to 2021 and our projection to 2030, using the 2017 PPP

Unit: Index (the US=1.0). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12).
Note: Our projections are drawn with dotted lines.

The relative performance of China and India, the two most populous countries in the world (both countries have 1.41 billion in 2021), is diminished in this measure due to their population. Their per capita GDP is 28% and 11% of the US in 2021, respectively, as shown in Figure 3.13. The income gap between the US and most Asian countries is still sizable (the levels achieved by Asia31 and CLMV were 22% and 12% of the US, respectively),[19] indicating significant rooms for catch-ups.[20]

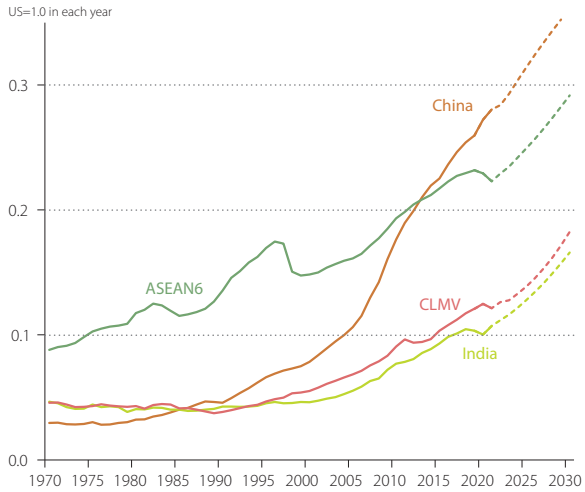

Figure 3.13 Per Capita GDP of China, India, and the ASEAN, 1970–2030
——Index of GDP at current market prices per person from 1970 to 2021 and our projection to 2030, using the 2017 PPP

Unit: Index (the US=1.0). Sources: Official national accounts in each country (including adjustments in APO-PDB) and our projections (Box 12).
Note: Our projections are drawn with dotted lines.

18: Based on the 2015 benchmark revision in Japan's System of National Accounts by the Economic and Social Research Institute, 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 changed to expand by 16% (right chart in Figure 8.15). The revisions on the SNA and PPP indicates that the uncertainty around the catch-up year should be around five years wide.

19: 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 the extent of its inclusion in the official GDP is unclear.

Table 9.6 also presents individual figures for resource-rich economies. 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 from liquidating a mineral and energy resources (MER) stock as part of the income flow. In other words, GDP over-evaluate net income in resource-exporting countries because it does not account for the depletion of their MER assets. To give a rough indication of the extent of distortion, Figure 3.14 provides comparisons of per capita GDP excluding mining sector production in 2021.[21] The non-mining GDP per person in GCC economies, such as Bahrain, Saudi Arabia, and Kuwait, is almost identical to Japan's, although the total GDP per capita is much larger. In Mongolia and Myanmar, the mining industry's share of GDP is around 30%, with the same level of dependence as in GCC. In other resource-rich countries, the mining share is about 10%.

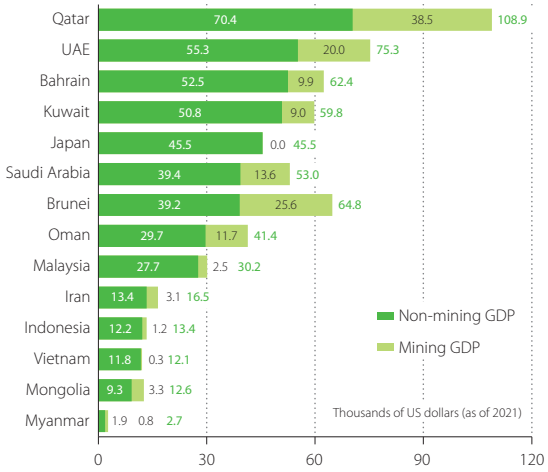

Figure 3.14 Per Capita Non-Mining GDP of Resource-Rich Countries in 2021

——GDP per person (using the 2017 PPP), the reference year 2021

Unit: Thousands of US dollars (as of 2021). Sources: Official national accounts in each country, including adjustments in APO-PDB. Note: The change in mining-sector GDP share from 2000 to 2021 is provided in Figure 7.5.

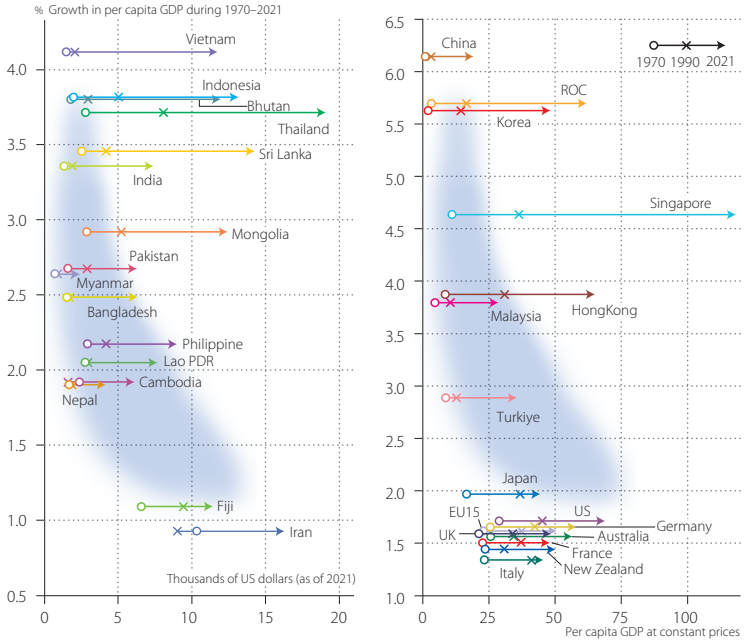

Figure 3.15 Initial Per Capita GDP Level and Growth, 1970–2021

——Growth in GDP at constant prices (using the 2017 PPP), the reference year 2021

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country, including adjustments in APO-PDB. Note: The level of GDP per capita is based on 1970 as the initial point of the arrow, 1990 is the middle point marked with an X, and 2021 as the end point of the arrow.

20: Per capita GDP may have underestimated welfare in some economies. For example, in the ROC, Hong Kong, and Japan, 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, although it has declined rapidly in recent years. (Figure 7.1). The number of Overseas Filipino Workers (OFWs) or Filipino workers who worked abroad during the period of April to September 2021 was estimated at 1.83 million, 78.3% of whom worked in other Asian countries (24.4% in Saudi Arabia and 14.4% in UAE), according to the Philippine Statistics Authority's "2021 Overseas Filipino Workers (Final Results)," on December 2, 2022.

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 the 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. Figure 3.15 plots countries' initial per capita GDP levels against their respective average annual growth rates over the last half-century, from 1970 to 2021.

Table 3.1 summarizes Figure 3.15 by grouping countries with four levels of initial per capita income in 1970. 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 per capita real GDP gap 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 top left to bottom right.

Table 3.1 Country Groups Based on Initial Economic Level and Catching-Up Pace, 1970–2021
——Level and growth of per capita GDP at constant 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 1970–2021					
	(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, New Zealand, UK				
(B2) 20% ≤–< 60%		Fiji, Iran	Japan	Oman, Turkiye	Hong Kong, Singapore	
(B3) 10% ≤–< 20%			Philippines		Malaysia	ROC
(B4) 0% ≤–< 10%			Bangladesh, Cambodia, Lao PDR, Myanmar, Nepal, Pakistan	India, Mongolia, Sri Lanka, Thailand	Bhutan, Indonesia, Vietnam	China, Korea

Sources: Official national accounts in each country, including adjustments in APO-PDB. Notes: 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 1970–2021. Another country grouping is provided in Table 6.1.

3.3 Gap in Per Capita GDP

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 to the population). In this section we discuss per capita GDP performance as a gap relative to the US in 2021.[22] Figure 3.16 shows the percentage point differences in

21: The productivity account in the current edition of the Databook is the first to consider the impacts of MER assets. See Box 10 for the impact of this revision in some resource-rich countries.

22: The gap in a country x's per capita GDP relative to the US is decomposed into the sum of the gaps in 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 employed workers.

per capita GDP gap decomposed into the contributions by the labor productivity gap and the employment rate gap. Most Asian countries display a huge per capita GDP gap with the US, and their inferior labor productivity performance is the main source of this gap. 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.

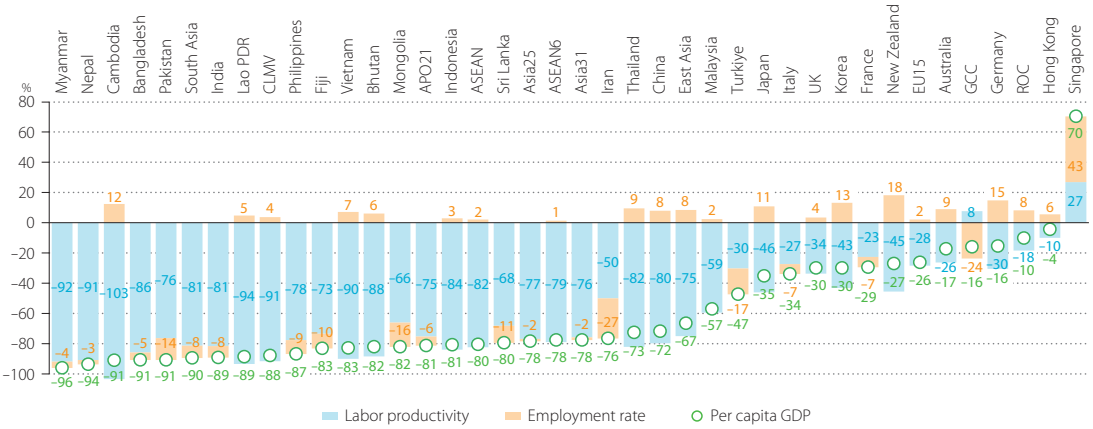

Figure 3.16 Sources of Per Capita GDP Gap in 2021

——Differentials in per capita GDP at constant prices (using the 2017 PPP), relative to the US

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB.

Box 4 Understanding Asia's Demographic Dividend

The population's age structure is of interest from both supply and demand perspectives for economic growth. Figure 3.17 shows the demographic make-up of countries in 2021 (the population proportions of the 0-14 and 65 or over age groups, which together make up the dependent population)—ranking the countries by the share of over-65 population automatically filters the rich economies to the top tier. These economies have a relatively low percentage 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 uncertain. As countries move from high to low mortality and fertility rates, the demographic transition produces a "boom" generation larger than those immediately before and after. As this boom generation gradually works through a nation's age structure, it makes a "demographic dividend" of economic growth as people reach their prime.

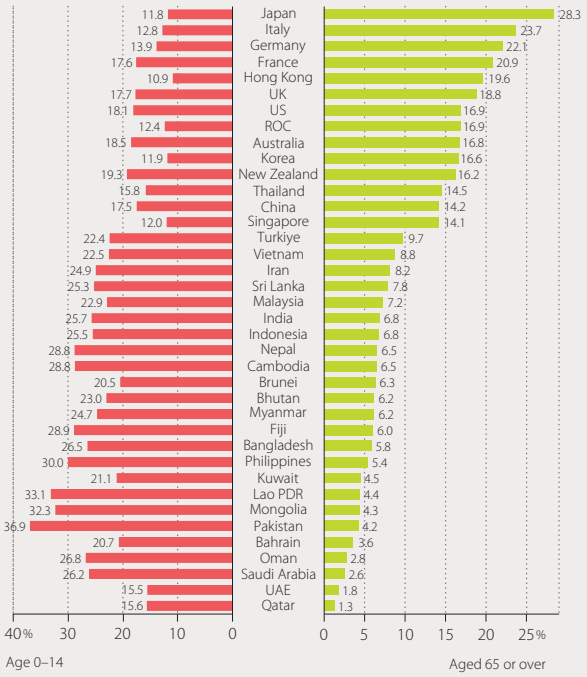

Figure 3.17 Proportion of the Dependent Population in 2021

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

There is a revision in the UN population projections between United Nations (2019) and United Nations (2022). Figure 3.18 shows the revision of the demographic dividend in 2050 and 2100; it gives the ratio of the prime age group to the dependent group (≤14 plus 65≤). While there are differences in the direction of revision among countries, the demographic dividends of East and South Asia for 2050 and 2100 are revised downwards in United Nations (2022). For ASEAN, on the other hand, the future population bonus has been revised slightly upwards, maintaining a number that can be considered healthy at about 1.4 even in 2100.

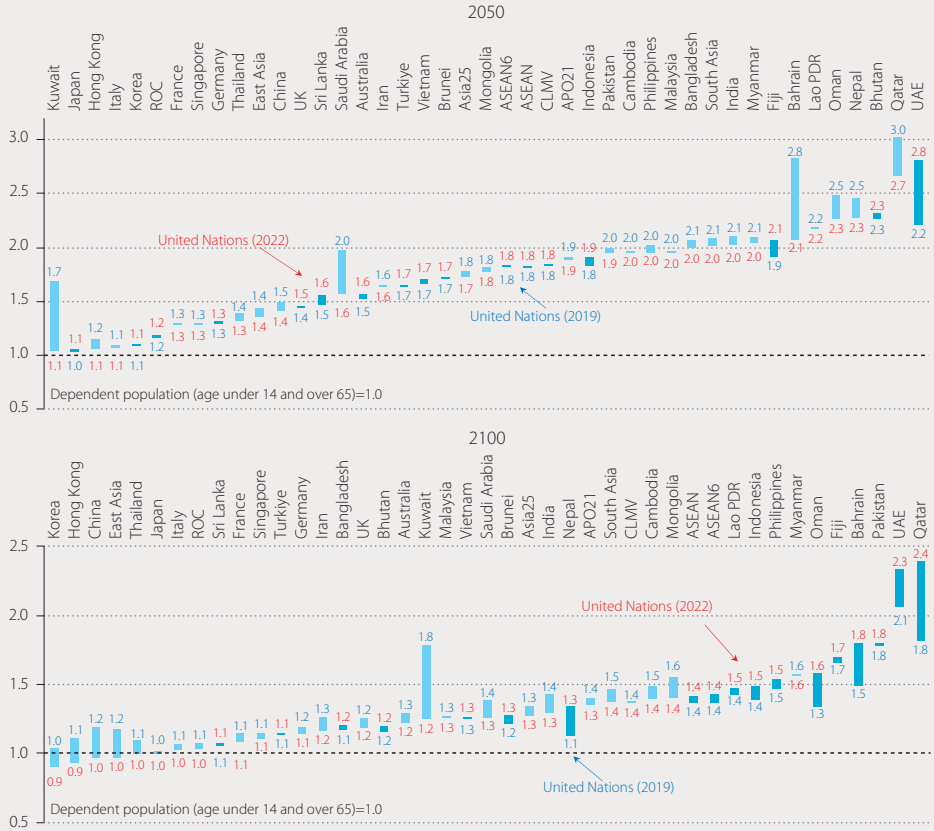

Figure 3.18 Revisions of Demographic Dividend in 2050 and 2100

Unit: Index (dependent population=1.0). Source: United Nations (2019 and 2022).

The most striking revision in Asia is found in China and Korea. As shown in the left chart of Figure 3.19, it is expected to undergo a major decline in the demographic dividend in the second half of the 21st century in China, falling below 1.0 from the late 2070s, compared to United Nations (2019) which did not project such a post-2070 fall. In Korea, shown in the right chart, the downward revision since the 2060s has deepened, making it the country with the highest proportion of the dependent population in Asia. It has been pointed out that the intensifying competition for entrance examinations and the increasing financial burden of educational expenses (Figure 4.5) further contribute to the declining birthrate.

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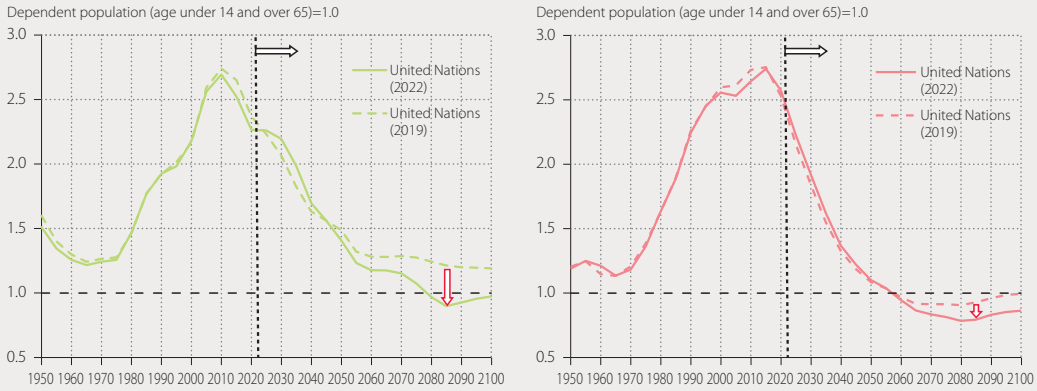

Figure 3.19 Downward Revision of Demographic Dividend in China and Korea, 1950–2100

Unit: Index (dependent population=1.0). Source: United Nations (2019 and 2022).

Using the revised UN projections (United Nations 2022), Figures 3.20 and 3.21 track changes in the working population (aged 15-64) to the 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. 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 realization of this dividend is not guaranteed. Favorable demography can produce a wealth creation cycle only if combined with appropriate health, labor, financial, human capital, and growth-enhancing economic policies. These complementary factors cannot be taken for granted but must 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 5.15). This means that aging in countries is not as significant if robust growth rates of capital and TFP are maintained. Nevertheless, understanding the demographic shift and its implications is relevant for economic projections, providing valuable foresight for economic policy-making. In our projection of economic growth by 2030 (Box 12), 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.

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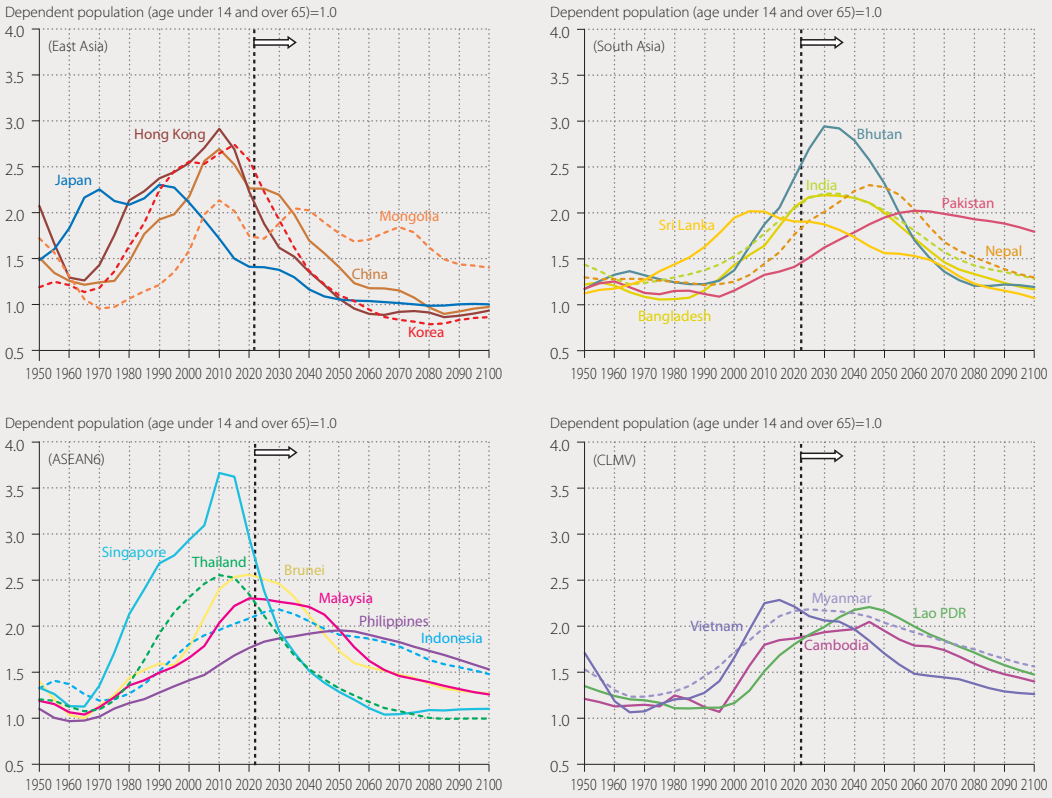

Figure 3.20 Demographic Dividend by Country, 1950–2100

Unit: Index (dependent population=1.0). Source: United Nations (2022).

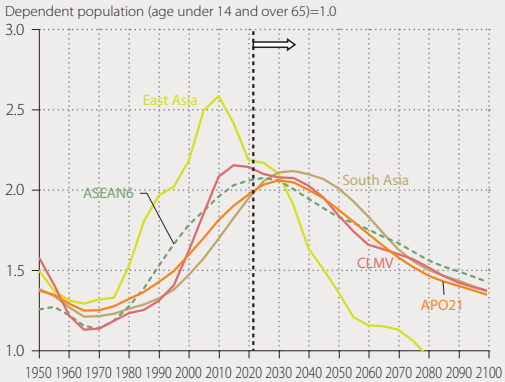

Figure 3.21 Demographic Dividend by Country Group, 1950–2100

Unit: Index (dependent population=1.0). Source: United Nations (2022).

Figure 3.22 gives the two components of per capita GDP growth between 2010 and 2021: labor productivity growth and the change in the employment rate.[23] 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 output gap is to increase labor productivity. The change in female employment plays an important role and Figure 3.23 shows the expansion of the female employment rate from 1970 to 2021. In many countries, such as the South Asian countries (except India) and the Asian Tigers, the expansion of the female employment rate has been significant over this half-century.

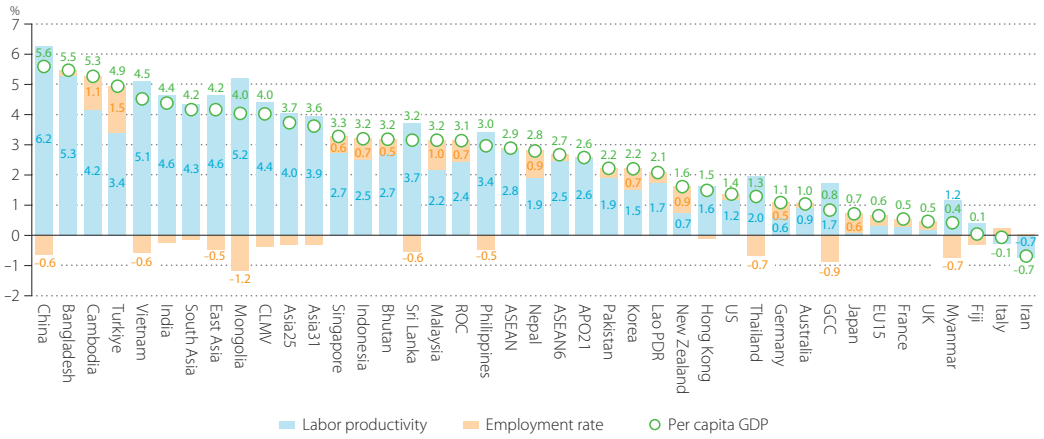

Figure 3.22 Sources of Per Capita GDP Growth, 2010–2021
——Growth in per capita GDP at constant prices (using the 2017 PPP)

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

Asian countries still have significant growth potential, as shown in Figure 3.23. Especially in the Muslim countries of Iran, Pakistan, and Turkiye, the female employment rate is significantly less than in the US, at 13%, 22%, and 30% in 2021, respectively, further reinforcing the poor economic performances of these countries (Figure 3.16). 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 3.24 shows cross-country comparisons of employment rates in 1970, 2000, and 2021 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 3.1), i.e., China, Korea, and the ROC, have the largest surge in employment rates over the past five decades. Some of the countries in Group–A2, such as Singapore and Malaysia, also experienced significant improvements in employment rates. Generally, countries that have not succeeded in closing the gap typically showed limited employment rate growth over the period.

23: 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 employed worker.

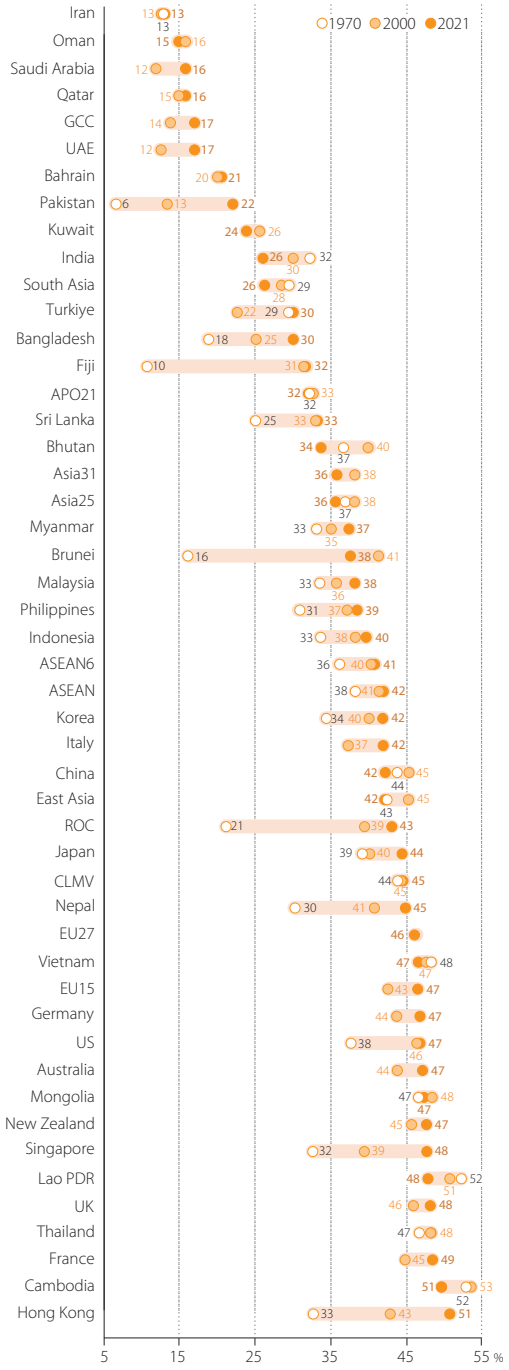

Figure 3.23 Female Employment Share in 1970, 2000, and 2021

——Ratio of female workers to total employment

Unit: Percentage. Sources: Population census and labor force survey in each country (including adjustments in APO-PDB), ILOSTAT database for GCC countries, Australia, EU 15, France, Germany, Italy, New Zealand, and the UK; The EU Labor Force Survey (Eurostat) for the EU 27.

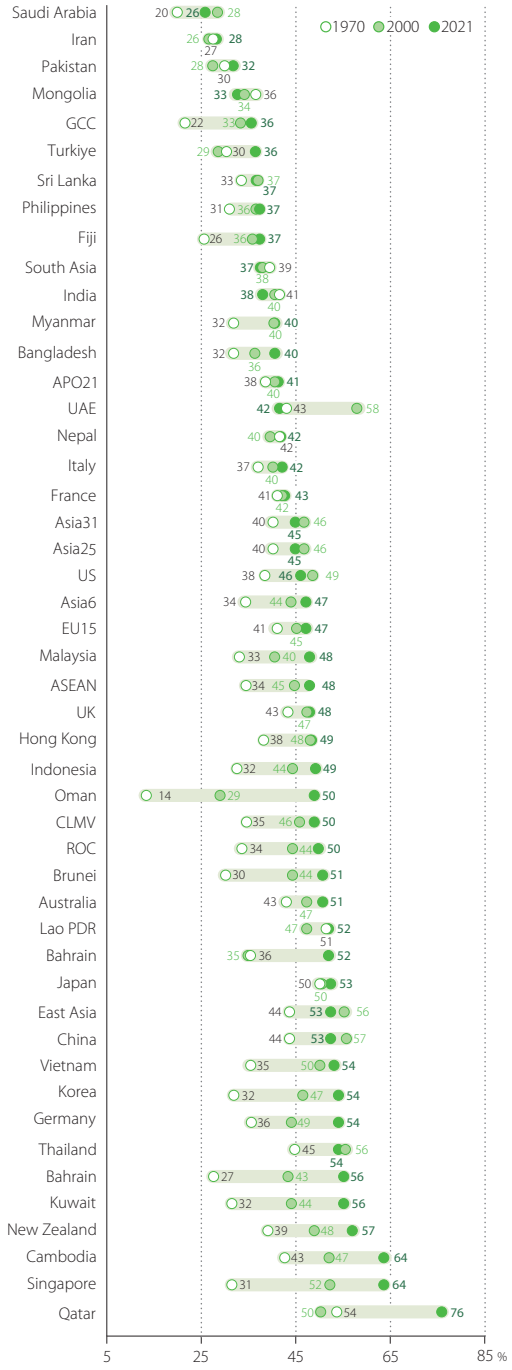

Figure 3.24 Employment Rate in 1970, 2000, and 2021

——Ratio of employment to total population

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

4 Expenditure Growth

Highlights

- In 2021, Asia31 invested 33% of its GDP, well above the 21% of the US and the 22% of EU15. East Asia has the highest investment ratio (37%) among the Asian regions (Figure 4.1), driven by China's higher investment share of 42% (Figure 4.2). Reflecting the investment boom, the household consumption ratio of Asia31 has dropped to 50% of GDP in 2021 from 56% in 2000 (Table 9.7).
- As a composition of investment, the expansions of ICT (information and communication technology) and R&D (research and development) capital are becoming more significant in some Asian countries. In the region, the ICT and R&D investment shares for Asia25 are 7.4% and 4.9% in 2021, respectively, compared to 18% and 17% in the US (Figure 4.8).
- Net export shares in GDP are remarkably high in Singapore and the ROC, at 35.3% and 14.9% in 2021, respectively. In contrast, it peaked at 8.3% in 2007 in China and 12.2% in 2005 in Hong Kong. Since then, they have dropped 2.4% and 4.8% in 2021, respectively (Figure 4.10).
- The expansion of household consumption is the main engine of demand-side economic growth, contributing 50% of the regional growth of Asia31 from 2010 to 2021. Investment is another engine, contributing 36% of the Asia31 growth (Figure 4.3).

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 vital in understanding the quality of economic growth. This chapter derives some characteristics of economic growth in Asian countries from an analysis of the expenditure side of GDP.

4.1 Final Demands

Figure 4.1 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).[24] Country groups display distinctive features in their final demand composition, reflecting their development stage and industrial structure.[25]

In economies undergoing rapid transformation, however, the share of household consumption is more volatile and largely trends downward. Figure 4.1 gives the GDP shares for 1970, 2000 and 2021 and Table

24: The country comparisons are provided in Table 9.7. In theory, the three approaches to measuring GDP are accounting identities. They should yield the same result, but in practice, they differ due to factors like measurement error and the estimates of the informal sector. Based on the APO-PDB Metadata Survey 2023 for APO member economies (Section 8.1.1), 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 define an additional item, "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. Readers should keep in mind that this treatment can have some impact on the share of final demand.

25: Compared to the previous edition of the Databook (APO 2022), the estimates in this edition reflect the benchmark revisions in Pakistan (footnote 3) and Sri Lanka (footnote 4). In addition, the GDP was revised downwards because we reviewed Fiji's retrospective estimates for 1995–2005.

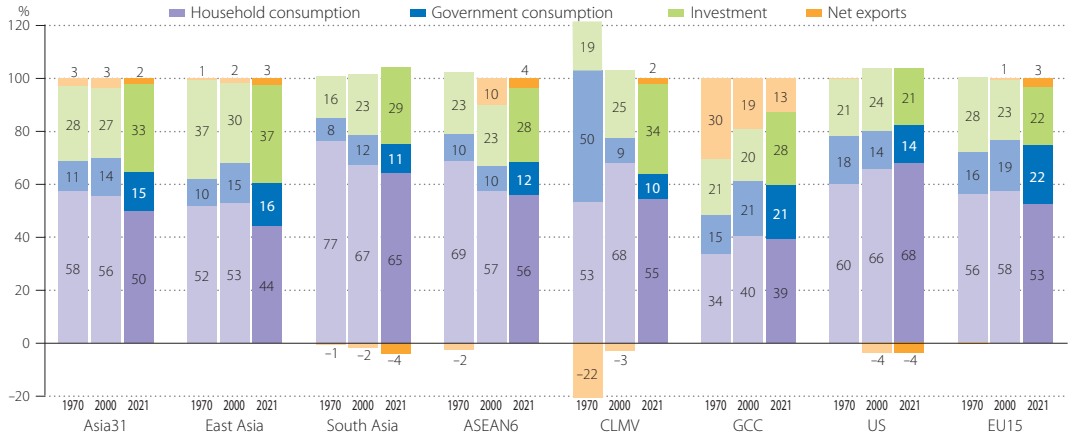

Figure 4.1 Final Demand Shares by Region in 1970, 2000, and 2021
——Shares of final demands to GDP at current market prices

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB. Notes: Final demand shares in the country groups are computed using the PPPs for GDP. Household consumption includes the consumption of NPISHs. The investment consists of GFCF plus changes in inventories.

9.7 provides the numbers. Within Asia, all regions except GCC display a decline in household consumption ratios from 1970 to 2021. South Asia maintains the highest share, although it dropped from 77% in 1970 to 65% in 2021. The rapidly decreasing trends are also found in CLMV, from 68% in 2000 to 55% in 2021. In contrast, the US household consumption share has been climbing.[26] Overall, Asian countries invest significantly more than the US and the EU15 as a share of GDP. In 2021, investment accounted for 21% and 22% of final demand in the US and the EU15, compared with 33% for Asia31. East Asia has the highest investment ratio (37% in 2021) 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 4.2 shows the cross-country comparisons of investment share in domestic final demand in 2000, 2010, and 2021. Countries are listed in descending order of GDP per capita, as shown in the reference chart at the left of Figure 4.2. 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 $13,000.

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 4.3 shows the average annual economic growth decomposition by final demand from 2010 to 2021.[27] Of the 4.6% average annual economic growth rate in Asia31 during this period, 2.3 percentage points came from household consumption, but investment was also close at 1.7 percentage points.

26: It is worth noting that the GDP share of government consumption in the EU15 was higher than the average of Asia31 by 7.8 percentage points in 2021 (Table 9.7). Regarding welfare measurement, actual individual consumption, as opposed to household consumption, is preferred because the former considers expenditures by NPISHs and the government on individual consumption goods and services (such as education and health) in addition to household consumption.

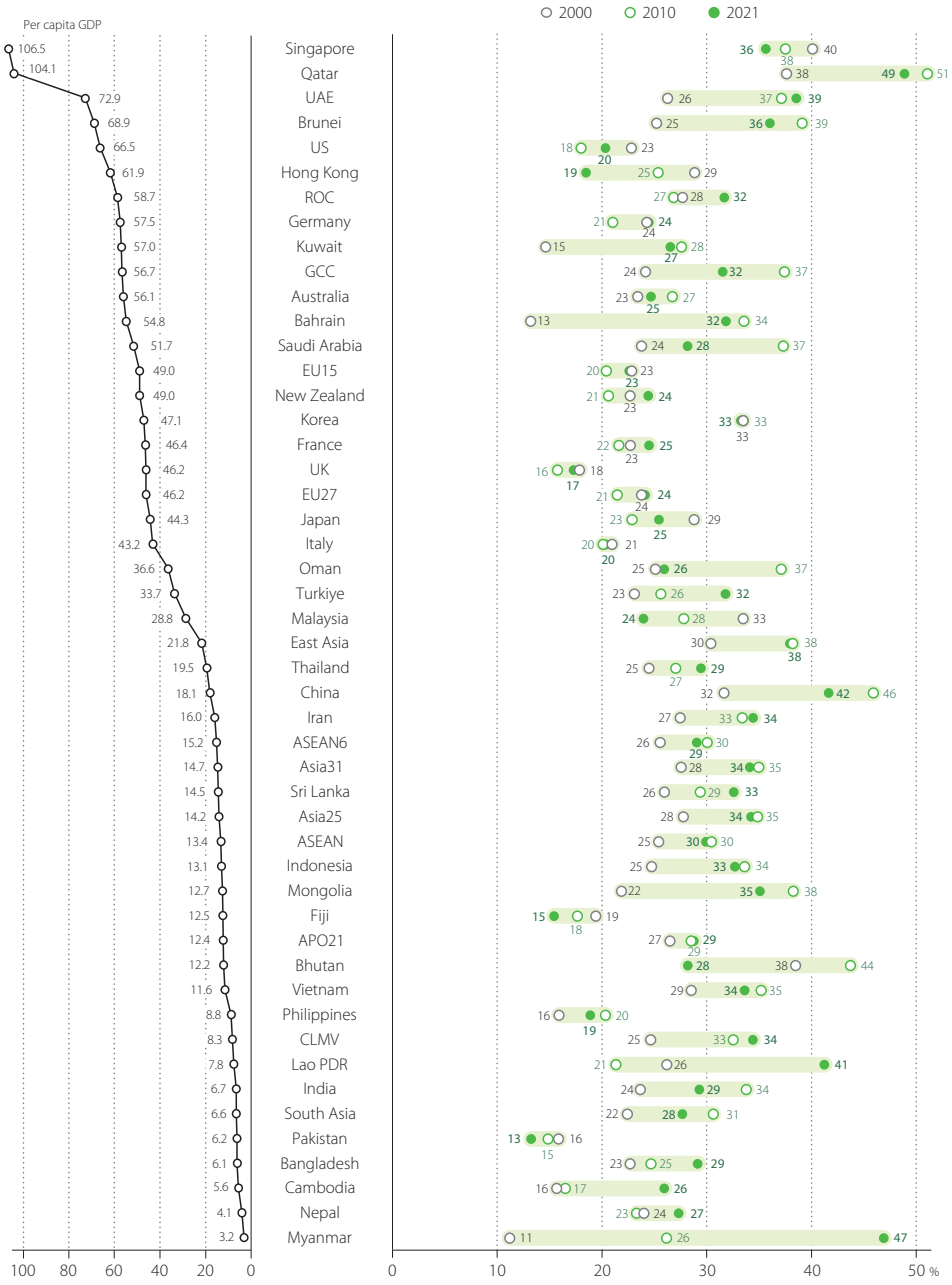

Figure 4.2 Investment Share by Country in 2000, 2010, and 2021
——Share of investment to domestic final demand at current market prices

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB. Notes: 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 2021, using the 2017 PPP (thousands of US dollars).

27: The Törnqvist quantity index is adopted for calculating the growth in real GDP. Using this index, we can decompose the growth in real GDP into the contributions by the four components of final demands:
$\underbrace{\ln\left(GDP^{t}/GDP^{t-1}\right)}_{\text{Real GDP growth}} = \underbrace{\sum_i (1/2)\left(s_i^{t}+s_i^{t-1}\right)\ln\left(Q_i^{t}/Q_i^{t-1}\right)}_{\text{Contribution of final demand } i}$ 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 9.3.

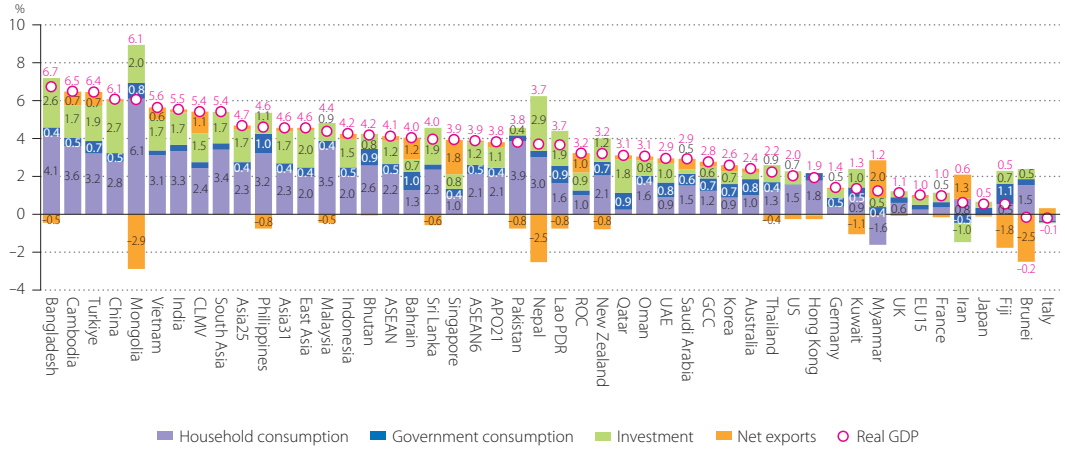

Figure 4.3 Final Demand Contributions to Economic Growth, 2010–2021
——Growth in GDP at constant prices and final demand contributions

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

4.2 Demand Compositions

This section describes the characteristics of the factors that influence final demand decisions and their composition in Asia. The difference in demographic structure partly explains the differences in the consumption rate. Figure 4.4 shows that countries with a high proportion of the dependent population (aged 0-14 and 65 or over) 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 Nepal and the Philippines, the declining trend in the dependent population in recent years has affected the declining consumption share. This figure also shows the change from 2015 to 2021. However, in high-income countries such as Singapore, the ROC, Korea, and

Figure 4.4 Dependent Population Ratio and Consumption Share in 2015 and 2021
——Dependent population ratio to total population and consumption share in domestic final demand

Unit: Percentage. Sources: Population data by the national statistical office in each country, World Bank (2023), official national accounts in each country, and the Asia QALI 2023. Note: Dependent population is people aged under 14 and over 65.

Japan, the increase in the dependent population, mainly because of aging, has not increased the consumption share but rather decreased it.

The decomposition of household consumption reveals a tremendous diversity of consumption patterns among individual countries, partly reflecting their income levels and partially the idiosyncratic characteristics of its society. Figure 4.5 gives the commodity-group composition of consumption and 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, a proportion that falls with income. More specifically, countries where food and non-alcoholic beverages account for a large proportion of consumption typically have low income, as shown in the reference chart at the left of Figure 4.5. The other end of the spectrum is rich Asian countries, namely, the Asian Tigers 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

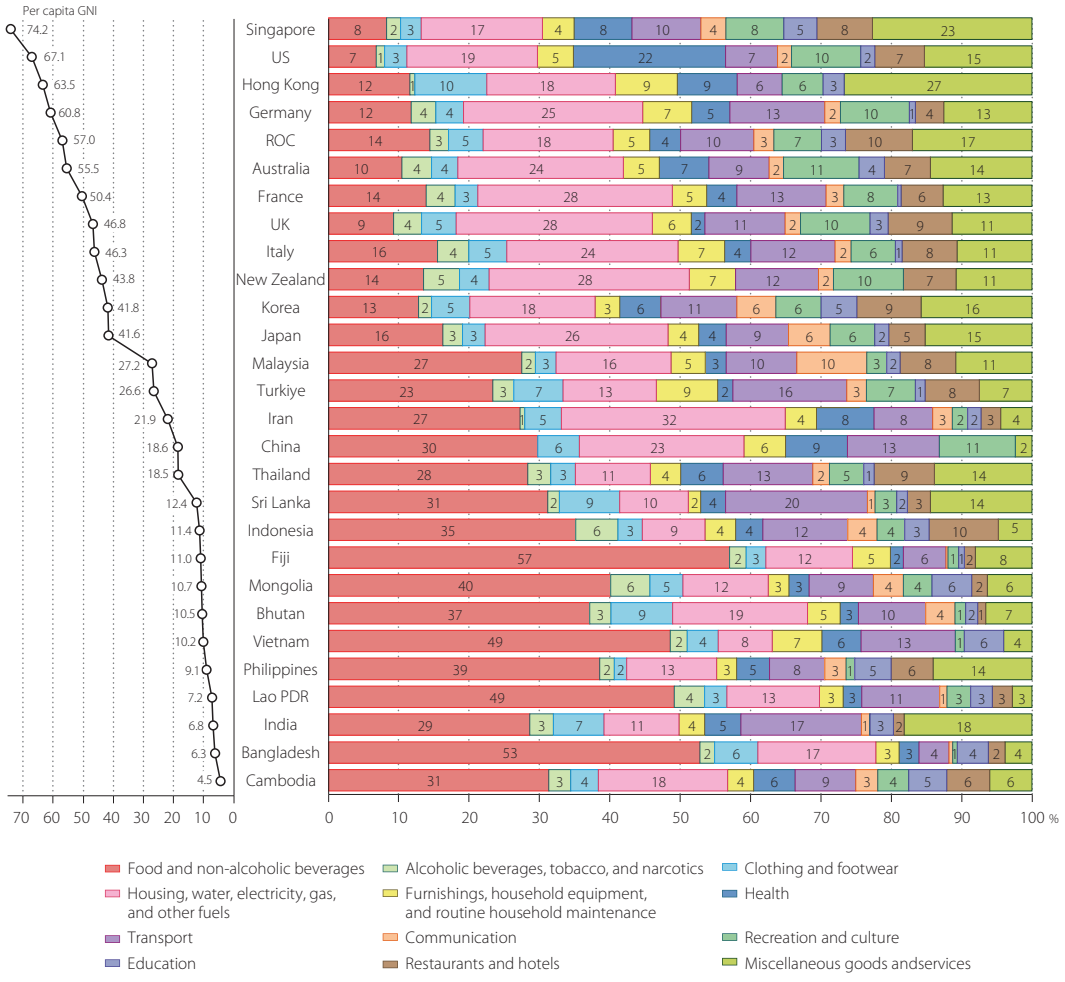

Figure 4.5 Household Consumption by Purpose in 2021
——Share of household consumption at current market prices by purpose

Unit: Percentage. Sources: Official national accounts in each country. Notes: For data on Hong Kong, transportation includes communication; recreation and culture include hotels; miscellaneous goods and services include restaurants. For data on China, food and non-alcoholic beverages include alcoholic beverages, tobacco, and narcotics; transportation includes communication; recreation and culture include education. For data on Vietnam, transportation includes communication. The observation periods for Cambodia, Fiji, the Lao PDR, and Vietnam are 2020, 2009, 2005, and 2016, respectively. The reference chart at the left shows per capita GNI in 2021, using the 2017 PPP for household consumption, the reference year 2021 (thousands of US dollars).

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 4.6 shows the FDI inflows as a percentage of GFCF in 2015 and 2021, plus 2019, which is the year of slowdown in China due in part to US-China trade tensions, and the year just before Covid-19 impacted the world economy. Especially in developing countries, FDI contributes to local human resource development and technology transfer. In 2021, the FDI inflows were over 10% of GFCF in 13 countries of Asia31. They were outstanding in the two global cities, Hong Kong (219% of GFCF) and Singapore (109%), as well as in Mongolia (52%), Cambodia (49%), and Fiji (49%). Fiji was severely impacted by the pandemic (Figure 2.2) but successfully recovered FDI by 2021. On the other hand, Japan (1.9%), Nepal (1.8%), Kuwait (0.6%), Iran (0.3%), Bhutan (0.2%), and Qatar (–1.6%) saw very low FDI inflows in 2021. FDI is unlikely to experience rapid capital outflows of liquid investments in the short term during crisis periods. In May 2022, Sri Lanka defaulted on loans for the first time since its independence in 1948,[28] and its FDI inflow was as low as 2–3% of GFCF during this period, suggesting an increased reliance on indirect investment and a failure to increase direct investment.

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),[29] Singapore and Hong Kong are in the top 10% of the covered countries. Figure 4.7 plots the business

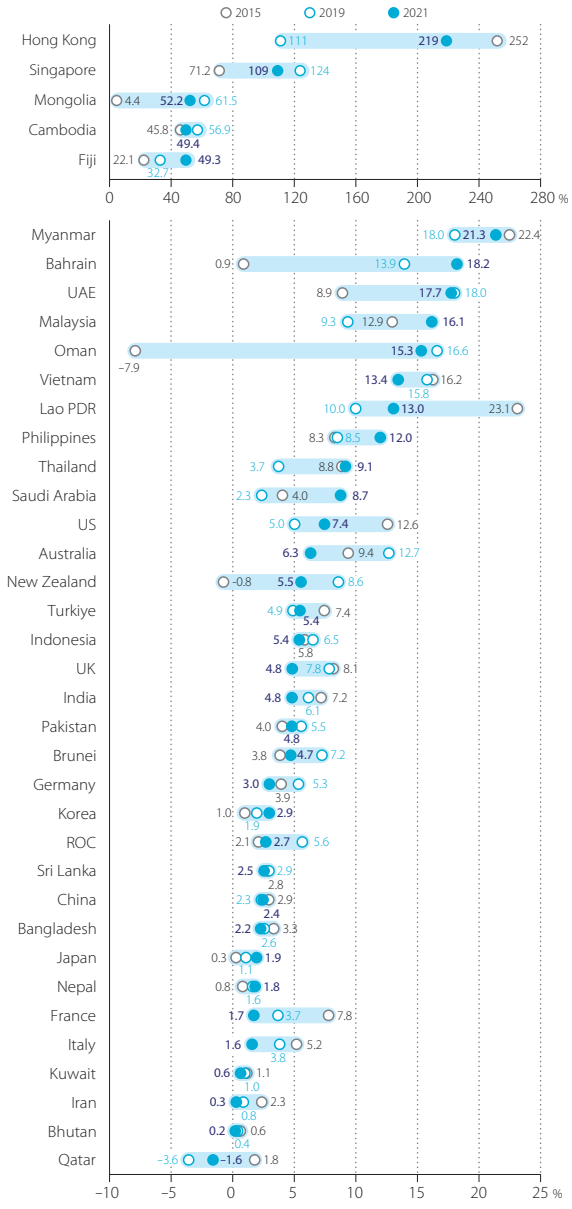

Figure 4.6 FDI Inflows in 2015, 2019, and 2021

——FDI inflows as a percentage of GFCF at current prices

Unit: Percentage. Sources: United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2022*, and APO Productivity Database 2023.

28: See "Sri Lanka becomes a first Asia-Pacific country in decades to default on foreign debt," *Financial Times*, May 19, 2022. On July 5, Prime Minister Ranil Wickremesinghe told Parliament that Sri Lanka was bankrupt. The IMF approved a 48-month extended arrangement under the Extended Fund Facility of about USD 3 billion to support Sri Lanka's economic policies and reforms on March 20, 2023 (IMF Country Report No. 23/116).

environment score and the FDI inflows ratio (as the average in 2015–2021) in the countries presented in Figure 4.6, excluding the countries where the FDI inflows ratio is over 20%. In Iran, Pakistan, Bangladesh, and 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 4.6, this cannot be explained by a poor business environment, suggesting the presence of other factors such as regulations and complex administrative procedures.[30]

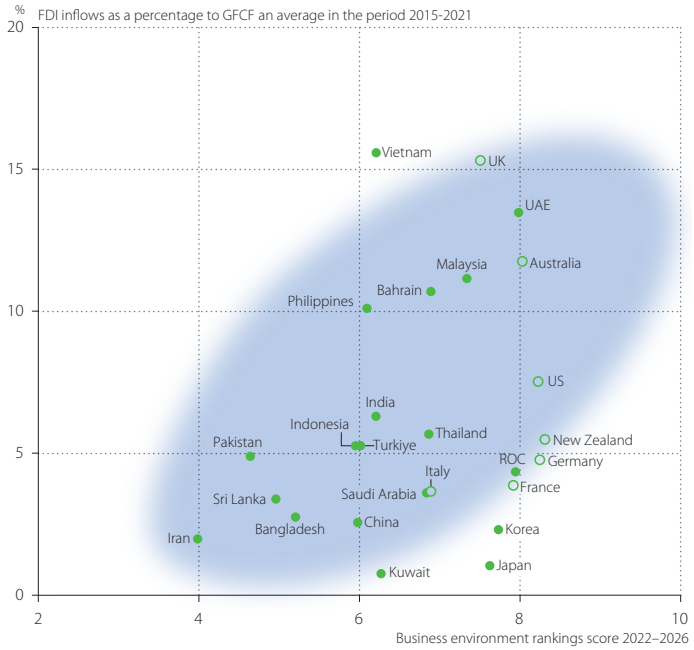

Figure 4.7 Business Environment and FDI Inflow Ratio, 2015–2021
——FDI inflows as a percentage of GFCF at current prices and business environment score

Unit: Percentage for the vertical axis and score for the horizontal axis. Sources: United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2022*, The Economist, The Economist Intelligence Unit 2021, 2022, and 2023, and APO Productivity Database 2023. Note: The evaluation period is 2023–2027 for Australia, China, Germany, Indonesia, Iran, Japan, Korea, Kuwait, Turkiye, Saudi Arabia, Singapore, Sri Lanka, and the UK.

Figure 4.8 focuses on investment components, showing the nominal GFCF share of five types of assets for Asia25 economies and regions in 2021.[31] Countries are listed in descending order of the GFCF share in GDP, as shown in the reference chart at the bottom of the figure. For most Asian countries, particularly those with GFCF greater than 25% of GDP, investment is still construction-based (i.e., dwellings, non-residential buildings, and other structures). However, the expansion of ICT capital and R&D is becoming more significant in some countries like Singapore (42% of the GFCF), surpassing the US (35%), Japan (27%), Korea (25%), ROC (23%), Hong Kong (21%), Malaysia (19%), and Thailand (19%)—even at the current price comparisons.[32]

29: 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 several indicators that the EIU assesses for the previous 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.

30: Kozo Kiyota indicates that the reasons behind the small size of inward FDI in Japan remain elusive, despite numerous studies ("Is Japan the least attractive country?" January 2021, *RIETI Report*).

31: The investment data by type of asset includes our estimates for countries where data is unavailable in their official national accounts (Section 8.2). Although our GFCF estimates are constructed based on 11 classifications of produced assets (Table 8.3), they are aggregated into five groups of assets for this figure. ICT capital is defined as ICT hardware, communications equipment, and computer software.

32: Box 7 discusses the ICT (hardware and software) and R&D capital stocks and their implications. In the APO-PDB 2021, the estimates on ICT software investment were considerably revised (Section 8.1.4).

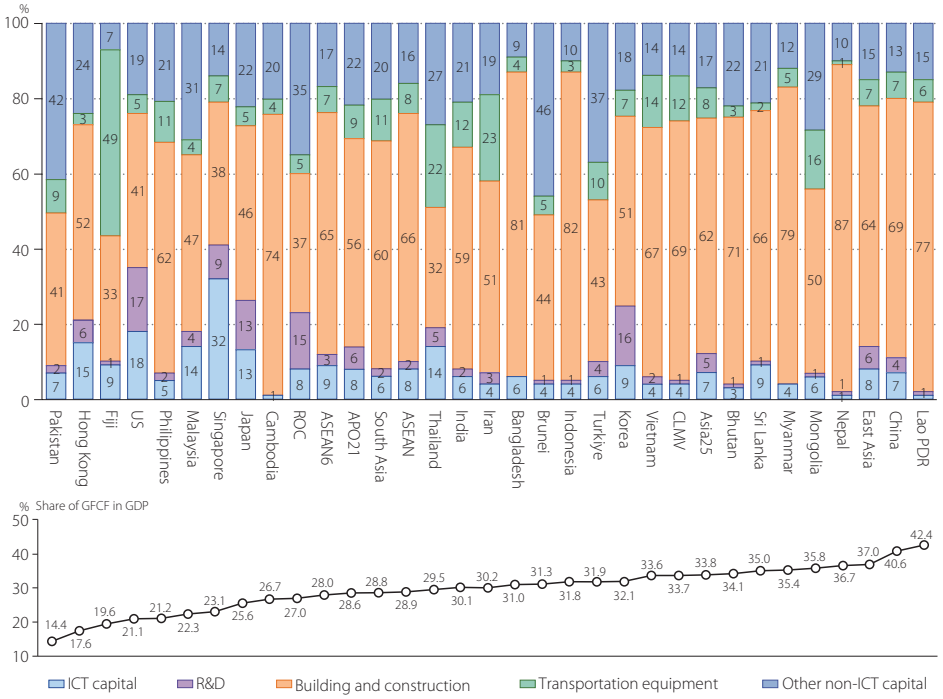

Figure 4.8 Investment Share by Type of Produced Asset in 2021
——Share of GFCF at current prices by type of produced assets

Unit: Percentage. Sources: Official national accounts in each country (including adjustments in APO-PDB) and APO Productivity Database 2023. Note: Numbers in parentheses of the assets correspond to the code of produced assets, defined in Table 8.3.

Box 5 Task-wise International Division of Labor in Factory Asia

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. Conversely, it imported machinery and exported garments. The trade pattern in broad commodity classes 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 4.9 presents each Asian country's export/import shares occupied by machinery and transport equipment in 1990–1999, 2000–2009, and 2010–2021. A striking contrast is observed here between countries that participate in the task-wise international division of labor and those that do not. Japan and Korea are located way above the 45-degree line, which means their machinery export shares are much larger than the 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.

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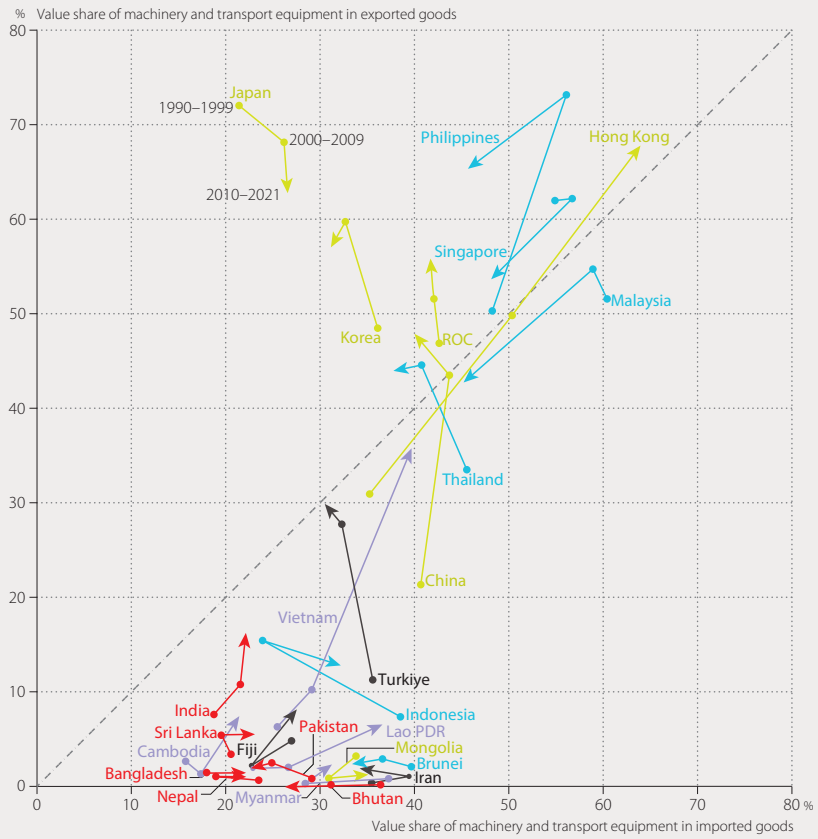

Figure 4.9 Export and Import Shares of Machinery, 1990–2021
——Average value share at current prices in 1990–1999, 2000–2009, and 2010–2021

Unit: Percentage. Source: APO Productivity Database 2023. Notes: The three points of the arrowed lines indicate the average shares in 1990–1999, 2000–2009, and 2010–2021, as described in Japan's estimates. The arrows are colored by region in green, red, blue, purple, and black for East Asia, South Asia, ASEAN6, CLMV, and others, respectively.

This two-way trade in machinery is a type 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 arrangement of production networks is what gives rise to the phrase "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 that, as these countries got richer and added to their appeal as a market, the proportion of "network trade" out of total trade declined. Other developing countries worldwide are still in the industry-wise division of labor in their trade patterns. South Asian countries, i.e., India, Pakistan, Bangladesh, and Nepal, are well below the 45-degree line, around 20% in import shares. Although India showed some upward movement in the 2010s, yet these countries do not participate in international production networks in machinery. Indonesia is also struggling with entering such networks.

Some Asian countries experienced drastic changes in the international division of labor (Box 5). Figure 4.10 plots the long-term trend of net export share in GDP from 1970 to 2021. Net exports, 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 35.3% and 14.9% in 2021, respectively. In contrast, shares of net exports peaked at 8.3% in 2007 in China and 12.2% in 2005 in Hong Kong. Since then, they have declined to 2.4% and 4.8% in 2021, respectively, much lower than the levels in Germany as the reference country, as shown in the right chart. Germany, in particular, has maintained a long-term net export ratio of over 5% since the 2000s, which is exceptional for a large economy. Japan's 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.

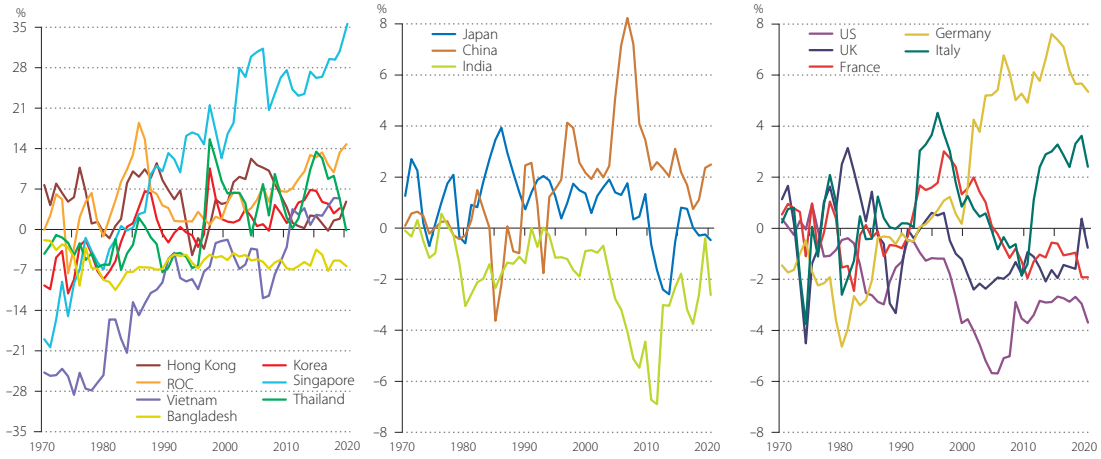

Figure 4.10 Net Export Shares in GDP of Asian Tigers, China, and Japan, 1970–2021
——Shares of net exports to GDP at current market prices

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB.

Figure 4.11 presents the gross export and import shares in GDP in 2021 to show the composition of net exports. In 2021 the export share for Singapore was 184%, and 204% for Hong Kong, reflecting their port

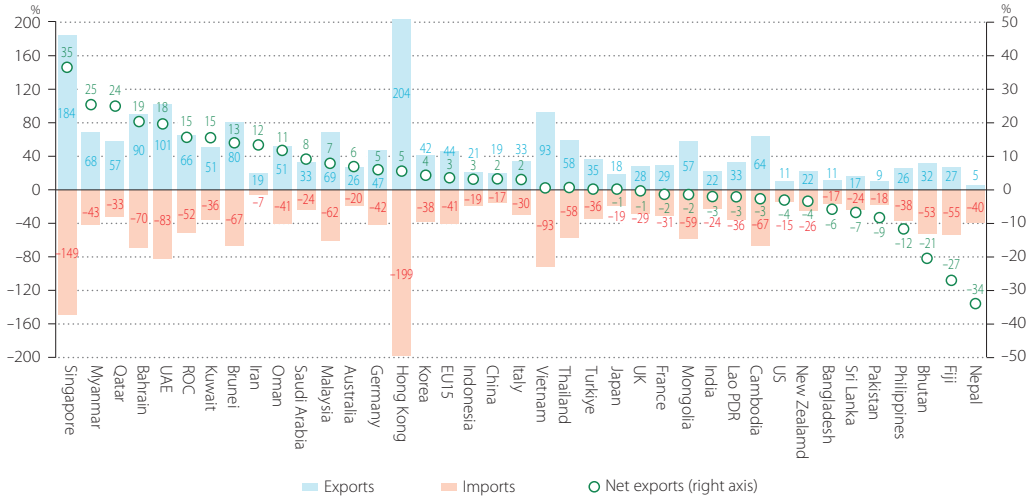

Figure 4.11 Export and Import Share in GDP in 2021
——Share of exports and imports to GDP at current market prices

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB.

function in Asia. This explains why the total values of exports and imports are exceptionally high relative to the GDP size in these economies.[33] 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 34% and 21% in 2021, respectively. The impact of the Covid-19 pandemic on tourism has been particularly significant in Fiji, with deterioration of net exports to –27%. [34]

33: The 2008 SNA requires that the trade values 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 have already introduced the 2008 SNA. However, the revisions from the 1993 SNA on the export and import data could have been more minor.

34: The tourism-dependent economy of Fiji has been hit by the border closure against Covid-19 and the tropical storms that hit the Pacific Island nation, with debt rising sharply from 2019 onwards ("World Bank warns Fiji to cut debt urgently or risk stalling pandemic recovery," Reuters, April 18, 2023). The country's GDP growth rate fell to –18.6% in 2019–2020 and –5.2% in 2020–2021 (Box 1).

5 Productivity Growth

Highlights

- Regarding labor productivity, defined as GDP at constant basic prices per hour worked, the US has maintained a sizeable gap of more than 25%, even against the highest Asian performers (Figure 5.3 and Table 9.10). The exception is Singapore, the Asian leader in this measure, where the gap with the US has narrowed to 2% by 2021 (Figure 5.2).
- From 2015 to 2021, the labor productivity of Asia25 grew by 3.8% per year on average, down from 4.8% in 2010–2015. China experienced a significant slowdown in labor productivity growth to 5.5% from 7.7% over the same period. The main drivers of productivity resurgence in Asia25 were Vietnam, China, Cambodia, Bangladesh, and Turkiye (Figure 5.5 and Table 9.11).
- In terms of TFP growth, Asia25 was severely affected by the Covid-19 pandemic in 2020 but recovered, giving a 1.1% average rate for 2015–2021. This rate is lower than the 1.9% growth in 2005–2010 but similar to 1.0% in 2010–2015. However, the recovery in ASEAN6 has been slower, with TFP still deteriorating by 0.3% in 2015–2021. The TFP growth in South Asia over 2015–2021 was 0.9%, 0.6 percentage points below the 2010–2015 level (Figure 5.11).
- The growth of Asia25 has been predominantly explained by the contribution of capital input, representing 59% (54% for non-ICT and 5% for ICT capital) of the regional economic growth achieved from 2000 to 2021. The role of TFP growth is also significant, contributing 25% in the same period (Figure 5.15).
- Capital deepening is the key mechanism of Asia25's labor productivity growth of 4.4% in 2000–2021, accounting for 48% (43% for non-ICT and 4% for ICT capital). The contributions of labor quality and TFP are 23% and 30%, respectively, in Asia25. In ASEAN, where the regional TFP growth for 2000–2021 was moderate at 0.7%, 60% of the 3.5% average annual growth in labor productivity was supported by improved labor quality (Figure 5.23).

Labor productivity is measured in several ways, depending on the definitions of output and labor input measures, for example, number of workers versus hours worked. Section 5.1 presents the labor productivity measure in terms of GDP per worker.[35] As workers in high-performing Asian countries tend to work longer hours on average than in the US (Figure 8.11), 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.[36]

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 Jorgensonian growth accounting framework.[37] In Sections 5.3 and beyond, capital input is included as another key factor of production,[38] and

35: 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 8.1.7 for the methods employed for our calculations.

36: This edition of Databook newly added the labor productivity estimates for New Zealand as a reference country, in addition to the US, Australia, the EU15, France, Italy, Germany, and the UK.

37: The growth accounting approach is based on the microeconomic production theory and the nominal accounting balance of input and output of production. See Jorgenson (2009), Jorgenson, Ho, and Stiroh (2005), and OECD (2001) for a presentation of definitions, theoretical foundations, and several practical issues in measuring productivity.

38: The measurement of capital stock, i.e., produced assets, land, inventory, and mineral and energy resources (MER), and capital services are discussed in Section 8.2. Compared to the previous edition of the Databook (APO 2022), the MER asset is considered one of the capital inputs (Box 10).

TFP estimates are presented for the Asia25 economies and the US. Finally, Section 5.7 offers the estimates of energy productivity, becoming an important policy target for pursuing sustainable growth in Asian countries. The details of long-term estimates of growth accounting for the APO21 economies and regions are provided in the country profiles in the Appendix.

5.1 Per-Worker Labor Productivity

Cross-country comparisons of per-worker labor productivity levels in 2021, measured as GDP per worker in US dollars in 2021, are presented in Figure 5.1. On this measure, Singapore is the leading economy with $175,900, 19% higher than the US ($147,200).[39] Hong Kong and the ROC follow, with more than $100,000 per-worker labor productivity. Turkiye, Korea, and Japan are in the next tier with over $80,000, at 39–44% below the US. Malaysia and Iran follow, with about $60,000. It is worth noting that Iran has the lowest employment rate in Asia25 (Figure 3.24), bringing about higher performance in labor productivity. After this group of leaders, many countries in Asia follow with labor productivity levels at less than 25% of the US. This pulls down the average performance to 22% of the US for Asia25, 22% for ASEAN6, and 11% for CLMV. Bringing up the rear are China and India, with productivity levels that were 23% and 12% of the US level, respectively, in 2021.

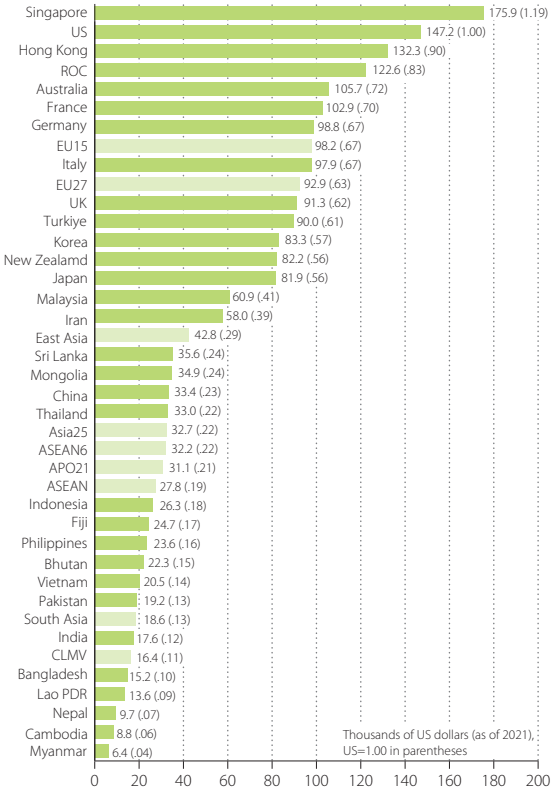

Figure 5.1 Per-Worker Labor Productivity Level in 2021
——GDP at constant basic prices per worker, using the 2017 PPP, the reference year 2021

Unit: Thousands of US dollars. Sources: Official national accounts in each country and APO Productivity Database 2023. Notes: Number in parenthesis is the ratio to the US level. See Table 9.8 for the time-series comparison from 1970.

5.2 Per-Hour Labor Productivity

The labor productivity gaps with the US, on a per-worker basis, in Figure 5.1 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 difference, total hours worked are constructed in the Asia QALI Database for the Asia25 economies, although the quality of the estimates may vary considerably across countries.[40] Figure 5.2 shows how the productivity gap with the US in 2021 varies depending on which measure of labor productivity is used.[41] 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

39: Cross-country level productivity comparisons are notoriously difficult to make and subject to much data uncertainty. Estimates should therefore be taken to indicate broad groupings rather than precise ranking.

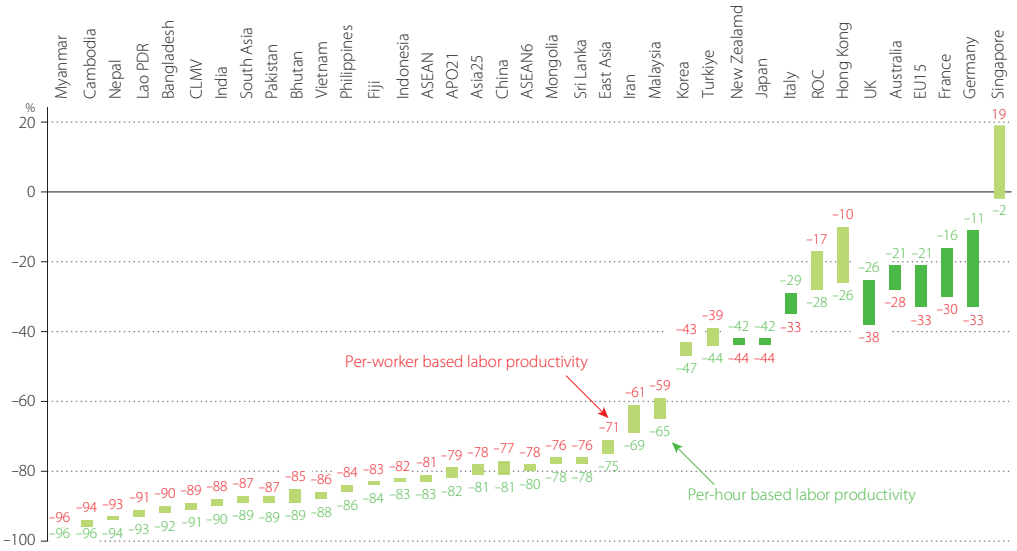

Figure 5.2 Per-Worker and Per-Hour Labor Productivity Gap in 2021
——Differentials of basic-price GDP at constant prices per worker and hour (using the 2017 PPP), relative to the US

Unit: Percentage. Sources: Official national accounts in each country and APO Productivity Database 2023. Note: Light green is used for countries where per-hour labor productivity is lower than per-worker labor productivity.

as Singapore (from 19% higher on a worker basis to 2% lower on an hourly basis) and Hong Kong (from 10% lower to 26% 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 33% on a worker basis to 21% 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 5.3 (and Table 9.10). The gap between the US and the Asian leader, Singapore, has been narrowing slowly. Hong Kong and the ROC have improved seven and 13 times in this period and overtook Japan in 2007 and 2010, respectively. Turkiye and Korea were at the same level in the 2000s, but in recent years Turkiye's labor productivity improvement has accelerated, overtaking Japan in 2020 before stagnating after the pandemic. While such acceleration has not been seen in Korea, Japan's stagnation from the mid-2010s is a remarkable change from earlier trends. If Korea can maintain its current pace, it 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 5.4 and Table 9.11. In Asia25 as a region, labor productivity growth accelerated to 4.3% per year in 2010–2021 (despite including the temporary stagnation due to the pandemic), compared to the past two-decade averages of 3.9% for 1990–2010 and 2.4% for 1970–1990. Figure 5.5 focuses on more recent productivity performances. As a region, labor productivity growth in the most recent period,

40: 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 national accounts, but not for the whole period studied in this report. See Section 8.3.1 to explain the estimation procedure of total hours worked. The validity of the per-hour labor productivity depends on the measurement accuracy. Databook considers this as a benchmark indicator of labor productivity while continuing to improve its measurements in Asia QALI Database.

41: The labor productivity gap for country x is the country x's labor productivity divided by the US's labor productivity in Figure 5.2.

2015–2021, was strong at 3.8% per year, though it is below the highest record of the regional productivity growth of 5.7% in 2005–2010, which was accelerated by the extremely high performance of China (10.9%). The main drivers of the recent Asia productivity performances in 2015–2021 are Vietnam (6.8%), China (6.3%), Cambodia (5.4%), Bangladesh (4.7%), and Turkiye (4.6%).

One can identify where countries are today regarding their hourly productivity performance against the backdrop of Japan's historical experience. Figure 5.6 traces the long-term path of Japan's per-hour labor productivity for 1885–2021 along the green line, expressed relative to Japan's 2021 level (set equal to 1.0).[42] A structural break was observed during World War II when output collapsed. Each country's hourly productivity level relative to Japan in 2021 are mapped against this Japan growth path (marked with circles). Here, the corresponding year can be located when Japan's hourly productivity level was the closest to the current level of each country in question. Most Asian countries are clustered around Japan's level between the late 1950s and the early 1970s. Myanmar and Cambodia, with the lowest hourly productivity in 2021, see levels corresponding to Japan in the early 1930s. 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.

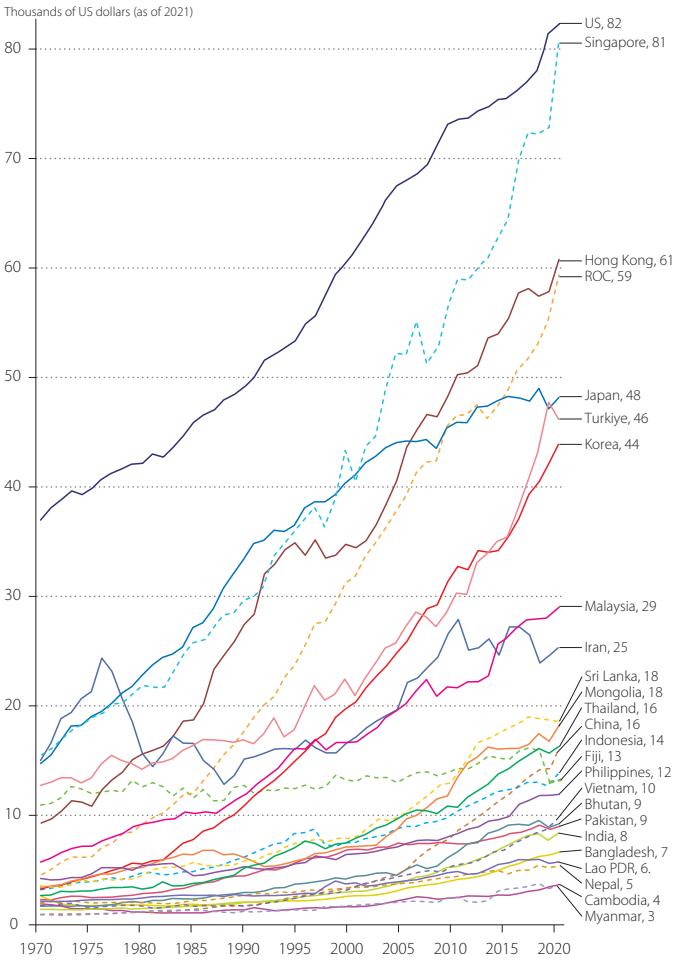

Figure 5.3 Per-Hour Labor Productivity Level in the Long Run, 1970–2021
——GDP at constant basic prices per hour, using the 2017 PPP, the reference year 2021

Unit: Thousands of US dollars. Sources: Official national accounts in each country and APO Productivity Database 2023. Note: See Table 9.10 for the numbers of this figure.

42: While one should keep in mind 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.

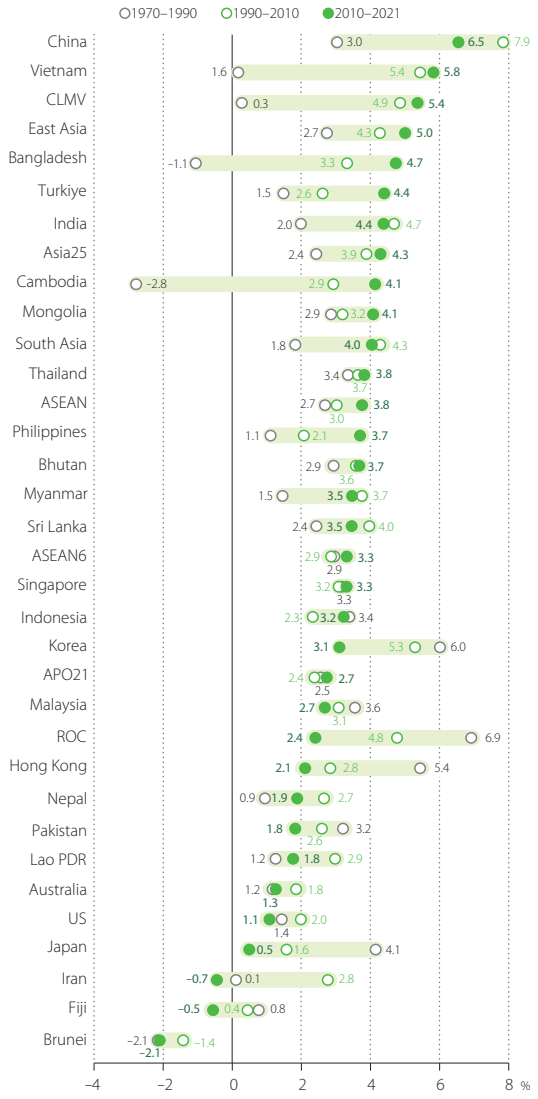

Figure 5.4 Labor Productivity Growth Averaged over Long Periods, 1970–2021

——Growth in per-hour GDP at constant prices in 2010–2021, 1990–2010, and 1970–1990

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country and APO Productivity Database 2023. Note: The starting period for Australia is 1978.

Figure 5.5 Labor Productivity Growth in the Recent Periods, 2005–2021

——Growth in per-hour GDP at constant prices in 2015–2021, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country and APO Productivity Database 2023. Note: See Table 9.11 for the growths for 2019–2020 and 2020–2021, which isolate the impact of the Covid-19 pandemic.

The productivity leaders are the Asian Tigers, of which Singapore, Hong Kong, and the ROC have already surpassed Japan. Figure 5.7 compares the time taken by each country to raise its labor productivity from 30% to 70% of Japan's level today (unit of measurement on the y-axis of Figure 5.6). What Japan had achieved in the 21 years from 1970 to 1991, Hong Kong, the ROC, and Korea managed to accomplish in 15, 15, and 18 years, respectively (Figure 5.7). 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 as we noted in Figure 5.6.

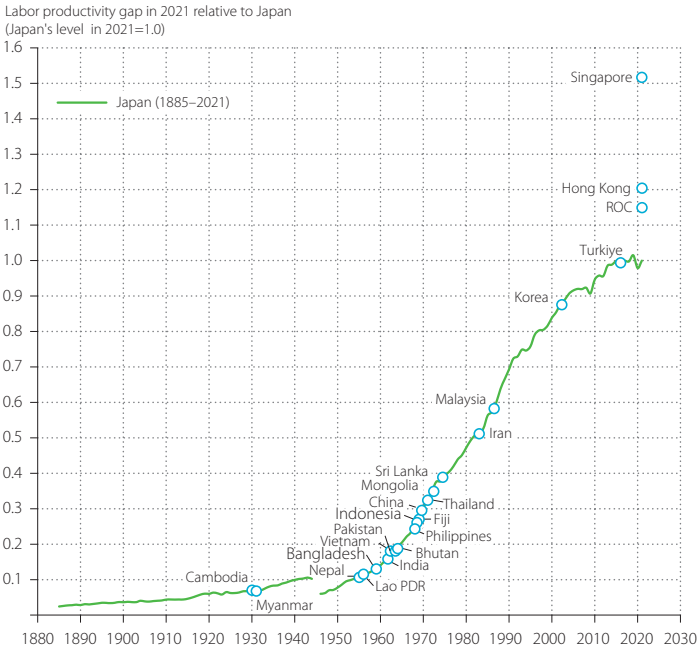

Figure 5.6 Historical Labor Productivity Trend of Japan and Current Level of Asia in 2021

——Japan's per-hour GDP at constant prices from 1885 to 2021 and for Asian countries, using the 2017 PPP

Unit: Index. Sources: Japan's historical GDP is based on Ohkawa, Takamatsu, and Yamamoto (1974) during 1885–1954 and the JSNA by the Economic and Social Research Institute, Cabinet Office of Japan, during 1955–2021 (including adjustments in APO-PDB). Hours worked data for Japan is based on KEO Database, Keio University, during 1955–2021. During 1885–1954, the average hours worked per person were assumed to be constant. The labor productivity level of Asian countries in 2021 is based on the APO Productivity Database 2023.

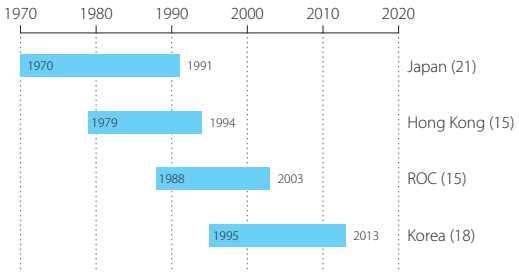

Figure 5.7 Time Taken to Improve Labor Productivity by Japan and Asian Tigers

Unit: Years. Source: See Figure 5.6. Note: The numbers in parentheses after the country name are the years each country took to raise its labor productivity from 30% to 70% of the current Japanese level.

Box 6 Contributions of College Workers to Economic Growth

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. This database also allows total labor input to be decomposed into college and non-college educated labor. Figure 5.8 shows the long-term trends of the share of college-graduate workers in total hours worked in Asian countries. While it may be surprising that college labor is still expanding even in the US, in Asia, Korea has been increasing its share at an accelerated pace since the late 1990s and now accounts for more than 50% of total hours worked. Among the East Asian countries, the high percentage of college workers in Mongolia, with a modest per capita GDP of $12,600 (Table 9.6), is distinctive. Mongolia had many students studying in Russia before 1991 when it became a market economy, and the female employment share was also high (Figure 3.23). Since the beginning of the 2000s, the number of college workers has expanded rapidly. 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 indicates the country's growth potential in other more-productive sectors.

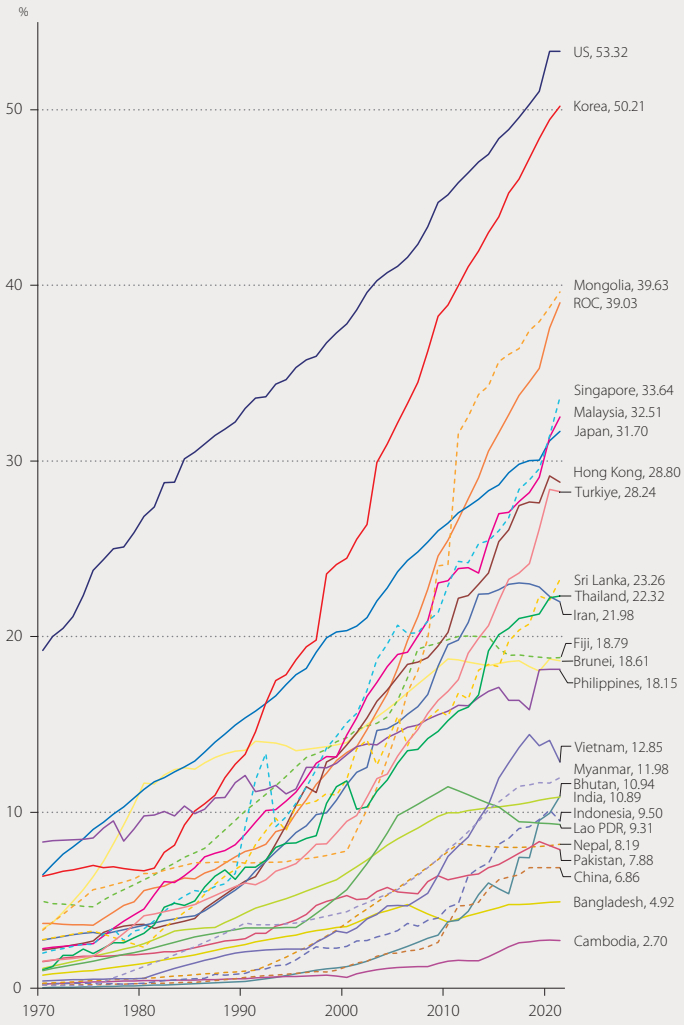

Figure 5.8 College Worker Share, 1970–2021
——Share of college labor in total hours worked

Unit: Percentage. Source: Asia QALI Database 2023.

Figure 5.9 shows the contributions of the college and non-college labor input to economic growth in 2000–2021. The countries are listed in descending order of economic growth rate in this period (see Figure 5.14 for the complete growth accounting, including capital input and TFP). The US, Japan, Korea, ROC, and Hong Kong recorded economic growth due to the expansion of college labor, while non-college labor declined. On the other hand, in the CLMV (excluding Myanmar), Bangladesh, and Pakistan, economic growth is dominated by the expansion of non-college labor. 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.

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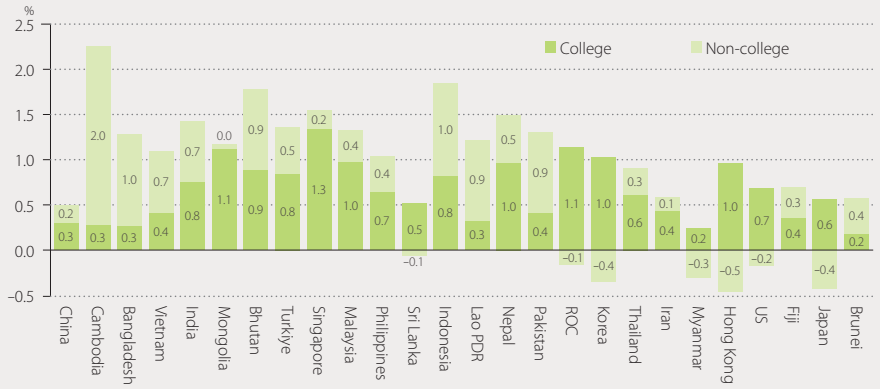

Figure 5.9 College and Non-college Labor Contributions to Economic Growth, 2000–2021

——Contributions of college and non-college labor to economic growth

Unit: Percentage (average annual contributions). Source: Asia QALI Database 2023.

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, that is, GDP per unit of the combined input bundle, to determine the overall efficiency of a country's production.

Measuring capital input is a key factor for determining TFP. Capital services are defined as the flow of services from productive capital stock, as recommended in the 2008 SNA and OECD (2009).[43] The required basis for estimating capital services is the appropriate capital stock measure. 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.[44] 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 services have been

43: 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-PDB 2023, the Törnqvist index aggregates 23 types of capital inputs (11 types of produced assets, seven types of land, inventory stock, and four types of MER in Table 8.3).

44: 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).

constructed and compiled within the APO-PDB based on common 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 23 types, and appropriate harmonized prices are used for ICT capital to reflect the rapid quality change embodied in ICT-related assets (Section 8.2).[45]

The APO-PDB 2023 constructs growth accounts for Asia25 countries that decompose each country's economic growth into growth in ICT and non-ICT capital services, hours worked, labor quality, and TFP.[46] In addition, the regional growth accounts are developed for six country groups—Asia25, APO21, East Asia, South Asia, CLMV, and ASEAN6.[47] Cross-country comparisons of TFP growth for Asia25 and the US are shown in Figure 5.10 for 2010–2021, compared with the earlier two-decade averages for 1970–1990 and 1990–2010. Figure 5.11 shows the five-year average TFP growths since 2005, focusing on more recent years. To understand the damage to TFP caused by the Covid-19 pandemic and its recovery, Table 9.12 also provides the 2015–2019, 2019–2020, and 2020–2021 estimates.[48]

Asia25 has accelerated its TFP growth rate from 0.8% per year on average in 1970–1990 to 1.3% in 1990–2010. It decelerated to an average of 1.1% per year in 2010–2021, as shown in Figure 5.10. This slight slowdown in the recent period includes the significant damage of the pandemic and its offset by the recovery in 2021. As shown in Table 9.12, due to the impact of the pandemic, TFP in Asia25 fell by –4.1% from 2019 to 2020 but recovered by 5.1% in 2021. The slowdown in TFP growth due to the pandemic can be considered temporary for the Asian region.

The country impact of the pandemic on TFP depends on its history in the years just before the pandemic. 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, 16 economies of Asia25 achieved higher TFP growth than the US (Table 9.12). Figure 5.12 gives TFP growths on the vertical axis and the change in TFP growth between 2010–2015 and 2015–2019 on the horizontal axis. 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; Sri Lanka (from 1.0% in 2010–2015 to –2.2% in 2015–2019), Fiji (from 2.2% to 0.3%), Malaysia (from 2.7% to 0.8%), Bhutan (from 1.1% to –0.5%), Mongolia (from 1.3% to 0.5%), Japan (from 0.9% to 0.2%), and Lao PDR (from –0.5% to –1.0%). As shown in Figure 5.12, some of these countries suspected of having had inefficient economic activity before the pandemic (2015–2019) are more severely affected in 2020 as a response to the pandemic.[49]

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

46: 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 in APO-PDB 2023 is presented in Section 8.3.3. See Box 9 for the sensitivity of our assumptions on labor income to the TFP results.

47: See Section 8.5 on the PPPs for output and inputs to develop the regional productivity accounts.

48: China's productivity account in APO-PDB has been revised in the past few years. See Section 8.4 for the abstract of the revision. Compared to the past estimates in the 2020 edition of Databook, China TFP growth in this edition is revised downwards from 1.4% to 1.0% for 1970–1990 and from 4.0% to 2.8% for 1990–2010.

49: 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 5.12. 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). In 2022, tourist numbers jumped as coronavirus restrictions were eased but remained way below pre-pandemic levels ("Covid: Thailand tourism up but still below pre-pandemic level," BBC, January 23, 2023.)

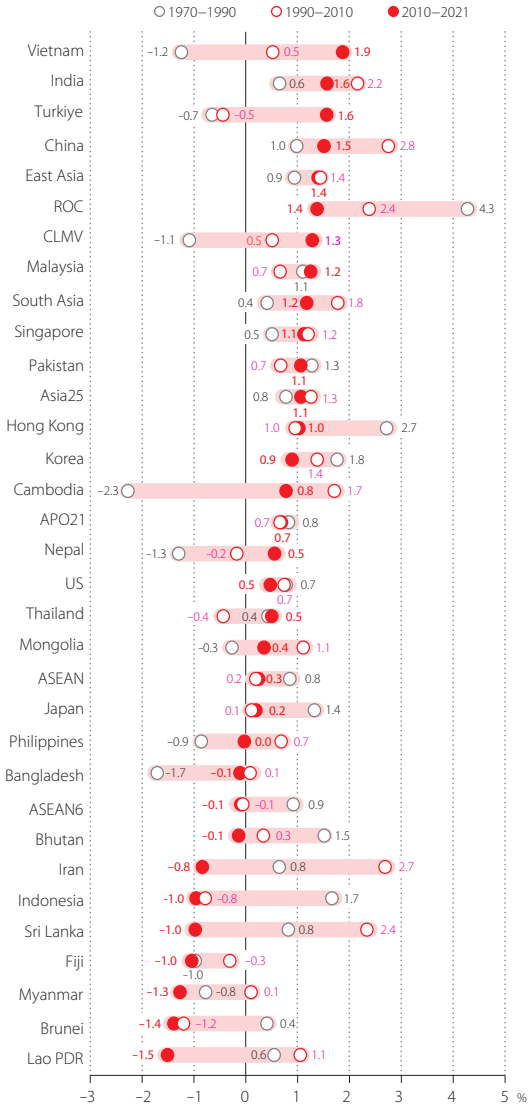

Figure 5.10 TFP Growth Averaged over Long Periods, 1970–2021

——Growth in total factor productivity in 2010–2021, 1990–2010, and 1970–1990

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

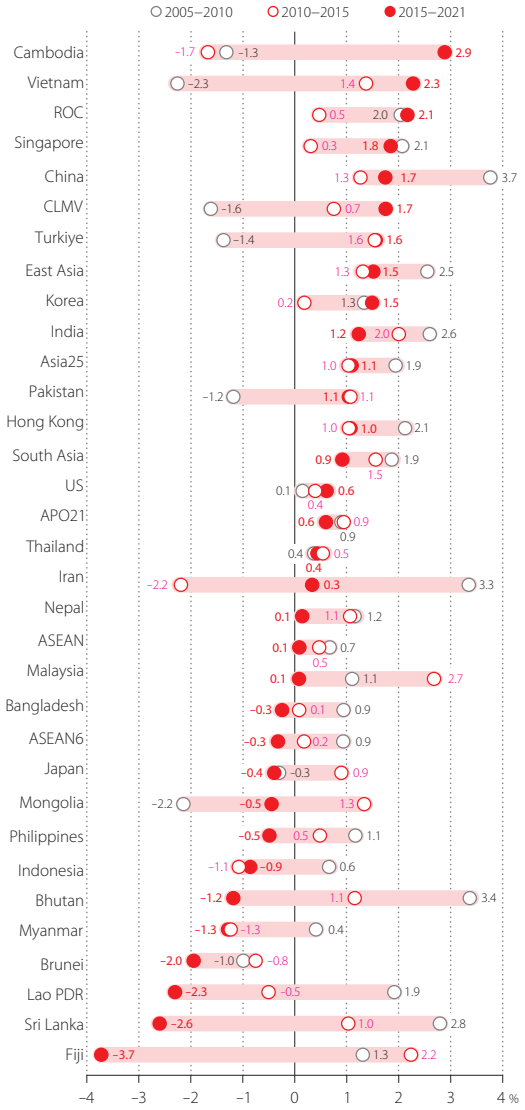

Figure 5.11 TFP Growth in the Recent Periods, 2005–2021

——Growth in total factor productivity in 2015–2021, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023. Note: See Table 9.12 for the growths for 2019–2020 and 2020–2021, which isolate the impact of the Covid-19 pandemic.

Figure 5.13 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 quadrupled (4.5 times) and those in China and Hong Kong more than doubled (2.5 times and 2.4 times, respectively) in the past half a century, Singapore's was smaller (1.6 times), and its improvement was sustained only from the mid-2000s. Over the past half-century, TFP has not improved in eight Asian countries; the progress has been less than 10% in three countries. While these assessments vary greatly depending on the correspondence between the initial period 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 Vietnam and since the 2010s for Turkiye.

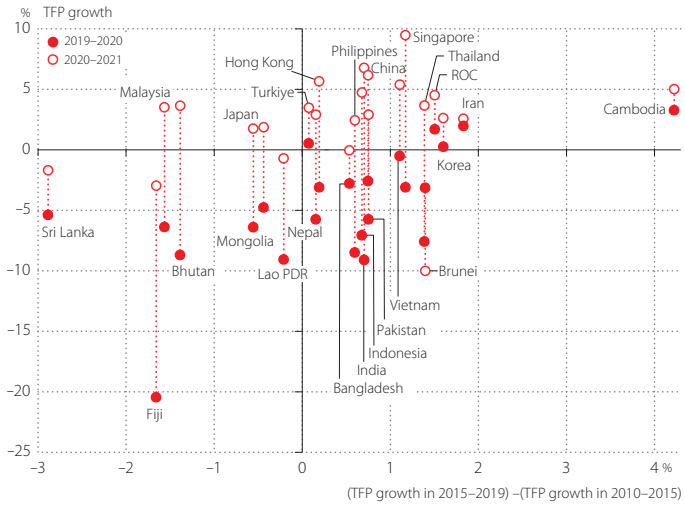

Figure 5.12 TFP Deterioration Resulted from the Covid-19 Pandemic

——TFP-growth difference between 2010–2015 and 2015–2019 and TFP deterioration in 2019–2020 and 2020–2021

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023. Note: See Table 9.12 for the numbers.

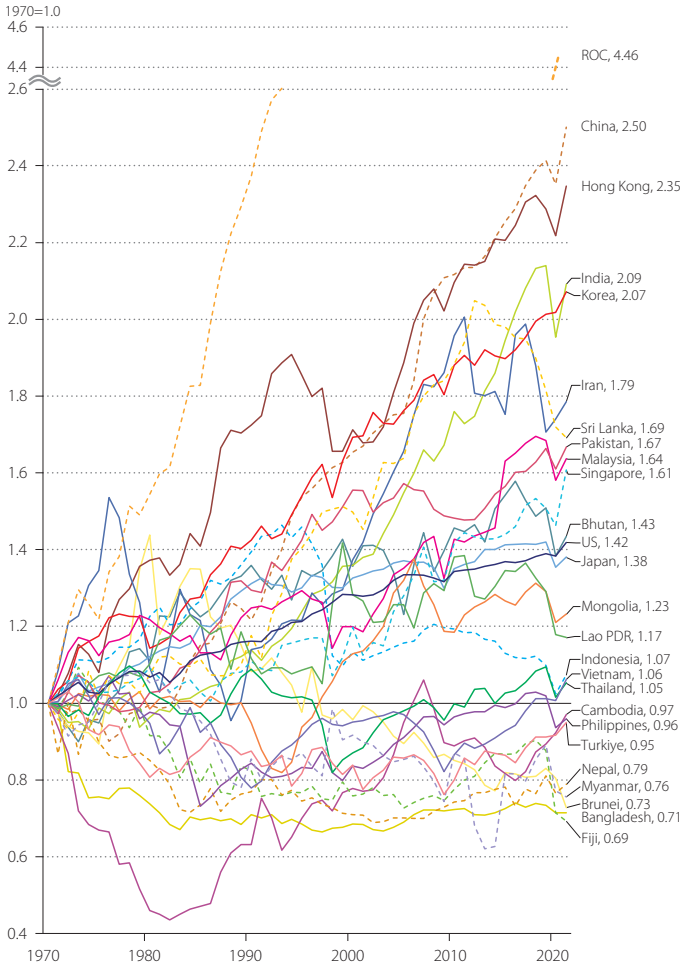

Figure 5.13 Half-Century TFP Index by Country, 1970–2021

Unit: Index (1970=1.0). Source: APO Productivity Database 2023. Note: The vertical axis is cut off in the middle since only the ROC has an exceptionally high TFP growth rate.

5.4 Sources of Economic Growth

For Asian countries to formulate appropriate macroeconomic policies, it is necessary to identify the drivers of economic growth. Suppose growth has been driven by capital accumulation rather than by assimilating existing technology from developed countries (measured as TFP growth). In that case, the growth model may be expensive for many less affluent countries to emulate. Figures 5.14 and 5.15 present the sources of economic growth by country and region, averaged from 2000 to 2021. Figure 5.14 gives the absolute contributions, e.g., the 5.1% GDP growth for Asia25 consist of 0.1 (ICT capital) + 2.8 (non-ICT capital) + 0.4 (hours worked) + 0.5 (labor quality) + 1.3 (TFP growth). Figure 5.15 gives percent share of each factor's contribution, adding to 100% (note that TFP can be negative). These show that 59% of Asia25's economic growth was achieved by capital accumulation (54% for non-ICT and 5% for ICT capital), well above the TFP growth rate of 25% contribution rate, indicating a major role of capital accumulation in their economic growth. Much of the technology propagation was not realized cost-free but through the accumulation of capital that embodied existing technology.

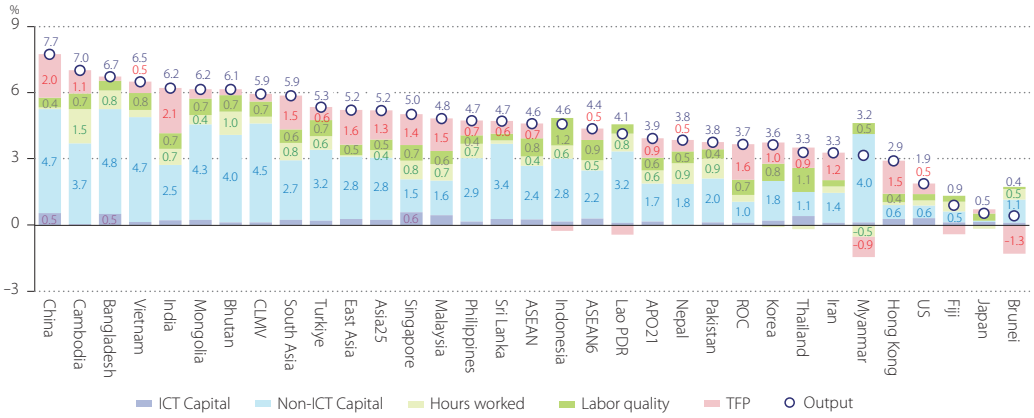

Figure 5.14 Sources of Economic Growth, 2000–2021
——GDP growth and contributions of capital, labor, and TFP

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

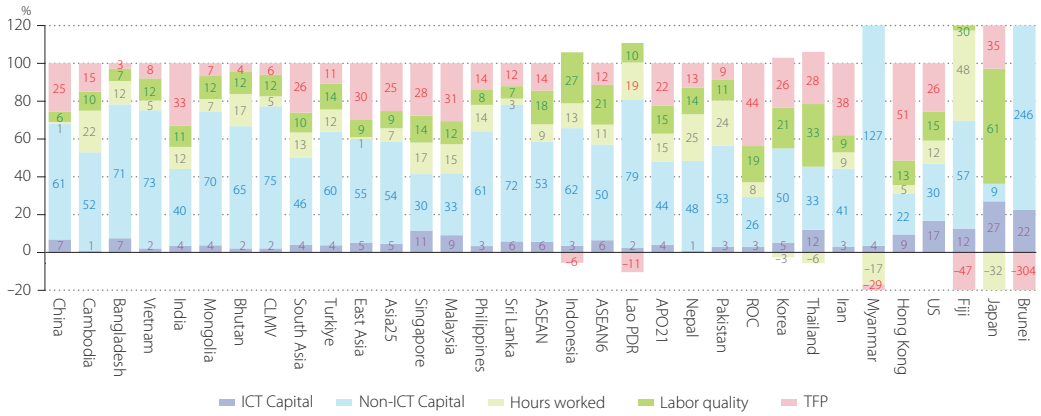

Figure 5.15 Contribution Shares of Economic Growth, 2000–2021
——Contribution shares of capital, labor, and TFP

Unit: Percentage (average annual contribution shares). Source: APO Productivity Database 2023.

This trend is also true in various regions and countries in Asia. In these two charts, countries are ordered based on their economic growth rates in this period. Figure 5.14 shows that in high-growth countries, which tend to have lower initial per capita income, the contributions of TFP and labor quality improvement to economic growth are not necessarily substantial. The contribution shares shown in Figure 5.15 show that TFP and labor quality improvement play a larger role in higher-income countries,[50] 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 51% and 44% of their economic growth, respectively, as shown in Figure 5.15. Figure 5.16 in Box 7 shows that the ROC has an R&D stock estimated at three times the ICT capital stock in 2021, the third-largest share in Asia after Korea and Japan. Conversely, ICT capital stock in Hong Kong was nearly twice as large as R&D stock in 2021. Although the direct effects of increased capital input due to R&D and ICT capital stock expansion are already considered in growth accounting in Figure 5.15, the high TFP growth rate may reflect the external effects of such R&D and ICT capital.

Box 7 Rise of ICT and R&D Capital in Asia

The Databook presents the decomposition of capital stock, including ICT (hardware and software) and R&D capital. Figure 5.16 shows these stocks relative to GDP in 2021. R&D capital has been regarded as the basis of scientific knowledge and a crucial input for innovation. As shown in Figure 5.16, 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 poorer Asian countries have extremely low ratios of R&D capital to GDP. A big gap exists 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 from upper-middle-income to fully developed economies.

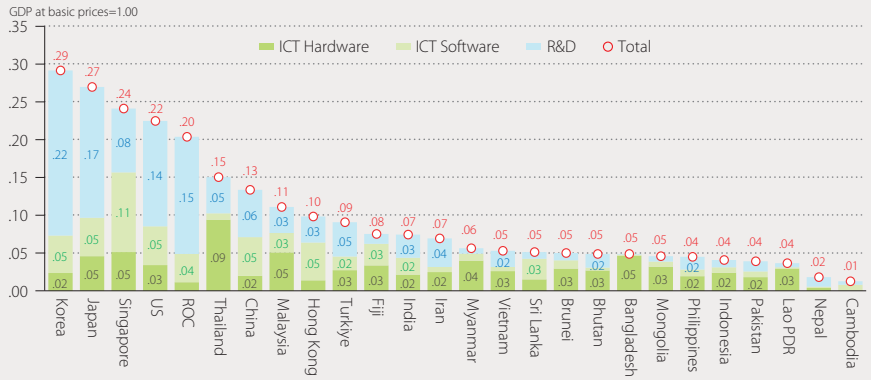

Figure 5.16 Stock of ICT and R&D Capital relative to GDP in 2021
——Ratios of the end-of-year capital stocks of ICT and R&D to the basic-price GDP at current prices

Unit: Percentage. Source: APO Productivity Database 2023.

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50: Box 6 and Appendix (Country Profiles) provide another view on labor input, focusing on college and non-college labor inputs.

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However, our ICT capital data may suggest a different view. The ICT capital here consists of ICT software and hardware, such as computers, communications equipment, TVs, radios, and cellular phones. The stock of this ICT 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 ICT shares comparable to those of developed countries. Although we are not sure why Thailand has much larger ICT hardware than ICT software, fully developed and newly developed economies tend to have large ICT 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 by country).

Developing countries are conducting very little cutting-edge innovation at the technological frontier but are proactively deploying new technologies even though such activities are not counted as R&D investment. In the past two decades, business innovation has shifted 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 now referred to as "unicorns" in the mainstream media. Although it may not be properly calculated in GDP, the proliferation of new services, including social media, e-commerce, matching, service outsourcing, e-payment, fintech, and e-government, is astounding. 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.

Tracking the size and growth of ICT capital has become a standard practice in productivity research following attempts to establish the driving force behind productivity resurgence in developed economies (Jorgenson, Ho, and Stiroh 2005). This started in the US in the 1990s. Unlike technological advancements in the past, which were largely confined to manufacturing, ICT 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 9.15), the potential and implications of ICT 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 digital transformation. As with non-ICT capital, it involves a process of accumulation and assimilation. ICT capability becomes a factor that determines an economy's long-term growth prospects.[51]

Japan and the Asian Tigers have led Asian countries in ICT capital contribution to economic growth. Japan's shift in capital allocation took off in earnest in the mid-1990s, with the ICT capital contribution to capital input growth rising from a low of 20% in the early 1990s to a high of over 40% in the late 1990s, as shown in the left chart of Figure 5.17.[52] This was when Japan's overall investment growth slowed significantly after the bubble collapse of the early 1990s. After years of excesses, Japan shifted from non-ICT to ICT capital as a profitable investment. The US turned toward ICT capital much earlier than any Asian economy and over a longer period, as shown in the right chart of Figure 5.17. Since the early 1980s, ICT capital has accounted for over 25% of US capital input growth, reaching over 40% in the late-1990s. Over the past quarter-century, ICT capital has accounted for about 40% of capital growth in Japan and the U.S. However, 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 ICT capital.

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

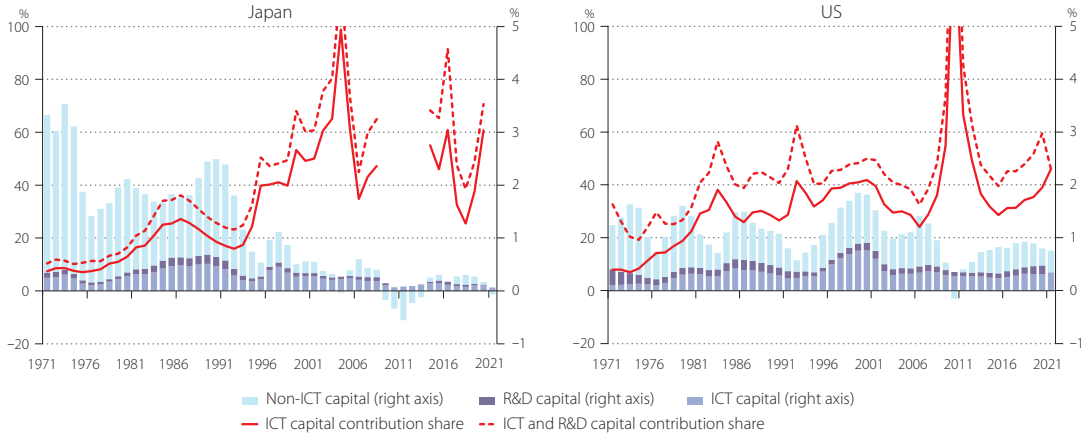

Figure 5.17 ICT and R&D Capital Contribution Share in Japan and the US, 1970–2021
——ICT and R&D capital contribution share in capital input growth

Unit: Percentage. Source: APO Productivity Database 2023.

A similar allocation shift to ICT and R&D capital is also found in the Asian Tigers, as shown in the left chart of Figure 5.18.[53] In the Asian Tigers, the contribution share of ICT 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 the mid-1990s. 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, ROC's ICT and R&D capital contribution share has declined since the early 2010s, indicating that its growing dependence is not necessarily essential for economic growth. China was focused on construction investment (Figure 4.8) and was a late-comer in terms of deepening ICT and R&D capital, with a surge in its contributions only taking off around 2000 and peaking at 18% in the early 2000s, as shown in the right chart of Figure 5.18.

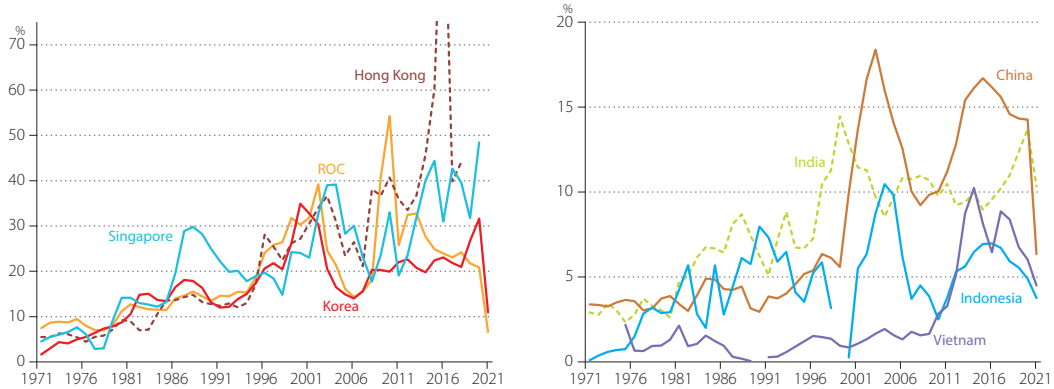

Figure 5.18 ICT and R&D Capital Contribution Share in Selected Countries, 1970–2021
——ICT and R&D capital contribution share in capital input growth

Unit: Percentage. Source: APO Productivity Database 2023.

52: The break in the contribution share for Japan (in the left chart of Figure 5.17) from the late 2000s is due to the negative growth of total capital input.
53: Readers should mind that the quality of the data on investment for ICT capital (ICT hardware, communications equipment, and computer software) varies considerably among countries, despite our best efforts in harmonizing data (Sections 8.1.4 and 8.2.1).


Bangladesh
Bhutan
Brunei
Cambodia
China
ROC
Fiji
Hong Kong
India
Indonesia
Iran
Japan
Korea
Lao PDR
Malaysia
Mongolia
Myanmar
Nepal
Pakistan
Philippines
%
1970–1975
1975–1980
1980–1985
1985–1990
1990–1995
1995–2000
2000–2005
2005–2010
2010–2015
2015–2021
ICT capital
Non ICT capital
Hours worked
Labor quality
TFP
Output

Figure 5.19 Sources of Economic Growth by Country and Region, 1970–2021
——GDP growth and contributions of labor, capital, and TFP

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

5.5 Capital Productivity

Labor productivity has received attention because it is closely related to GDP per capita (Section 3.3). 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 on improvements in labor quality and how well capital and technology are used.

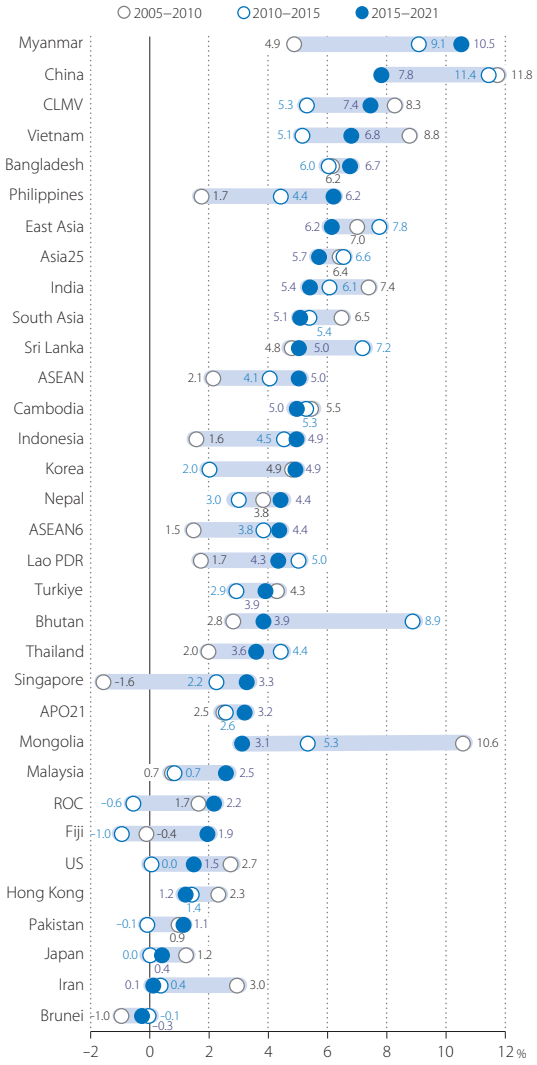

Figure 5.20 Capital Deepening, 2005–2021
——Growth in capital input per hour worked in 2015–2021, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

Figure 5.21 Capital Productivity Growth, 2005–2021
——Growth in GDP per capital input in 2015–2021, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

Capital deepening has been underway in almost all countries for almost all periods, except for a few natural-resource rich countries, such as Brunei, as shown in Figure 5.20.[54] For Asia25 as a group, 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 2015–2021, Myanmar, China, Vietnam, Bangladesh, Philippines, 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 5.4, 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 5.21. On average, in 2015–2021, although labor productivity improved by 5.5% in China and 3.7% in India (Figure 5.5) and the rates of capital deepening were outstanding at 7.8% and 5.4%, respectively (Figure 5.20), their capital productivity experienced the sharpest decline of 2.3% and 1.7%, respectively. The decline in capital productivity is necessary to increase labor productivity through capital deepening as long as it does not worsen TFP.

5.6 Sources of Labor Productivity Growth

Capital deepening should raise labor productivity, all other things being equal. Figure 5.22 shows the contributions to per-hour labor productivity growth and Figure 5.23 gives their contribution shares during 2000–2021. According to these figures, it remains the prime engine of labor productivity growth, explaining 51% (46% for non-ICT and 5% for ICT capital) in East Asia. The contribution of improvement in labor quality is more moderate at 19% in East Asia than the 31% TFP contribution. The same is true in South Asia, where the contribution of labor quality to labor productivity growth is significant (25%) but below that of TFP growth (34%). However, the role of labor quality change is more important in the ASEAN; with the average 0.7% growth of regional TFP, labor quality was the prime engine contributing 60% of the regional improvement in labor productivity.

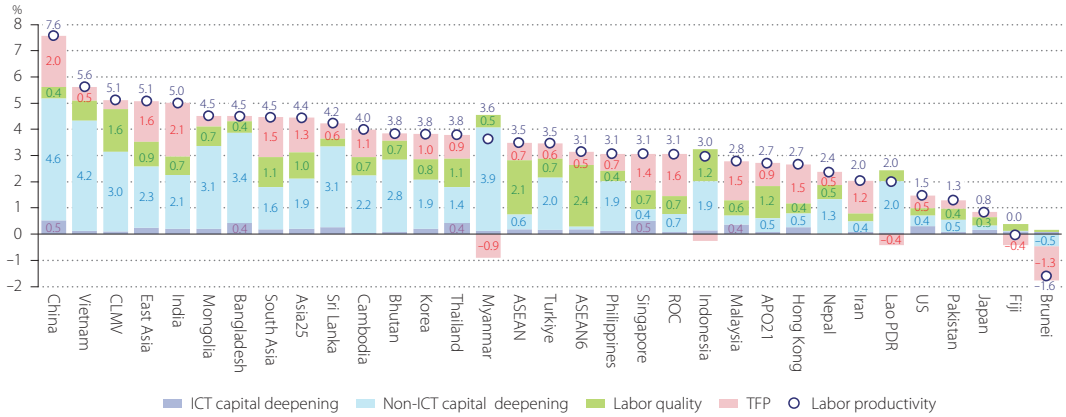

Figure 5.22 Sources of Labor Productivity Growth, 2000–2021
—Decompositions of the growth GDP per hour to ICT and non-ICT capital deepening, labor quality, and TFP

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

54: The asset boundary was expanded in this edition of Databook to include mineral and energy resources (MER) and three types of land (lands for other economic use, forest use, and inland water use). As a result of these revisions, for example, the rate of capital accumulation in the resource-rich Brunei has decreased significantly compared to the previous edition of Databook.

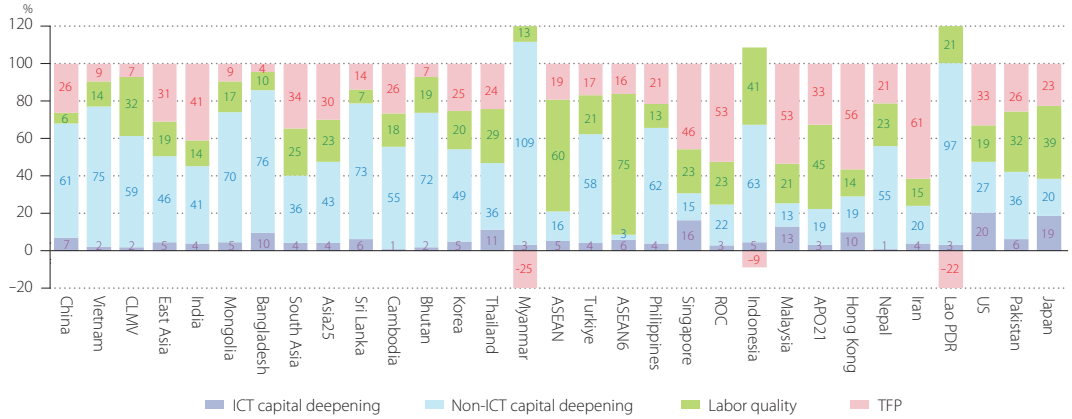

Figure 5.23 Contribution Shares of Labor Productivity Growth, 2000–2021
——Contribution shares of ICT and non-ICT capital deepening, labor quality, and TFP

Unit: Percentage. Source: APO Productivity Database 2023. Note: The countries with negative growth in labor productivity are excluded.

5.7 Energy Productivity

Given the current concerns over energy security and climate change we now discuss the relationship between output and energy inputs. In Asia31, to produce 47% of the world output in 2020, 47% of world energy was consumed, and 56% of world CO2 was emitted (Figure 5.24), compared to 14%, 11%, and 8%, respectively, for the EU27.[55] This implies that Asia has lower energy productivity (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.

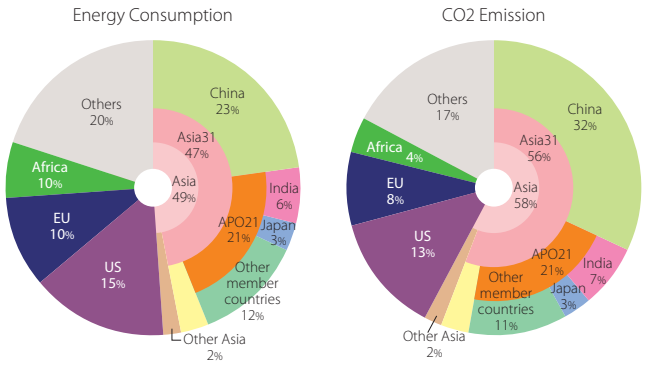

Figure 5.24 Asia in World Energy Consumption and CO2 Emission in 2020

Unit: Percentage. Sources: IEA (2022a and 2022b).

There is considerable diversity in energy productivity among countries in Asia. Figure 5.25 compares energy productivity trends of Japan, China, Asia31, and the EU15 from 1970 to 2020, relative to the US. While

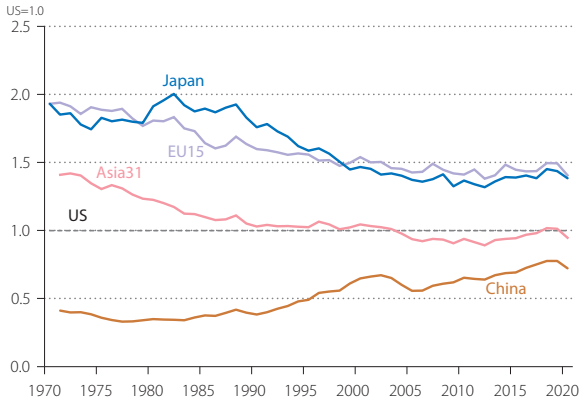

Figure 5.25 Energy Productivity of Japan, China, Asia31, and the EU, 1970–2020
——Index of GDP at constant prices (using the 2017 PPP) per final energy consumption, relative to the US

Unit: Index. Sources: Official national accounts in each country (including adjustments in APO-PDB) and IEA (2022b).

considering that such comparisons at the aggregate level are only rough indicators, given the different industrial structures and climates by country, 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 since the 1990s with its rapid growth, closing the gap with the US to 28% in 2020, in part due to the rising share of services and falling manufacturing share.

The energy productivity measure reflects not only the difference in energy efficiencies of industries and households but also the difference in the industry and production structure of the economy. Thus, energy productivity at the aggregate level is highly dependent on the development stage of the economy and industrial structure (Box 8). Figure 5.26 places countries on the two partial productivity indicators of labor and energy in 2020. Less-developed countries with lower labor productivity (such as the Philippines, 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 dynamic between labor and energy productivities in Figure 5.26 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).

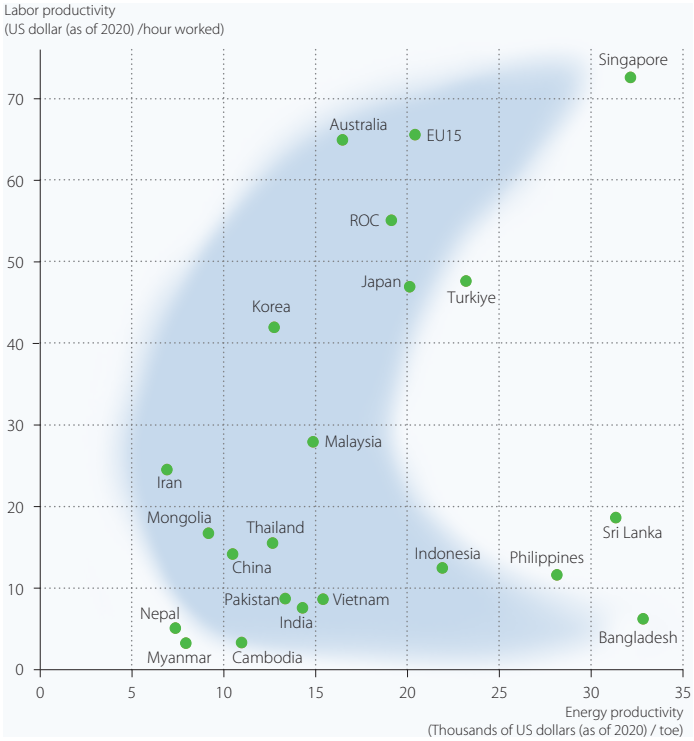

Figure 5.26 Labor Productivity and Energy Productivity in 2020
——Per-hour labor productivity level and energy productivity level

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including adjustments in APO-PDB), IEA (2022b), and APO Productivity Database 2023.

55: Due to the time lag in obtaining energy and CO2 emissions data, the final observation year is 2020 only in Section 5.7.

Box 8 Structural Changes Behind Energy Productivity Improvement

In Japan, energy productivity improvement (EPI) at the aggregate level has been sustained in the postwar economy. However, this gross EPI measure reflects the effects of several structural changes. Figure 5.27 illuminates the sources of the gross EPI (measured as the real GDP per unit primary energy consumption) provided in Nomura (2023a, Chapter 2). The gross EPI is depicted by the line, which is decomposed into the true EPI under the control of two structural changes, i.e., energy quality changes (conversion and sophistication effects) and changes in industrial structure. The energy conversion effect is defined as the ratio of final energy consumption to primary energy consumption,[56] and the energy sophistication effect is defined as the ratio of quality-adjusted energy input to final energy consumption. Although the direct impact of the progress in electrification is a lower energy conversion effect, it also increases the energy sophistication index.

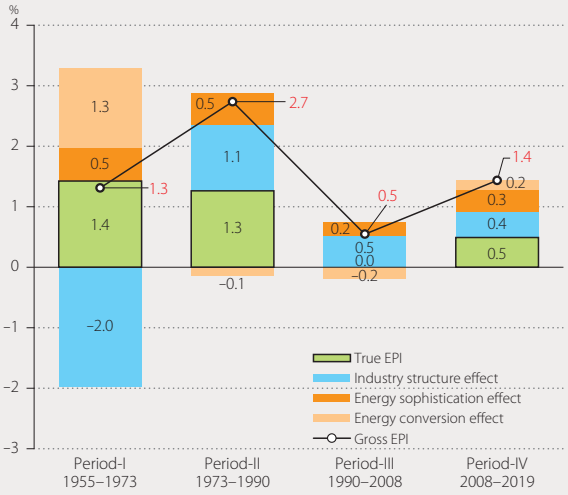

Figure 5.27 Decomposition of Energy Productivity Improvement in Japan, 1955–2019
——Contributions of structural changes and true EPI

Unit: Percentage (average annual growth rates). Source: Nomura (2023a, Chapter 2). Note: The gross energy productivity is the real basic-price GDP per primary energy consumption.

Japan's high-growth period (1955–1973) is characterized by a marked improvement in energy quality, resulting in an overestimation of gross EPI (1.3% per year) by 1.3 percentage points because of the energy conversion effect (mainly due to the improvement of energy conversion efficiency) and by 0.5 percentage points because of the energy sophistication effect. However, this period also saw a rapid expansion of energy-intensive trade-exposed industries, and the industry structure effect caused gross EPI to be underestimated by 2.0 percentage points. The heavy industrialization that led to high economic growth has made it difficult to see true improvement in the gross measure of energy productivity. During this period, while the energy quality effect and the structural change effect offset each other, the true EPI averaged 1.4% per year, slightly higher than the gross EPI (1.3%).

In the post-oil crisis period (1973–1990), the impact of industrial structure changes turned from negative to positive. Because of the industrial structure change and energy sophistication effect, the gross EPI (2.7% per year) is overestimated by 1.1 and 0.5 percentage points per annum, respectively, and the true EPI is revised downward significantly to 1.3% per annum. The industrial structural change of a relative shrinkage of heavy industry greatly inflated the gross EPI in the period that includes the oil crises.
In the 1990–2008 period, true EPI almost disappeared, and energy productivity in the Japanese economy stagnated noticeably. The gross annual EPI rate of 0.5% is only bulked up by industrial structure factors. The Act on Rationalizing Energy Use was established in 1979. Since then, it has been revised on a large scale several times, especially during 2000–2008, when the most aggressive promotion of energy efficiency and conservation was made to tackle the problem of climate change. While there are micro-evaluations that suggest

56: The "final consumption" in economic statistics excludes all intermediate inputs to the production process and thus does not include energy consumption by industry. However, in energy statistics, "final consumption" refers to total domestic consumption, excluding consumption by the energy conversion sector and a net increase in inventories.

policy support in the form of subsidies for energy conservation was effective, at the aggregate level, the true EPI is found to have slowed down significantly since the 1973–1990 period of oil price shocks.

In the recent period 2008–2019, the gross EPI seems to be recovered to 1.4% per year, but it overstates true EPI by 0.4 percentage points because of changes in industry structure, 0.3 percentage points because of the energy sophistication factor, and 0.2 percentage points because of the energy conversion factor. The true EPI is evaluated as 0.5% per annum, close to one-third of the gross EPI.[57] These Japanese experiences illustrate the dangers of assessing policy based only on the gross EPI at the aggregate level.

Figure 5.28 decomposes the sources of CO2 emission growth (from fuel combustion) in the Asian countries during 2000–2020, based on the so-called Kaya identity. This identity decomposes the change in CO2 emissions into three components: changes in real GDP, the carbon intensity of energy, and the energy intensity of GDP (the inverse of energy productivity). In all countries with increasing CO2 emissions (except Nepal), output expansion is the most significant factor in explaining the growth of CO2 emissions. In this period, energy productivity has improved in these countries, except for Iran. However, these improvements are not enough to offset an expansion of energy consumption.[58]

While the developed countries and a few rich Asian countries have a falling carbon intensity of energy, in many Asian economies, the carbon intensity of energy has increased. This is mainly due to an expansion of coal consumption. Japan achieved some improvement in energy efficiency in this period in 2000–2020, but the carbon intensity of energy increased due to a 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.[59] This helped offset the increases in CO2 emissions accompanied by strong economic growth, regardless of

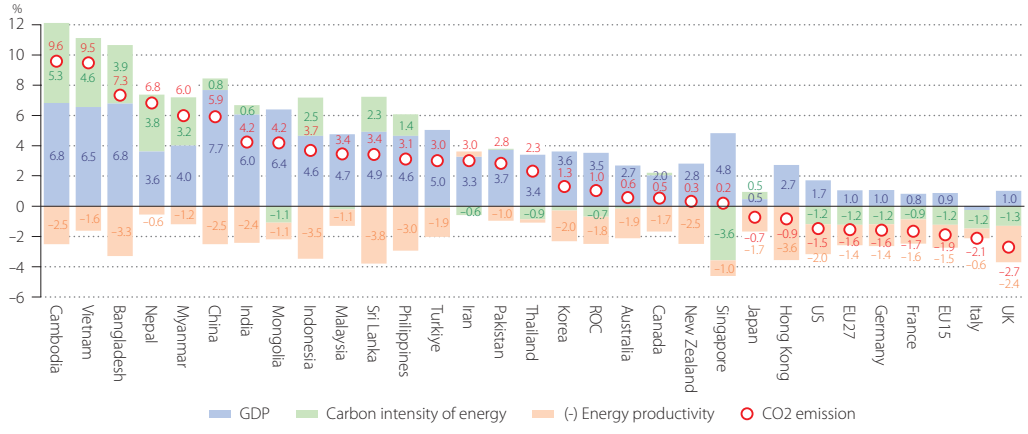

Figure 5.28 Sources of CO2 Emission Growth, 2000–2020

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including adjustments in APO-PDB) and IEA (2022a and 2022b).

57: While analyzing the sources of this recovery in true EPI (0.5% per year), the chemical industry contributed the most to the economy-wide EPI, and there are considerable changes in the product components within this industry. Controlling changes in the composition of chemical products has the effect of shrinking the economy-wide EPI by 0.2 percentage points.

58: Only in countries with declining CO2 emissions has energy productivity growth outpaced output growth (Figure 5.28). However, these aggregate EPIs may be causing so-called carbon leakages (increases in production and emissions in other countries).

a modest energy productivity improvement. In this period, the decoupling of changes in GDP and CO2 emission is apparent in a few developed countries, especially in the EU15 and the US. However, this may be due in large part to the shift of energy-consuming manufacturing activities to Asian countries, where more energy was required, and more CO2 was emitted, to produce the same output. There is still a need for an international institutional design that can effectively curb global emissions.

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 2023) to give readers a wider perspective of the results. For this comparison, the growth accounting for Asian countries is re-estimated based on the OECD-compliant methodology in this section, and only this section, of the Databook. There are two main differences between them. First, land, inventory, and mineral and energy resources are not considered capital input in the OECD-compliant methodology.[60] This adjustment would expand the speed of capital accumulation and thus constrain the rate of TFP growth, compared to the results in the other sections of the Databook. Second, the change in labor quality is not considered. Labor input is simply measured by hours worked, and the calculated TFP growth rate includes the effect of labor quality improvements.[61] Figure 5.29 provides the revision on the two-decade average TFP growth by country from 2000 to 2021, resulting from these two methodological changes. Based on the OECD-compliant methodology, the TFP growth of most Asian countries is increasing by 0–1 percentage points per year.

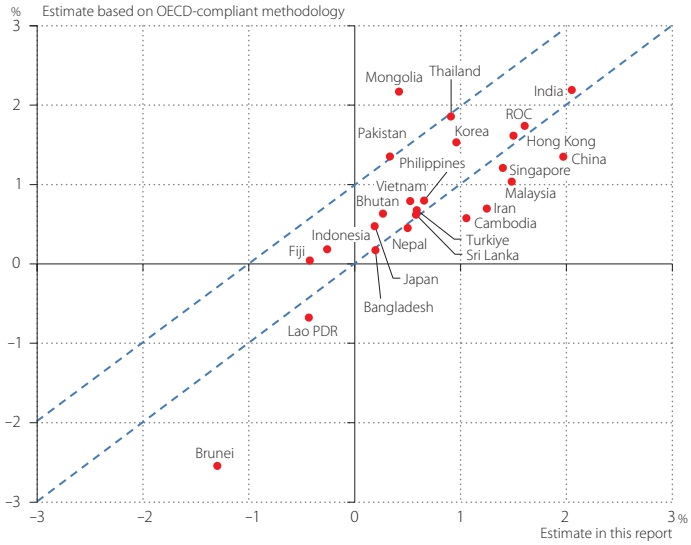

Figure 5.29 Comparison of TFP Estimates Based on Different Methodology, 2000–2021

Unit: Percentage (average annual growth rate). Sources: APO Productivity Database 2023 and OECD (2023). Note: See the main text for differences between the OECD-compliant methodology and the methodology of this report.

59: In Singapore, the share of natural gas in electricity generation reached 95% in 2020 from 18% in 2000, compared to the decrease in oil in power generation from 80% in 2000 to 0.4% in 2020 (IEA 2022b). Singapore receives natural gas via pipelines from neighboring Malaysia and Indonesia and imports LNG from Australia, the United States, Qatar, and Angola, among other countries (US EIA, August 2021).

60: Due to this methodological change, the rate of return of capital is re-estimated endogenously (Section 8.2.8).

61: The multi-factor productivity in the OECD Productivity Database (OECD 2023), 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 Figure 5.30 and Figure 5.31, readers should keep in mind that two additional differences in assumptions remain. First, capital services of residential buildings are included in our estimates of capital input 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). In contrast, 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.

Figure 5.30 compares the sources of growth accounting between Asian countries (based on the OECD-compliant methodology) and OECD countries (OECD 2023) for 2000–2021. Using the common methodology, we see that 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 5.31 plots the per capita GDP level in 2021 and the TFP contribution share in each country from 2000 to 2021 for the Asia25 economies (dark dots) and compares this with the share for OECD countries (white circles). There is a wide range of share contributions among the OECD countries on the right side of Figure 5.31 and a wide range among middle-income Asian countries. There are no significant differences in the roles of TFP contribution to economic growth between them.

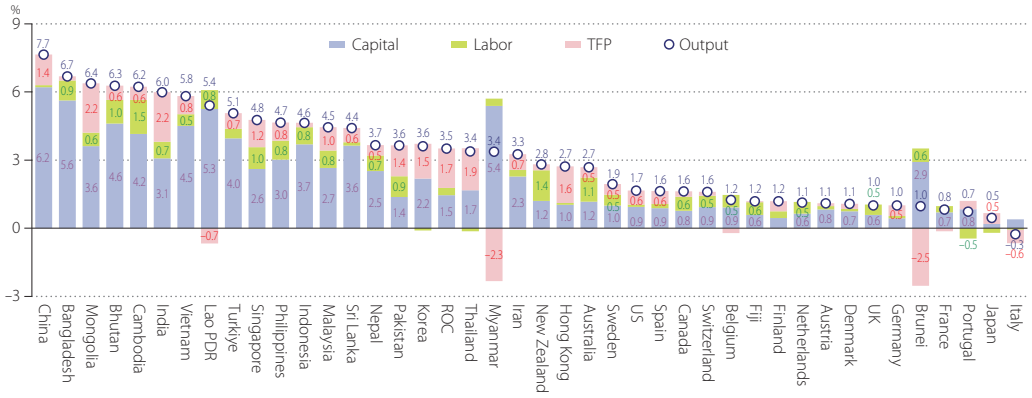

Figure 5.30 Comparison of Sources of Economic Growth with OECD Countries, 2000–2021
——GDP growth and contributions of capital, labor (hours worked), and TFP (based on the OECD-compliant methodology)

Unit: Percentage (average annual growth rate). Sources: APO Productivity Database 2023 for the Asia25 economies and the US. The OECD.Stat (Dataset: Multi-Factor Productivity) and OECD (2023) for OECD countries (except Japan, Korea, Turkiye, and the US). Notes: 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 2020.

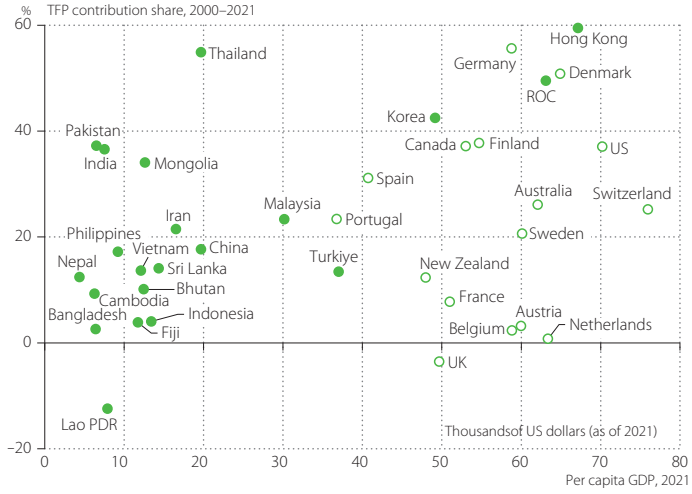

Figure 5.31 Comparison of TFP Contribution Share with OECD Countries, 2000–2021
——Contribution share of TFP in economic growth (based on the OECD-compliant methodology)

Unit: Percentage (contribution share) for the vertical axis and thousands of US dollars for the horizontal axis. Sources: APO Productivity Database 2023 for the Asia25 economies and the US. The OECD.Stat (Dataset: Multi-Factor Productivity) and OECD (2023) for OECD countries (except Japan, Korea, Turkiye, and the US). Notes: 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 2020.

Box 9 Labor Share and Its Sensitivity to TFP Estimates

TFP computations based on the growth accounting framework depend on data often difficult to observe. One challenge arises from calculating compensation for self-employed individuals and unpaid family workers. Moreover, certain Asian countries do not include estimates for the Compensation of Employees (COE) in their official national accounts. In the Asian QALI Database, labor income for total employment is estimated to be consistent with finely classified labor inputs and wages based on the assumptions described in Section 8.3.3. A reassessment of this assumption in the future would directly impact TFP estimates by revising labor shares. It would indirectly affect estimates of the ex-post rate of return, consequently influencing the aggregate measure of capital services.

The right chart of Figure 5.32 presents the employee income share (the ratio of COE to the basic-price GDP at current prices) in 2021, based on the official national accounts and Asia QALI Database 2023 in the Asia25 economies and the US. Among Asian countries, there are substantial variations in the COE share from 17% to 63%. As illustrated in the left chart, these differences do not necessarily correlate with gaps in the share of employees in total employment. For instance, while Brunei, Malaysia, and Turkiye exhibit high employee shares of 95%, 80%, and 75%, respectively, their corresponding COE shares in 2021 are only 30%, 40%, and 30%. The COE share depends on various factors such as industry structure and the size of the informal sector, and their estimates are not always precise.

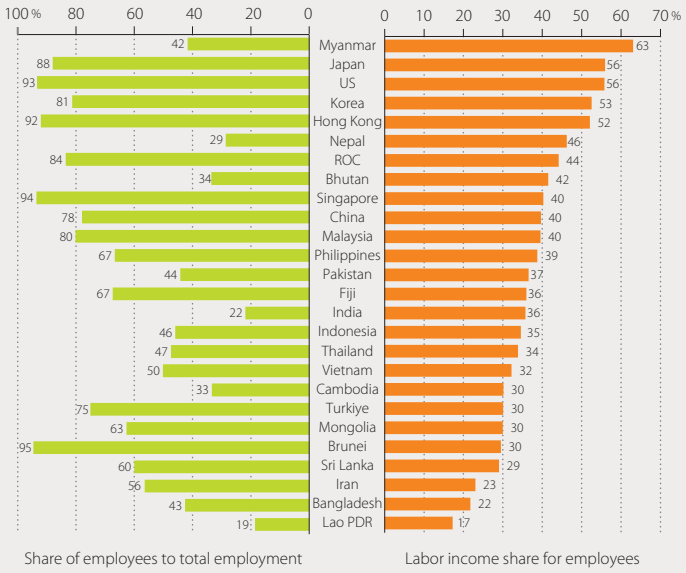

Figure 5.32 Employee Labor Income Share in 2021

Unit: Percentage. Sources: Official national accounts in each country (including adjustments in APO-PDB) and Asia QALI Database 2023.

Figure 5.33 illustrates the sensitivity of TFP-growth estimates from 2010 to 2021 by changing the labor income share. 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 5.5) is improved much faster over a given period than capital productivity (Figure 5.21), the growth of which frequently tends to be negative. The TFP estimate reflects more labor productivity improvement when the labor share increases. In the case of Vietnam, the country with the strongest performance in this period, the average TFP growth rate for 2010–2021 is 1.9%. But, if the labor share in its current estimates were overestimated by 10%, the true TFP growth rate would be revised to 1.4%. 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 that in Figure 5.33.

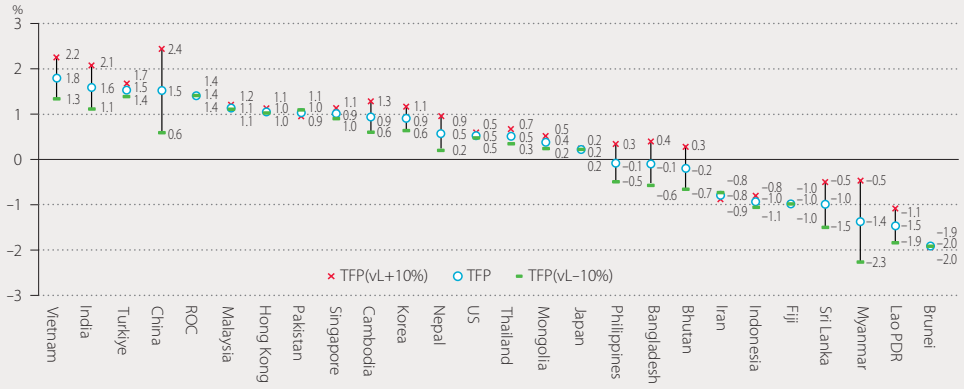

Figure 5.33 Sensitivity of TFP Estimates to Changes in Labor Share, 2010–2021
——Growth in total factor productivity

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

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 2021 in Asia25 (Figure 6.6), down from 63% in 1980. Its share in total value added decreased more moderately, from 17% to 9% over the same period (Figures 6.1 and 6.9).
- Manufacturing is a significant sector, accounting for over 20% of total value added in 12 Asian countries in 2021 (Figure 6.1 and Table 9.15). It is particularly prominent at 35% in ROC, 28% in Korea, 27% in Thailand, and 26% 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 6.3 and 6.15).
- In labor productivity growth by region, the manufacturing sector's contribution is significant at 31% in East Asia in 2010–2021 but remains somewhat moderate in CLMV at 25% and South Asia at 17% (Figure 6.18). In South Asia, 62% of the labor productivity growth is explained by improvement in the service sector, compared to 35% in East Asia and 31% in CLMV (Figure 6.19).

Industry decomposition gives insight into the sources 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 resilient in weathering economic shocks. On the other hand, reliance on a narrow industry base leaves an economy more vulnerable to shocks and 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.[62]

6.1 Industrial Structure

Table 3.1 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 6.1 regroups countries based on the same set of criteria as in Table 3.1 but applies it to 2021 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.[63] 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 6.1 shows the industry composition of the Asian economies and regions in

62: Constructing the industry origins of labor productivity growth requires collecting data from different sources. Data inconsistency issues arising from the fragmentation of national statistical frameworks 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 unavailable, series are spliced together using different benchmarks and growth rates. Data inconsistencies in terms of concepts, coverage, and data sources have yet to be fully treated, although levels of breakdown are deliberately chosen to minimize the potential impact of these inconsistencies. In constructing APO-PDB 2023, we have comprehensively examined the problems of time-series industry data connections in each Asian country, but issues remain. Readers should bear these caveats in mind in interpreting the results.

Table 6.1 Country Groups Based on Current Economic Level and Catching-Up Pace, 2010–2021
——Level and average annual growth rate of per capita GDP at constant market prices, using the 2017 PPP

Per capita GDP level in 2021, relative to the US	Average annual rate of catch-up to the US during 2010–2021					
	(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, Germany, Saudi Arabia	Bahrain, Hong Kong, Korea, New Zealand	ROC		
(D3) 40% ≤ - < 70%	Oman	EU27, France, Japan, UK		Malaysia		Turkiye
(D4) 20% ≤ - < 40%	Iran	Thailand		Sri Lanka		China
(D5) 10% ≤ - < 20%	Fiji		Lao PDR	Bhutan, Indonesia, Philippines	Mongolia	India, Vietnam
(D6) < 10%		Myanmar	Pakistan	Nepal		Bangladesh, Cambodia

Sources: Official national accounts in each country, including adjustments in APO-PDB. Notes: The annual catch-up rates in the column are based on the estimates for 2010–2021. Another country grouping is provided in Table 3.1.

2021, with the reference chart on GDP per capita (using the 2017 PPP) at the left of Figure 6.1.[64] In the figure, the countries are listed in descending order of GDP per capita. There is an obvious negative correlation between the share of the primary industry and income per capita.[65] The changes in industry shares of value added are presented in Table 9.15.

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 forward in economic development. It accounts for 20% more of the total value added in 12 of the Asian countries compared in Figure 6.1. Figure 6.2 relates estimates of TFP growth during 2010–2021 to the shares of manufacturing in 2021. A positive correlation between them in past decades is no longer clear in the 2010s but is apparent for the group of high-income countries, such as Japan, the Asian Tigers, as well as for the group of middle-income countries. Thailand is an exception in the middle group, with slow growth in TFP despite its high manufacturing ratio in this period.

63: In Chapter 5, GDP is adjusted to be valued at basic prices for all countries (if the official estimates are unavailable, they are the estimates in APO-PDB). 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 Turkiye. See Section 8.1.7 for the details.

64: 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 have already switched to the ISIC Rev.4. See Appendix 10 in the 2018 edition of Databook for the concordances between the industry classification used in Databook and the ISIC Rev.3 and Rev.4.

65: 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.

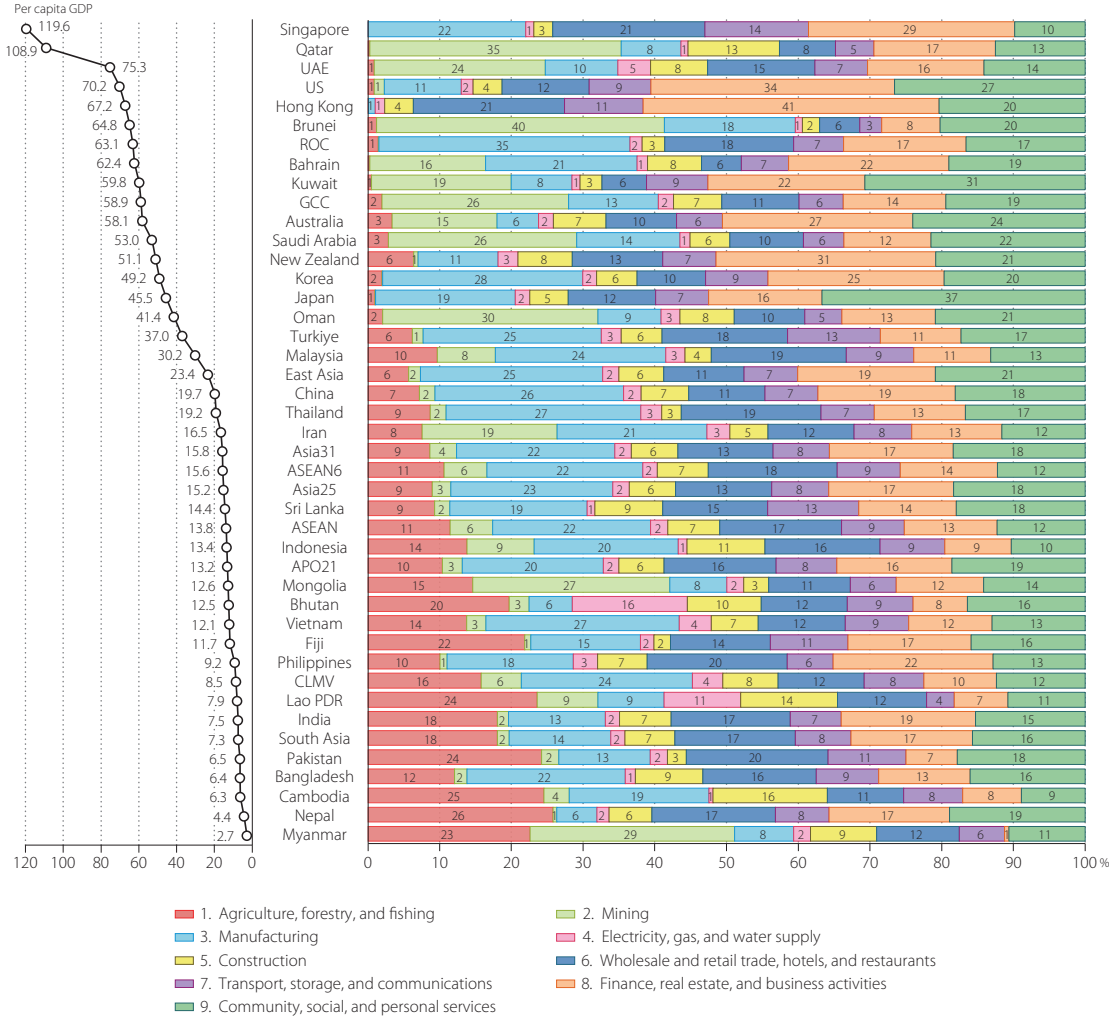

Figure 6.1 Industry Value-added Share in 2021
——Industry share of GDP at current prices

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB. Note: The reference chart at the left shows per capita GDP, using the 2017 PPP for GDP, the reference year 2021 (thousands of US dollars).

Figure 6.3 shows the breakdown of the industry GDP shares in the manufacturing group, comprising nine sub-industries, for 17 selected Asian countries, for which data are available, and the US in 2021.[66] Countries are sorted based on the size of the share of industry 3.8–machinery and equipment manufacturing. The dominance of machinery and equipment 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.

66: 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.

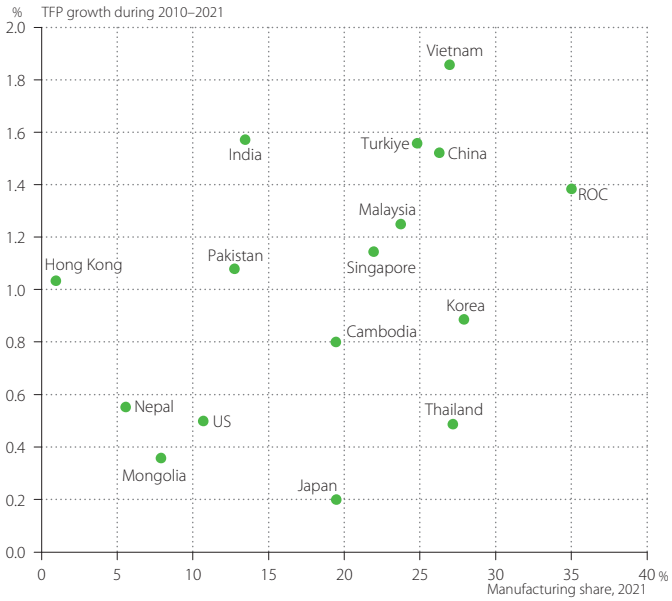

Figure 6.2 Manufacturing GDP Share and TFP Growth, 2010–2021
——GDP share of manufacturing in 2021 and TFP growth

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 adjustments in APO-PDB) and APO Productivity Database 2023. Note: Countries with negative TFP growth in this period are excluded.

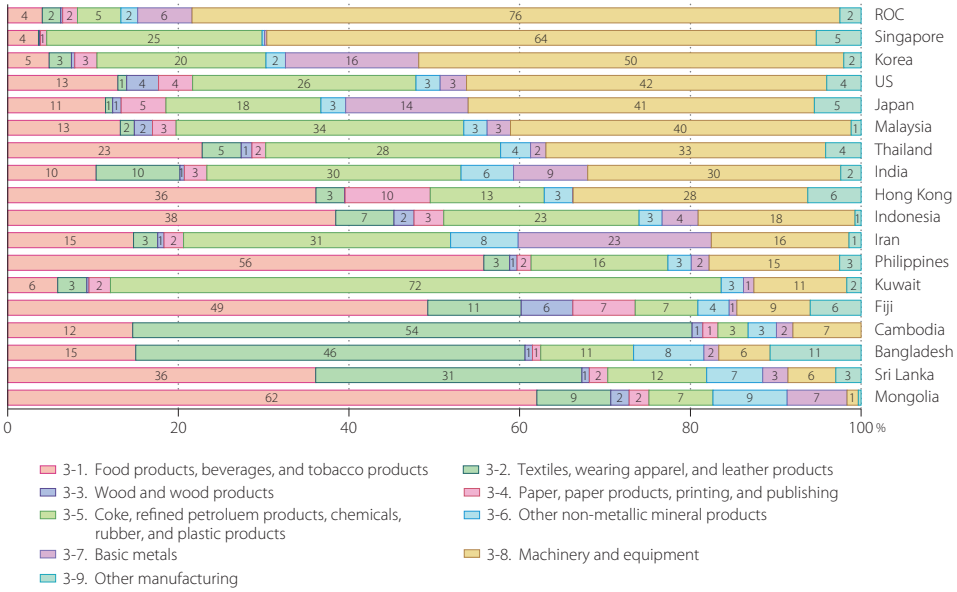

Figure 6.3 Industry Shares of Value Added in Manufacturing in 2021
——Shares of sub-industry GDP at current prices in manufacturing

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB.

Figure 6.4 shows how the share of the agriculture, forestry, and fishing industry in total value added dropped over time in the poorer Asian economies with per capita GDP lower than 40% of the US level in 2021. This could reflect the 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 2021 (Table 6.1), the declining trend is evident, as shown in the right chart of Figure 6.4. 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).

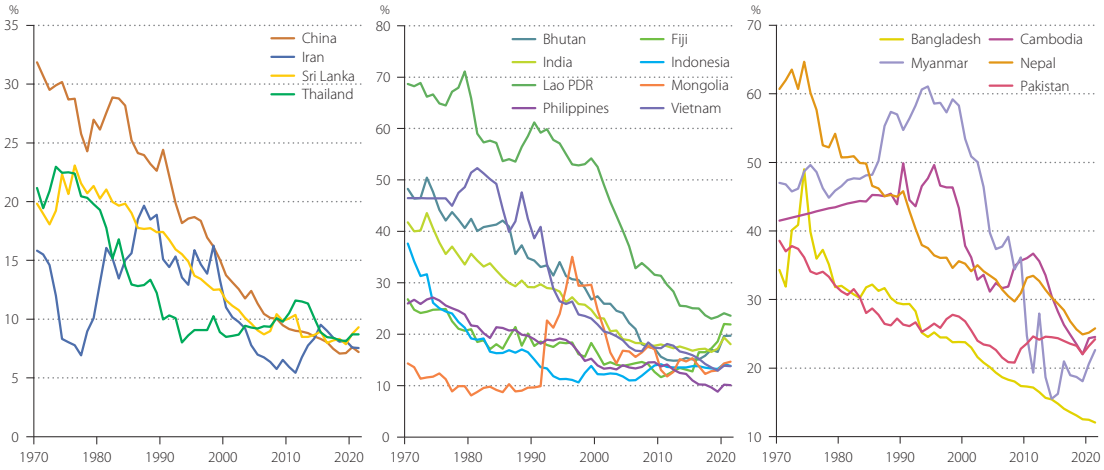

Figure 6.4 Value-added Share of Agriculture, Forestry, and Fishing, 1970–2021
——Share of agriculture, forestry, and fishing sector in GDP at current prices

Unit: Percentage. Sources: Population census and labor force survey in each country, including adjustments in APO-PDB. Note: Countries are grouped according to the per capita income levels in 2021 relative to the US, as defined in Table 6.1.

Box 10 Unveiling the Sources of Growth in Resource-Rich Asia

Ignoring the depletion of mineral and energy resources (MER) leads to overestimating net income in resource-rich countries. This also impacts measured TFP growth. This edition of the Databook starts to consider MER as capital inputs. The data has been developed at KEO since 2020 within the Asia Natural Resources Database (ANRD). Abstracts of the ANRD 2023 are provided in Section 8.2.7.

Figure 6.5 depicts the impact of considering MER assets on measured TFP for Brunei, Mongolia, and Indonesia, with reference charts in the bottom row presenting the MER capital share in the total capital stock. Estimates of MER stocks in the ANRD are adjusted in relation to realized production rather than simple reserves. While the accuracy of the production measurement needs to be understood within the margin of error, two trends can be identified in terms of the impact on TFP. One is that the original high TFP growth rates seen in Brunei in the 1970s and Mongolia since the late 2000s are explained by the expansion of economically available MER stocks (mainly oil for Brunei and coal for Mongolia); when MER capital is included, the TFP growth rates are more moderate.

On the other hand, the continuous downward trends in TFP observed in Brunei and Indonesia since the 1980s can be explained significantly by declining MER stocks. As a result, the TFP path is revised upwards. These two trends show that MER considerations are essential for meaningful TFP estimates in resource-rich countries.

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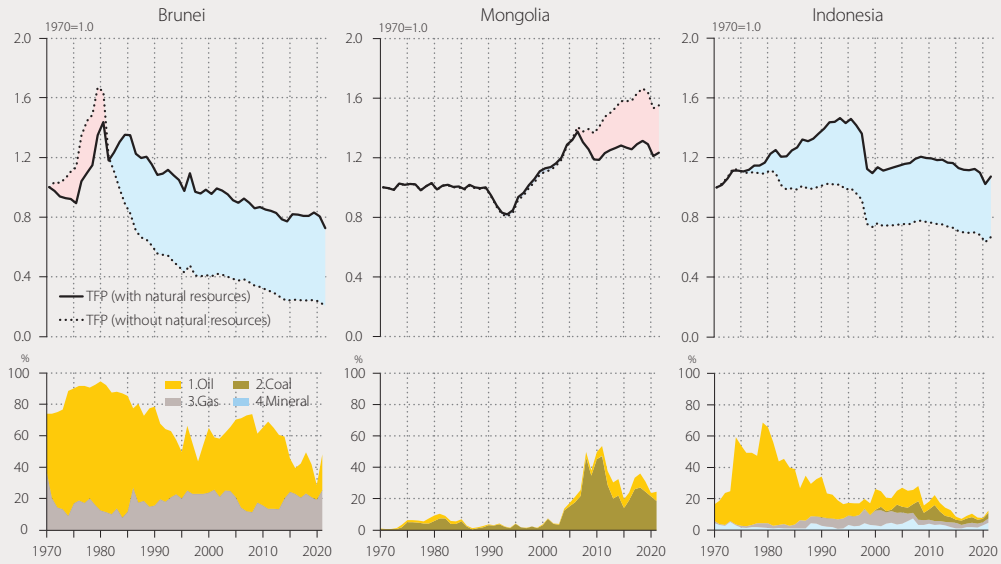


Figure 6.5 Impacts of Mineral and Energy Resources on TFP in Selected Countries, 1970–2021

——TFP indices with and without consideration of MER capital

Unit: Index (TFP in 1970=1.0) in the top row and percentage for reference charts in the bottom row. Sources: APO Productivity Database 2023 and ANRD 2023. Note: The reference chart shows the stock share of MER in total nominal net capital stocks (including MER).

6.2 Employment Allocation

Despite the relative decline in the share of agriculture, forestry, and fishing in total value added, employment in the sector still accounts for 30% of total employment for Asia in 2021. Figure 6.6 shows industry shares in total employment by country and region, ranking them by per-worker labor productivity in 2021, which is presented in the reference at the left.

Figure 6.7 traces the historical trajectory of Japan's employment share of agriculture for 1885–2021. Share for each country in 2021 is mapped against this history (as circles). Large shares of agriculture, forestry, and fishing employment—over 30% in nine 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 following the Japanese history.

Figure 6.8 gives the trend of agriculture employment share over time for the same three groups of countries as in Figure 6.4, i.e., D4, D5, and D6. These trends suggest 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.[67] This trend is unmistakable in most of the countries plotted in Figure 6.8.[68] Between 1970 and 2021, the employment share in this sector dropped from 82% to 22% in China and from 77% to 32% in Thailand.

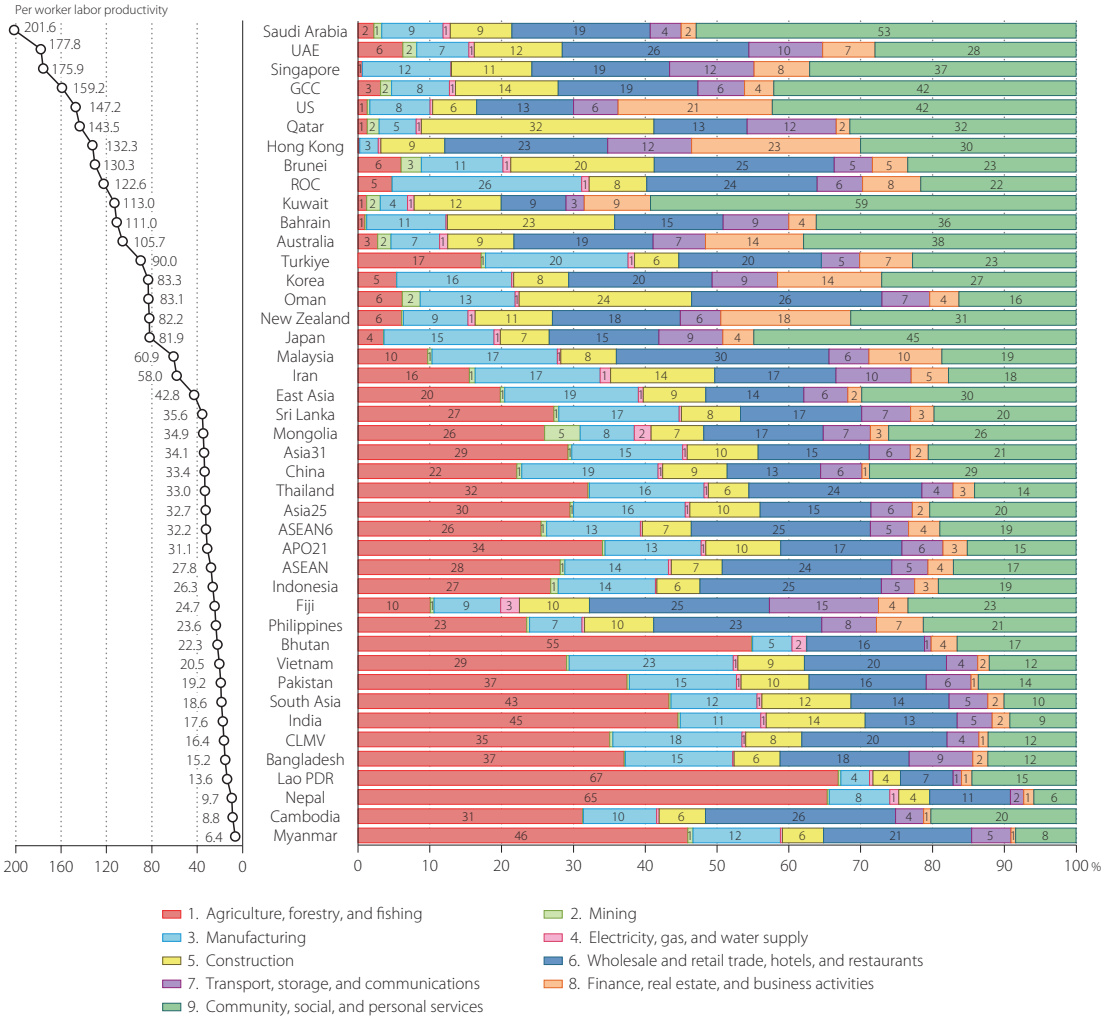


Figure 6.6 Industry Shares of Employment in 2021

——Shares of the number of employment by industry

Unit: Percentage. Sources: Population census and labor force survey in each country, including adjustments in APO-PDB. Note: The reference chart at the left shows per-worker labor productivity, using the 2017 PPP and the reference year 2021 (thousands of US dollars).

67: Nepal's employment-by-industry figures are constructed by interpolating benchmark data from its labor force survey and population census. Figure 6.8 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.

68: However, the decline in a share does not always reflect an actual fall in employment for the agriculture sector; rather, it could reflect total work rising faster than employment in agriculture. Countries experiencing a consistent fall in actual employment in the agriculture sector are, for example, the ROC, Hong Kong, Japan, and Korea. In contrast, employment has risen in Bangladesh, India, Iran, Nepal, and Pakistan. Other countries such as Cambodia, Indonesia, Malaysia, Singapore, Thailand, and Vietnam have yet to establish a trend in employment growth. However, China has seen employment in agriculture falling since the turn of the millennium.

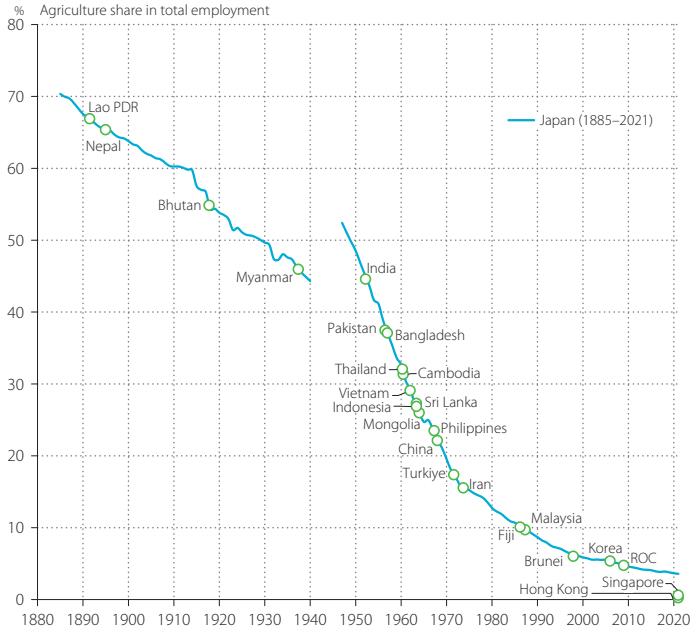
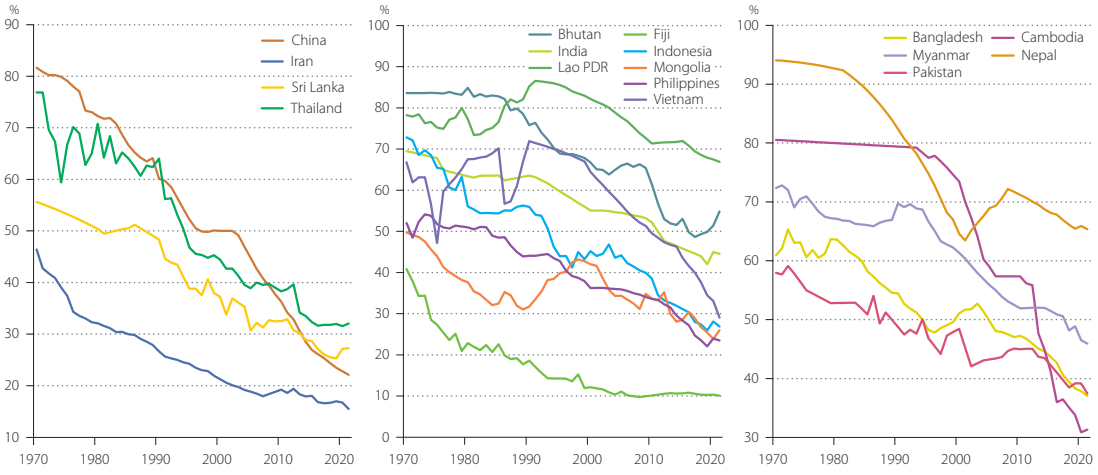


Figure 6.7 Historical Employment Share of Agriculture in Japan and Current Level of Asia in 2021

——Share of the number of employment in agriculture, forestry, and fishing for Japan from 1885 to 2021 and for Asian countries

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



Group–D4 (20%≤···<40%) Group–D5 (10%≤···<20%) Group–D6 (<10% of the US)

Figure 6.8 Employment Share in Agriculture, Forestry, and Fishing, 1970–2021

——Share of number of employment in agriculture, forestry, and fishing

Unit: Percentage. Sources: Population census and labor force survey in each country, including adjustments in APO-PDB. Note: Countries are grouped according to the per capita income levels relative to the US, as defined in Table 6.1.

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 industries.[69] Thus, countries with

69: 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 in other sectors.

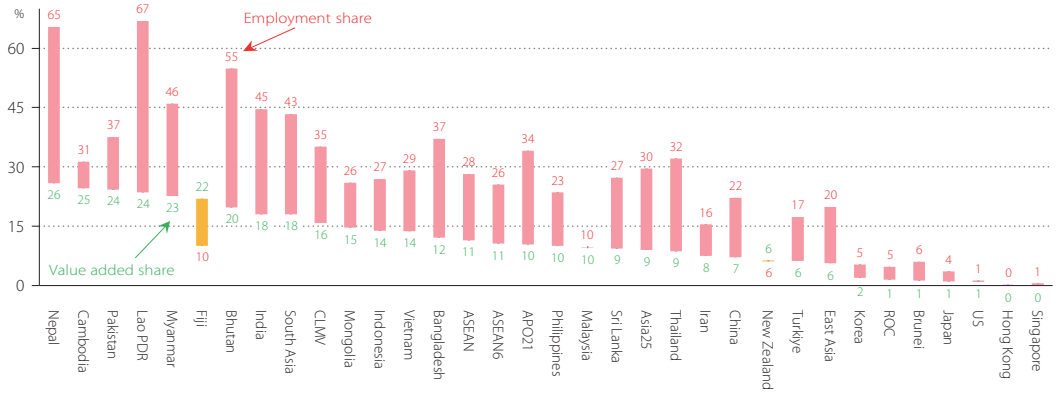


Figure 6.9 Value Added and Employment Share of Agriculture, Forestry, and Fishing in 2021
——Industry share of GDP at current prices and the number of employment

Unit: Percentage. Sources: Official national accounts, population census, and labor force survey in each country, including adjustments in APO-PDB.

a 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 6.9, suggesting that labor productivity in this sector is higher than that achieved in Asian countries.[70] The reverse is true for the finance, real estate, and business activities industry, which often generate a much greater value-added share than its employment share suggests. In 2021, the sector accounted for 34% of total value added generated by 21% of US employment versus the 17% and 2% in Asia25, respectively (Figure 6.1 and Figure 6.6).

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

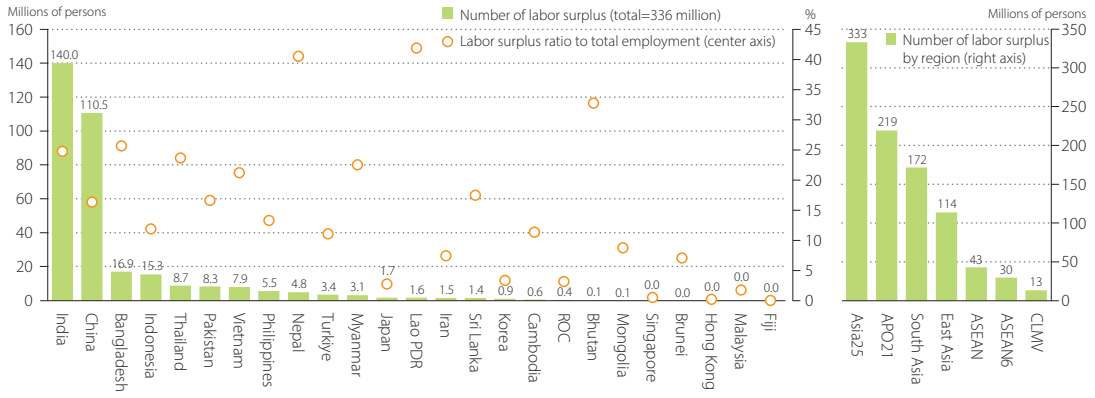


Figure 6.10 Labor Surplus in 2021
——Number and ratio of labor surplus

Unit: Millions of persons in the marginal axis and percentage in the center axis. Sources: Our estimates are based on the APO Productivity Database 2023.

70: Jorgenson, Nomura, and Samuels (2016) indicates agriculture, forestry, and fishery sector is one of the industries which realized a consistently high TFP growth 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 R&D) in new agricultural technology in the US.

agriculture, forestry, and fishing in the status of zero labor surplus,[71] the number of labor surplus reaches 333 million persons for Asia25 in 2021. Figure 6.10 presents the country contributions and regional totals (right chart) of the estimated labor surplus. It suggests a more than 100 million labor surplus in India and China in 2021.

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 6.11 traces the trajectory of the relation between the growth of manufacturing GDP and growth of manufacturing employment 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 illustrates the growth rate in the most recent decade, 2010–2021. 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 6.11a). However, since the 1990s, manufacturing has not been an employment absorption sector, 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 6.11c).

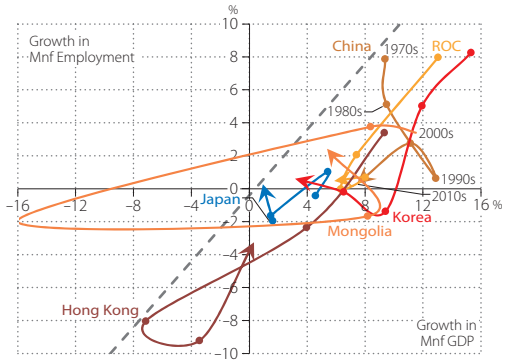


Figure 6.11a: East Asia

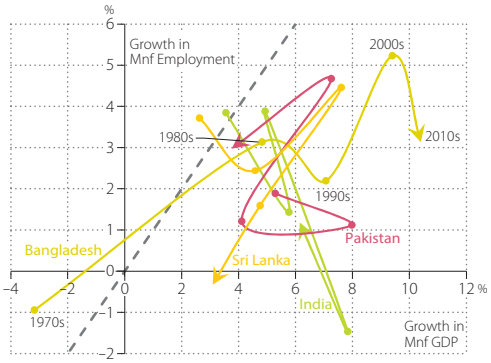


Figure 6.11b: South Asia

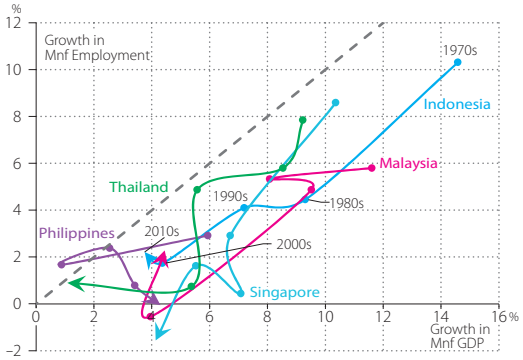


Figure 6.11c: ASEAN6

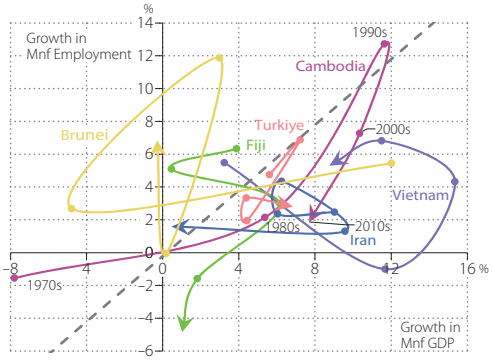


Figure 6.11d: CLMV and Other Asian

Figure 6.11 Job Creation in Manufacturing, 1970–2021
——Growth in Manufacturing GDP at constant prices and Manufacturing employment

Unit: Percentage (average annual growth rate). Sources: Population census, labor force survey, and official national accounts in each country, including adjustments in APO-PDB. Notes: Each dot represents the average annual growth rate in manufacturing (mnf) in the 1970s, 1980s, 1990s, 2000s, and 2010s (2010–2021). The arrows indicate the rate in the 2010s.

6.3 Industry Origins of Economic Growth

The industry origins of economic growth by country and region for 2010–2021 are shown in Figure 6.12. China and India have been the two main drivers among the Asian economies, accounting for 53% and 18% during 2015–2021, respectively, as shown in Figure 3.7. However, the industry composition's origins of economic growth in China and India are quite different. China's economic growth has been fueled by manufacturing sector expansion, whereas India's economic growth has been led by service sector expansion. Development started shifting towards services in China and towards manufacturing in India in recent years.

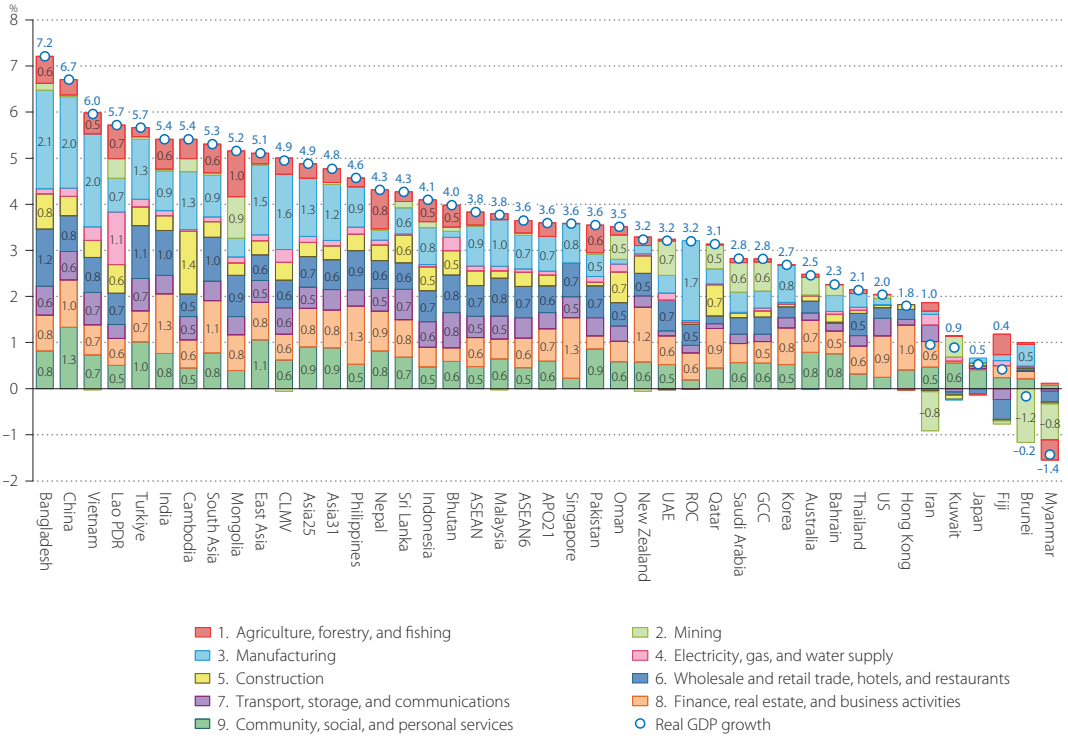


Figure 6.12 Industry Origins of Economic Growth, 2010–2021

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

Figure 6.13 contrasts industry contributions to economic growth among regions for the recent decade of 2010–2021, compared with the past two-decade averages for 1970–1990 and 1990–2010.[72] For half a century, the contribution of manufacturing to Asian economic growth has been significant: on average, from 1990 to 2010, 29% of Asia25's economic growth came from manufacturing expansion, well above 18% in the more mature US economy. From 2010 to 2021, the contribution from manufacturing growth shrank to 26% 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 7% 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 it did not increase as much in South Asia and declined in ASEAN6.

71: In this calculation, the mining sector is excluded in employment and value-added totals.
72: Asian averages are calculated using the Törnqvist index to aggregate each country's industry GDP growth rates based on the two-period average of each country's shares of industry GDP to the gross regional products as weights.

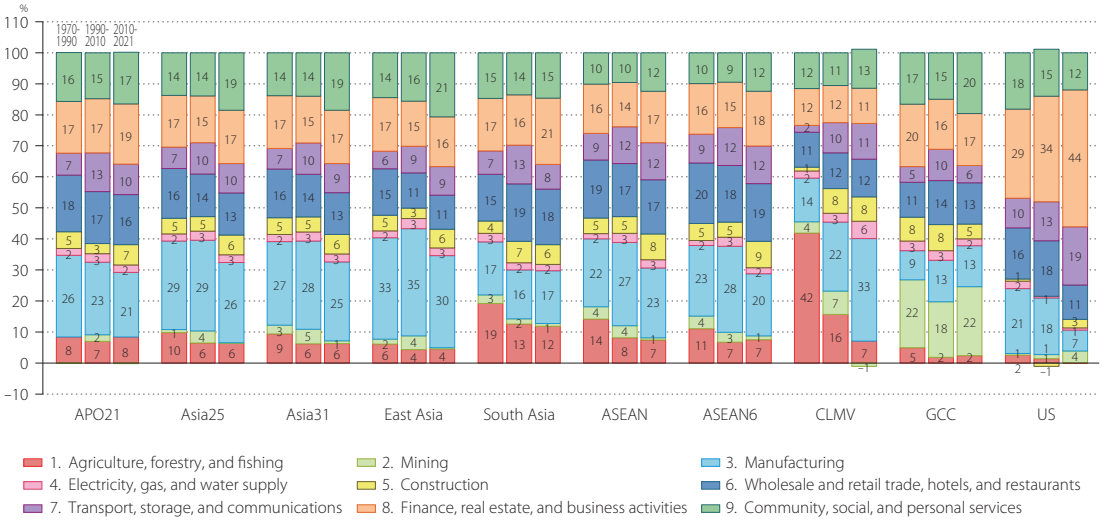


Figure 6.13 Industry Origins of Regional Economic Growth, 1970–2021
——Contribution shares of industry GDP growth by region in 1970–1990, 1990–2010, and 2010–2021

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB.

There are considerable differences in experience among countries in manufacturing sector contribution to economic growth. Figure 6.14 shows the experience of each country in 2000–2010 (circles) and 2010–2021 (dark dots), sorted by the contribution of manufacturing to economic growth.[73] The left chart gives the absolute percentage point contributions, and the right chart gives the contribution shares. 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

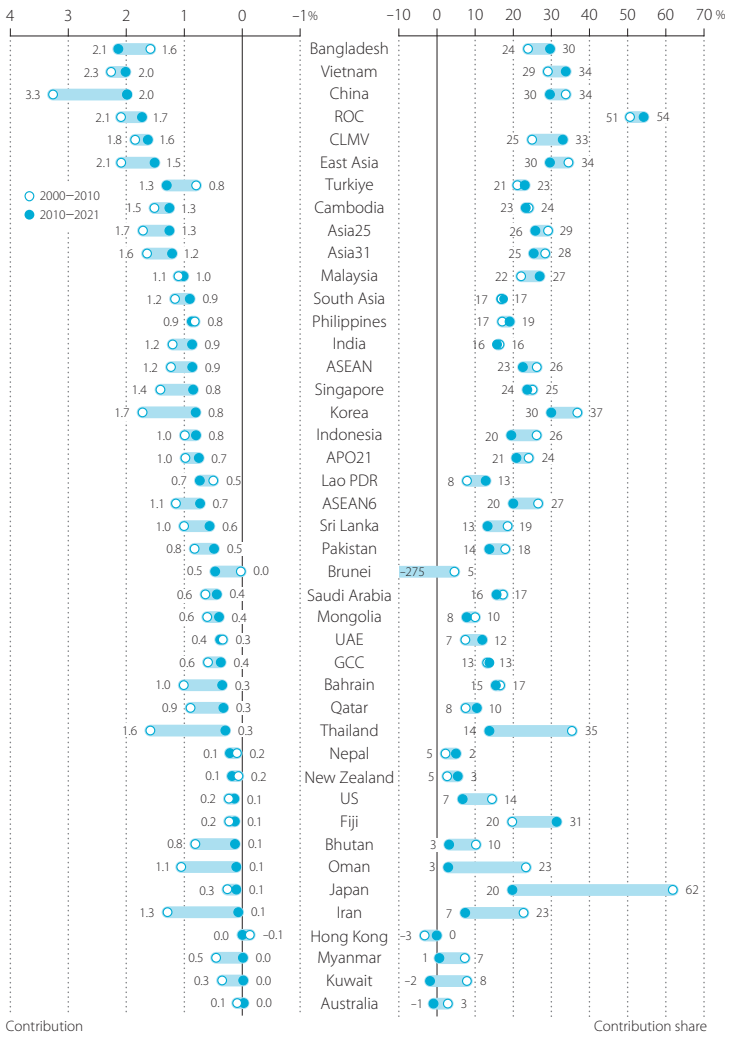


Figure 6.14 Contribution of Manufacturing to Economic Growth, 2000–2021
——Contributions and contribution shares in 2000–2010 and 2010–2021

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

in Japan, Thailand, and Iran. The ROC has realized a 50% contribution to economic growth from the manufacturing sector in both periods.

Figure 6.15 illustrates the sub-industry origins of the average annual growth in manufacturing GDP for some selected Asian countries from 2010 to 2021.[74] The expansion of ROC's manufacturing sector is characterized by a considerable concentration in the 3.8–machinery and equipment sector. Bangladesh and Vietnam expanded their high manufacturing shares from 2000–2010 to 2010–2021, driving high economic growth as shown in Figure 6.14. In Bangladesh, more than half of the annual growth rate of over 10% in this period depended on expanding 3.2–textiles, wearing apparel, and leather products. The expansion of the manufacturing sector, skewed by the growth of the textile sector, is also seen in Cambodia.

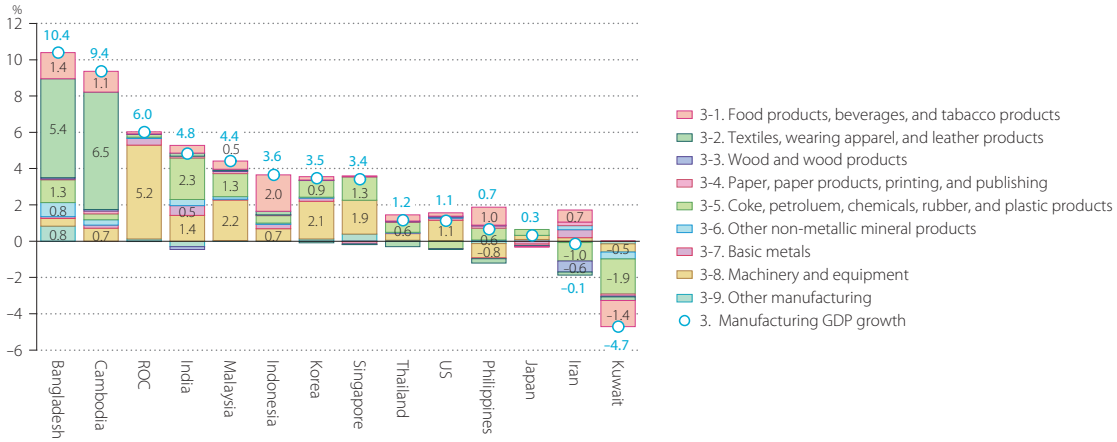


Figure 6.15 Industry Origins of Output Growth in Manufacturing, 2010–2021
——Sub-industry contributions in the manufacturing GDP growth

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

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 on economic growth, as shown in Figure 6.16. The story behind India's growth has been one of services growth. Modern ICT has 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.[75] From 2010 to 2021, India's 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 6.15. To further improve per capita GDP and capitalize on the demographic dividend (Box 4), expansion of labor-intensive manufacturing may be required in India for greater job creation.

73: The Törnqvist quantity index is adopted for calculating the growth in real GDP. Using this index, the growth in 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.

74: Törnqvist quantity index is adopted for calculating the growth in real GDP of manufacturing in the same manner as footnote 73.

75: 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/) Vikram Khanna evaluates that the prospects for the nation's manufacturing sector look bright, despite obstacles ("'Make in India' is finally poised for take-off," *The Straits Times*, July 5, 2023)

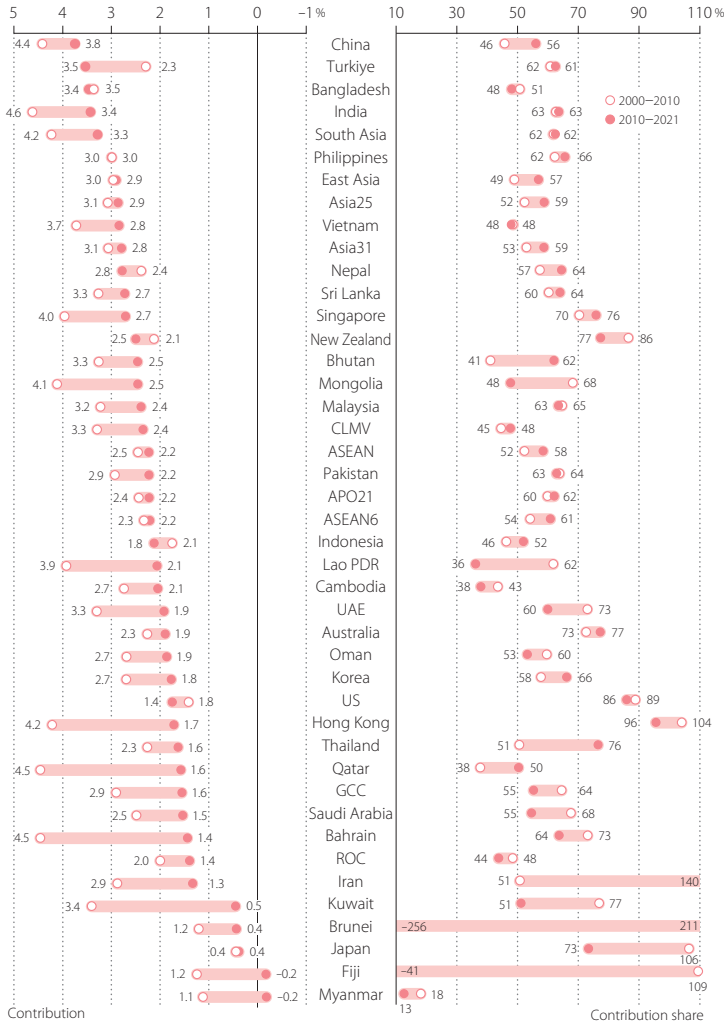


Figure 6.16 Contribution of Service Sector to Economic Growth, 2000–2021

——Contributions and contribution shares in 2000–2010 and 2010–2021

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

6.4 Industry Origins of Labor Productivity Growth

This section analyzes the industry sources of labor productivity growth in Asia.[76] Figure 6.17 shows the industry origins of average labor productivity growth per year from 2010 to 2021.[77] 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 non-manufacturing

76: 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 in less developed countries often need higher frequency and industry details. The industry classification of employment data does not necessarily correspond to those of industrial output data. Consequently, the quality of labor productivity estimates at the industry level must be improved. 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.

77: Not all Asian countries are included, as employment by industry is unavailable for some countries. Labor productivity growth in Table 9.17 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 6.17 (industry contribution in Table 9.17) 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 sectors 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.

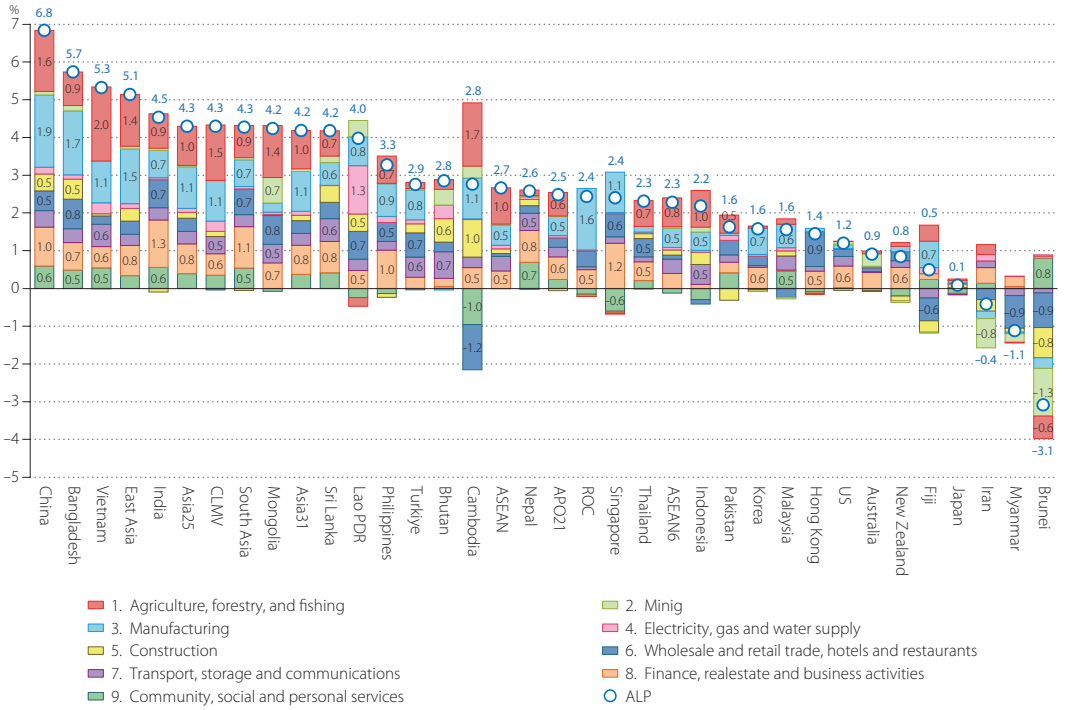


Figure 6.17 Industry Origins of Labor Productivity Growth, 2010–2021
——Growth in per-worker GDP at constant prices and industry contributions

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

sectors in Asia25, i.e., manufacturing (at 4.5% on average per year), agriculture, forestry, and fishing (5.9%), construction (3.1%), electricity (2.6%), and transport, storage, and communications (3.4%) all have sizable growth, as provided in Table 9.17.

Looking at changes by country, Figure 6.18 shows that in many Asian countries, the manufacturing sector's role, which has been the driving force behind labor productivity growth in the

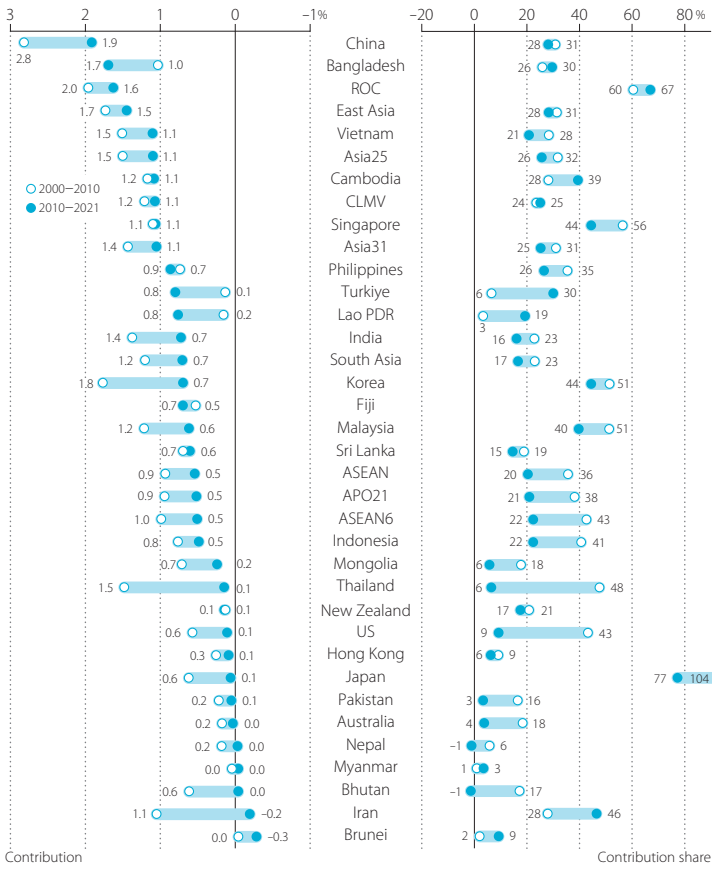


Figure 6.18 Contribution of Manufacturing to Labor Productivity Growth, 2000–2021
——Contributions of manufacturing to per-worker labor productivity growth in 2000–2010 and 2010–2021

Unit: Percentage point (average annual contributions) and percentage (contribution shares). Source: APO Productivity Database 2023.

past, has declined recently. The manufacturing contribution to aggregate labor productivity growth in Malaysia fell to 40% in 2010–2021 from 51% in 2000–2010, and in Korea to 44% from 51%. On the other hand, it still has a significant contribution in the ROC and Singapore, accounting for 67% and 44% of labor productivity improvements in the whole economy, respectively. In CLMV and South Asia, manufacturing contributed moderately to their progress in regional labor productivity at 25% and 17%, respectively, in 2010–2021.

The service sector has traditionally had difficulty increasing productivity, but recent ICT advances are changing this trend. This sector has many ICT-intensive users and can capture the productivity gains from ICT (Box 7). 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 6.17). Among the four industries in the service sector, three in particular are potentially ICT-employing industries: wholesale and retail trade, hotels, and restaurants; transport, storage, and communications; and finance, real estate, and business activities.

Figure 6.19 presents the contribution of services to labor productivity growth by country in 2000–2010 and 2010–2021 (left chart for absolute contributions, right chart for contribution shares). 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. It differs significantly from 31% in CLMV, 33% in ASEAN6, and 35% in East Asia.

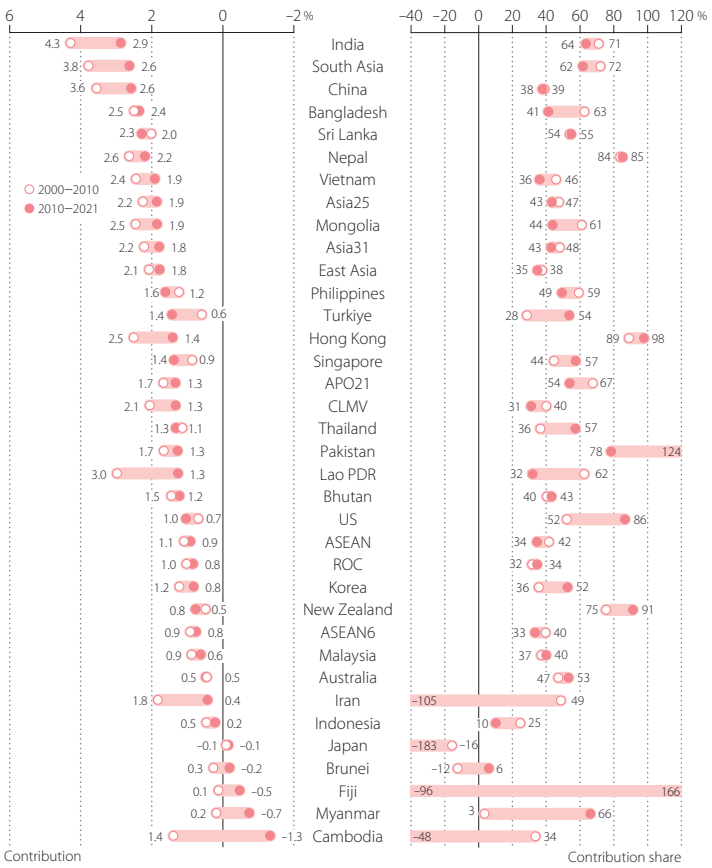


Figure 6.19 Contribution of Service Sector to Labor Productivity Growth, 2000–2021
——Contributions of the service sector to per-worker labor productivity growth in 2000–2010 and 2010–2021

Unit: Percentage point (average annual contributions) and percentage (contribution shares). Source: APO Productivity Database 2023.

Box 11 Premature Deindustrialization in Asia

Deindustrialization, or the shrinkage of the manufacturing sector, has been a major concern in advanced economies for reasons discussed in Rodrik (2016) which calls it "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 economic development because manufacturing is a dynamic sector, typically at the center of sustained economic growth and technological progress (Figure 6.2). The industry also has created massive numbers of jobs for relatively poor people (Figure 6.11). Additionally, it generates labor flows from rural to urban areas, 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 status.

Rodrik points out premature deindustrialization is serious, particularly in Latin America and Sub-Saharan Africa. How about in Asia? Figure 6.20 plots GDP shares of the manufacturing sector in Asian economies, placing the peak of each country's inverse U shape at the center. The US and Japan graphs are typical images of the rise and fall, with peaks above 30% in 1946 and 1970, respectively. The peaks in manufacturing GDP are reached faster than peaks in manufacturing employment shares, which are 1970 in the US and 1976 in Japan. China, the ROC, and Korea reached their peaks above 30% in 1997, 1986, and 2011, respectively, and remain high. Malaysia, Singapore, and Thailand show a similar pattern, with peaks in 2000, 2004, and 2010, respectively.

The Philippines peaked in 1973 and recently held at around 20%. Indonesia is just above 20%. Although these are respectable figures, more room for industrialization may be possible. Cambodia, India, and Pakistan are struggling below 20%. These countries still need to be fully industrialized, requiring further effort to promote the manufacturing sector.

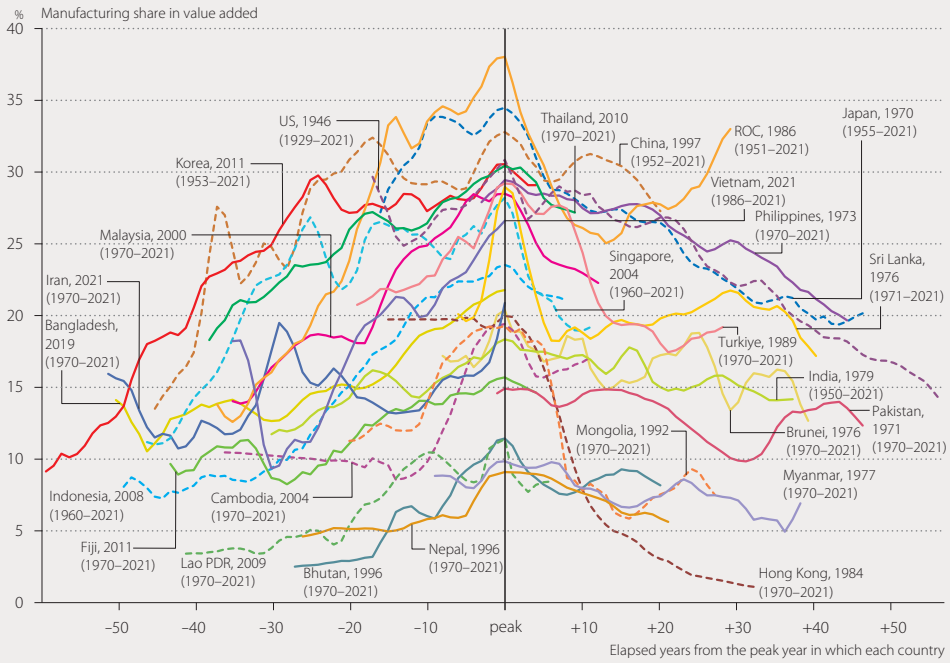


Figure 6.20 Country Peaks in Manufacturing GDP Share, 1970–2021

Unit: percentage. Sources: Official national accounts in each country (including adjustments in APO-PDB) and APO Productivity Database 2023. Note: The lines present the trends based on the three-year moving averages.

On the other hand, the IMF (2018, Chapter 3) suggests that service sectors can 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 6.21 graphs manufacturing share of GDP versus per capita GDP over time and indicates that low- and middle-income Asian countries, with low and stagnated shares of manufacturing GDP, seemingly improved their per capita income level. However, it is uncertain if these countries will continue to grow by skipping the intermediate stage of mature industrialization.

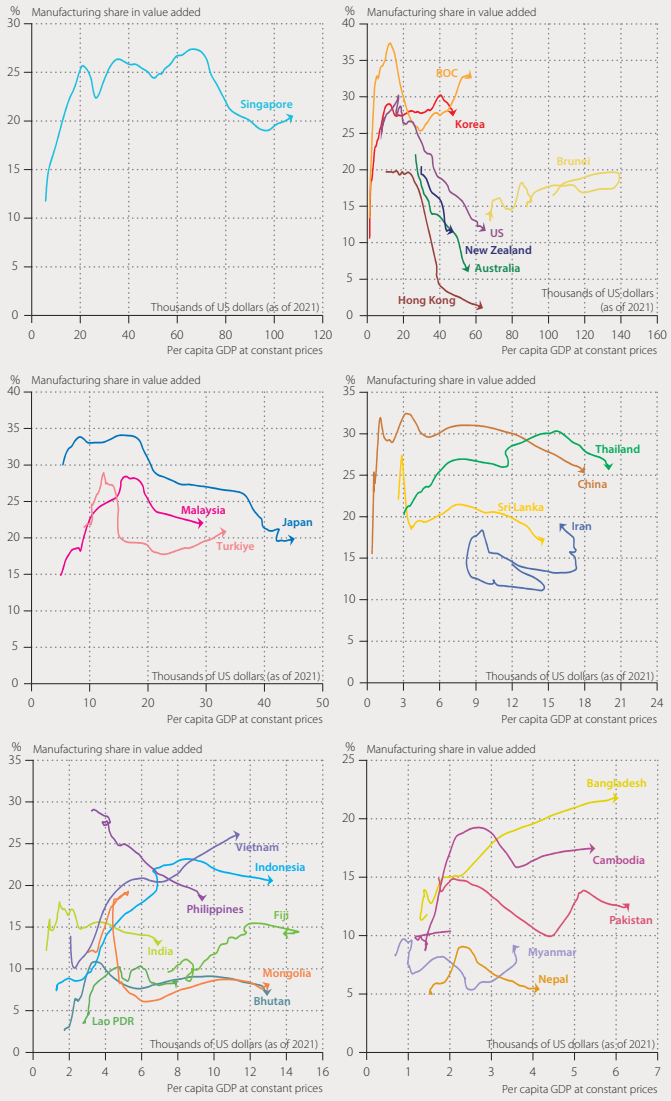


Figure 6.21 Manufacturing GDP Share and Per Capita GDP, 1970–2021

——Five-year moving averages of share of manufacturing GDP and per capita GDP

Unit: Percentage. Sources: Official national accounts in each country (including adjustments in APO-PDB) and APO Productivity Database 2023.

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 7.3 and Table 9.18). The positive trading gain effects that oil-rich countries experienced in the 2000s turned negative in 2010–2021: –0.3 percentage points in Qatar, –0.4 percentage points in Kuwait, and –0.7 percentage points in Saudi Arabia (Figure 7.2).
- 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 7.1).
- Five resource-rich countries in Asia31 have enjoyed a trading gain of over 1.0% per annum from 2000 to 2021. Among them, Mongolia and Saudi Arabia managed to raise 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 price of success (Figure 7.4).

Constant-price GDP captures production volume, not real income. An improvement in the "terms of trade," 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 analogous to 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 4.11.

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. In contrast, 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 domestic expenditure that can be purchased with the current income flow.[78] 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 GDP in real income calculation 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:

78: 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.

annual growth rate of real GDP, real income growth attributed to change in prices of exports and imports (referred to as the trading gain), and the effect of net income transfer.[79]

Figure 7.1 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 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.[80] 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.

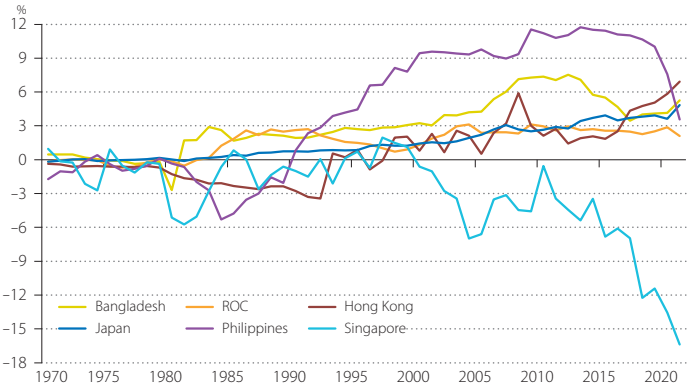


Figure 7.1 Effect of Net Income Transfer on GDP, 1970–2021
——Share of net income transfer in GDP at current market prices

Unit: Percentage. Sources: Official national accounts in each country, including adjustments in APO-PDB.

The crude oil price changes in the recent decade have greatly impacted trading gains in Asian countries. Figure 7.2 compares the trading gain effects between 2000–2010 and 2010–2021. The positive trading gain effects that oil-rich countries experienced in the 2000s turned negative in 2010–2021, including the impact of the Covid-19 pandemic and the recovery: –0.7 percentage points in Saudi Arabia, –0.4 percentage points in Kuwait, and –0.3 percentage points in Qatar. In contrast, the trading gain effects in Pakistan and the ROC turned positive at 0.2 and 0.1 percentage points per year, respectively.

Over a long period, the trading gain effect is, small on average. But over a shorter period, it could be very significant. Figure 7.3 plots real income growth against real GDP growth to show this effect (numbers are provided in Table 9.18). 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. 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 2021. Brunei, Fiji, Oman, and Saudi Arabia are outliers in this period with real income growth more than 25% different from GDP growth.

79: 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.

80: 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 in PSNA, incorporated for the first time in the 2020 edition of the Databook, was three times larger than the revised estimate in this edition.

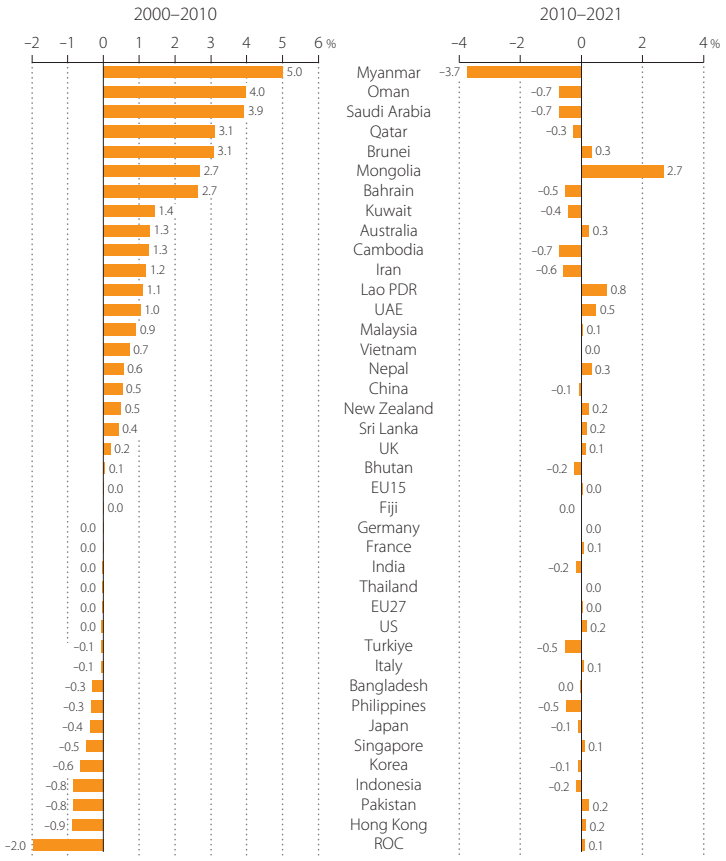


Figure 7.2 Trading Gain Effect, 2000–2021

Contributions to real income growth in 2000–2010 and 2010–2021

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

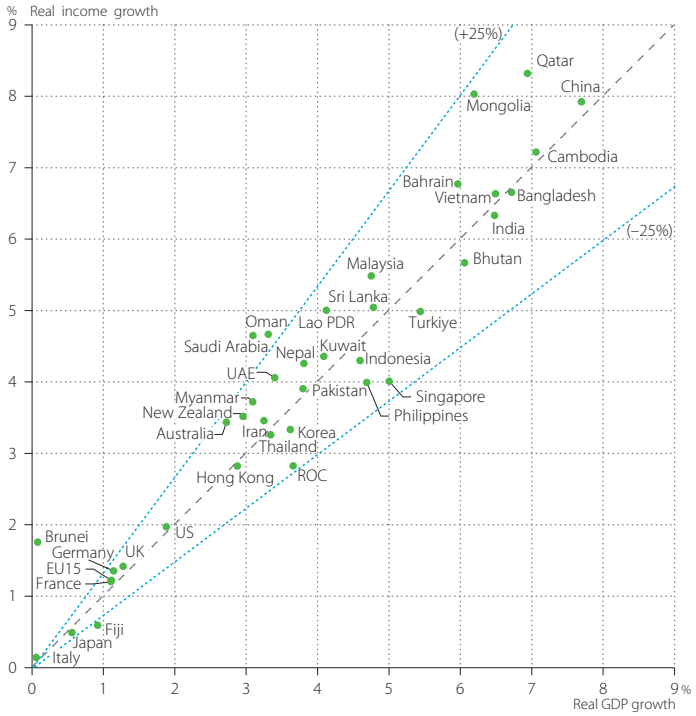


Figure 7.3 Real Income and GDP Growth, 2000–2021

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

7.2 Trading Gain and Productivity Growth

When the trading gain is highly favorable, it can breed complacency, with productivity performances suffering. Resource-rich economies are susceptible to this pitfall because they can reap extremely positive trading gains when commodity prices turn in their favor over a sustained period. However, 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 7.4 plots the labor productivity growth and the trading gain effect from 2000 to 2021. 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 mineral and energy resources.[81] This is how resource abundance can easily lead to resource dependence. Five resource-rich Asian countries enjoyed trade gains of over 1.0% per year from 2000 to 2021. Mongolia and Saudi Arabia realized both trading gain and labor productivity growth. In contrast, export-oriented and highly productive Asian countries such as the Asian Tigers and Japan have been facing a deteriorating trading gain position as a price of their success.

Figure 7.4 Trading Gain Effect and Labor Productivity Growth, 2000–2021

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including adjustments in APO-PDB) and APO Productivity Database 2023. Note: Labor productivity is defined as an hourly basis.

Figure 7.5 illustrates trading gain effects and changes in the value-added share of the mining sector from 2000 to 2021 in some selected countries. It indicates that large trade gainers typically have dominant mining sectors, such as petroleum and natural gas. These countries gain from the positive terms-of-trade effects if resource prices continually rise. However, this makes traditional manufacturing uncompetitive. Then, the story of the Dutch disease may appear. Richness in mineral and energy 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 7.5 shows that the GCC countries actively reduced their mining sector share over time, which could reflect the intention of developing industries other than mining. However, Figure 7.4 shows that labor productivity growth rates in these countries remained low or even negative. Even if they wanted to

81: The term originated from 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.

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.

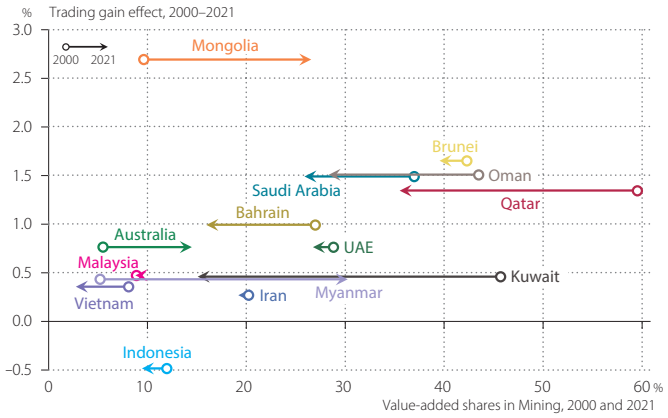


Figure 7.5 Trading Gain Effect and Value-added Share in Mining Sector, 2000–2021

Unit: Percentage (average annual growth rate). Sources: Official national accounts in each country (including adjustments in APO-PDB) and APO Productivity Database 2023.

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 9.18). However, this has strengthened their competitiveness in manufacturing and other productive activities for the future. Figure 7.4 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 commodity demand pushes their import prices up. 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 true in countries where economic growth depends 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 12 Navigating the Economic Horizon: Projections to 2030

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 population structure and technology scenarios. This Box presents the estimates of our mid-term projections on economic growth and labor productivity for the Asia25 economies through 2030. Our projections reflect the economic growth of 2022 and the first quarter of 2023, where available.

Our population projection is based on United Nations (2022), in which the annual projections are provided by gender and age, as presented in Box 3. This is divided into estimates in different educational attainment categories based on the projections developed in Wittgenstein Centre Human Capital Data version 2.0 (Lutz, Butz, and KC 2014; Lutz et al. 2018) for each gender and age class.[82] The employment rate in each population class by gender, age, and education is developed in the Asia QALI Database 2023 (Section 8.3.2). The employment rates in 2015–2021 are assumed to be constant for the future in each population class. Using these populations and the employment rates, employment by gender, age, and education is estimated for 2021–2030.

82: The Wittgenstein Centre Human Capital Data (version 2.0) is provided at http://dataexplorer.wittgensteincentre.org/wcde-v2/. This website presents a set of scenarios of future population and human capital trends in 201 countries of the world by 2100.

The employment rate in each class is divided into different categories of employment status, i.e., own-account workers, contributing family workers, and employees, based on the current composition in 2015–2021, provided in the Asia QALI Database. The projected employee share is assumed to gradually change by 0–3% per year until 2030, based on the past trends 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 7.6 for 2021–2025 and 2025–2030.

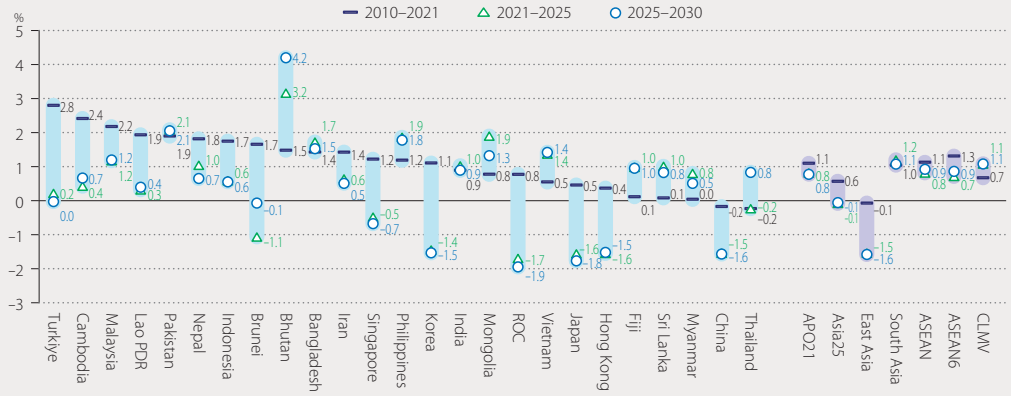


Figure 7.6 Projection of Change in Total Employment, 2021–2030

Unit: Percentage (average annual growth rate). Sources: The estimates are based on United Nations (2022), Lutz et al. (2018), and Asia QALI Database 2023.

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 estimated for 2015–2021 in the Asia QALI Database 2023. Based on past trends, average hours worked are assumed to decrease slightly until 2030. The relative wage structure cross-classified by gender, age, education, and status is also provided for 2015–2021 in the Asia QALI Database 2023. Based on these projections, labor quality changes are estimated through 2030. The estimates of average annual growth rates of labor quality in each country are presented in Figure 7.7. In some countries such as Indonesia, Mongolia, Thailand, Turkiye, and Singapore, the quality growth is expected to fall considerably in the late 2020s compared to

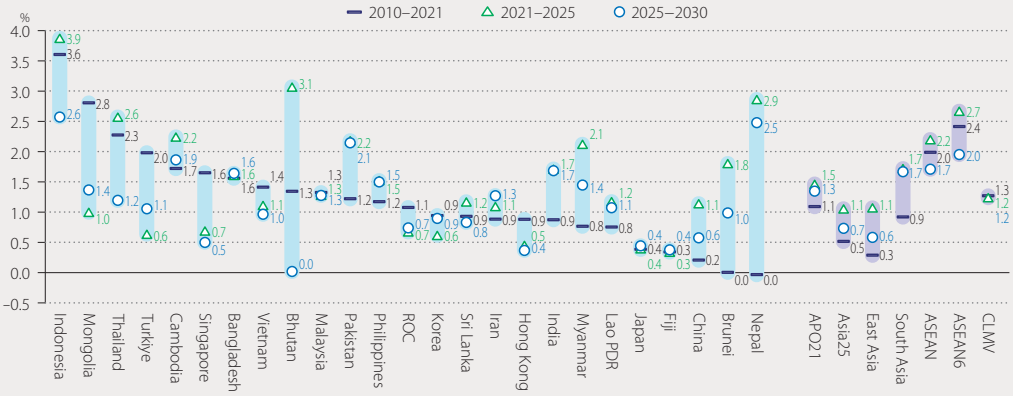


Figure 7.7 Projection of Labor Quality Change, 2021–2030

Unit: Percentage (average annual growth rate). Source: The estimates are based on Asia QALI Database 2023.

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2010–2021, when labor quality growth was exceptionally high, mainly reflecting the changes in employment status and educational attainment. In Asia25, labor quality changes are projected to be 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 7.8 presents the past GFCF share since 1885, and the line shows the ten-year moving average. The current level of GFCF share in each Asian country is plotted using the year in which its per-hour labor productivity is equal to the historical Japan share (see Figure 5.6). Based on these historical trends, the future GFCF rate is assumed for each country. Each year's investment is estimated by GDP and determines the beginning-of-the-period capital stock level for the next year, which provides capital services to be used in next year's production.

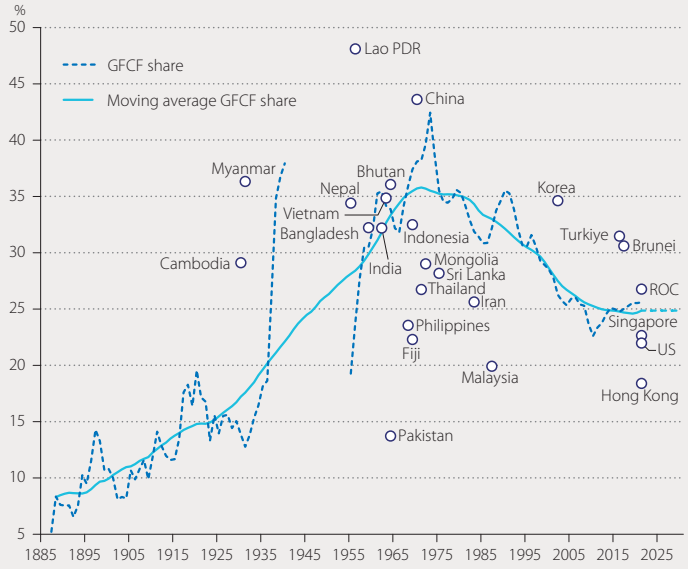


Figure 7.8 Historical GFCF Share of Japan and Current Level of Asia in 2021

—Share of GFCF in GDP at market prices for Japan from 1885 to 2021 and for Asian countries in 2021

Unit: Percentage (current-price share). Source: The estimates are based on APO Productivity Database 2023.

Another uncertain source of economic growth is TFP. As a baseline scenario, the TFP growth in 2010–2021 estimated in APO-PDB 2023 is used to provide benchmark estimates. In some countries, however, past achievements reflect events that will not be repeated. In these cases, benchmark projections of TFP growth are set in the following manner. 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 2022 to the first quarter of 2023, 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 2022–2023 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-PDB 2023 (see Section 8.3.3 and Box 9). The recent estimates are assumed to hold for the entire 2021–2030 projection period.

The baseline estimates of economic growth are presented in Figure 7.9. In Asia25, the recent economic growth in 2010–2021 (4.6% per year on average) is projected to decrease slightly to 4.1% in 2021–2025. This includes further recovery from the Covid-19 pandemic. Furthermore, it is projected to fall to 4.4% in 2025–2030, representing an upward revision from our estimate (3.9%) in the previous edition of the Databook (APO 2022) for the same period. The projected regional growth of South Asia (6.9%) in the late 2020s, which Bangladesh and India lead, is much higher than that projected for East Asia (3.1%). In addition, CLMV will be a strong driver of the Asian economy in the late 2020s, with a projected growth rate of 7.4%, 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 7.6% in the late 2020s.

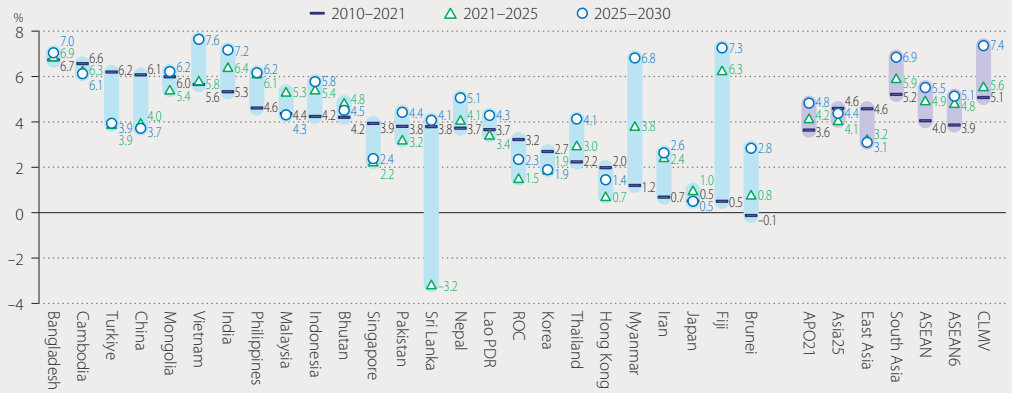


Figure 7.9 Projection of Economic Growth, 2021–2030

Unit: Percentage (average annual growth rate). Sources: The estimates are based on APO Productivity Database 2023 and Asia QALI Database 2023.

Regarding per-hour labor productivity growth, the current rate of improvement in Asia25 (4.3% per year in 2010–2021) is projected to fall slightly to 4.0% in 2021–2025, as shown in Figure 7.10. It is then expected to improve to 4.6% 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 in productivity growth rates is expected to be smaller than that of economic growth rates (Figure 7.9). Labor productivity growth is likely 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 2010–2021.

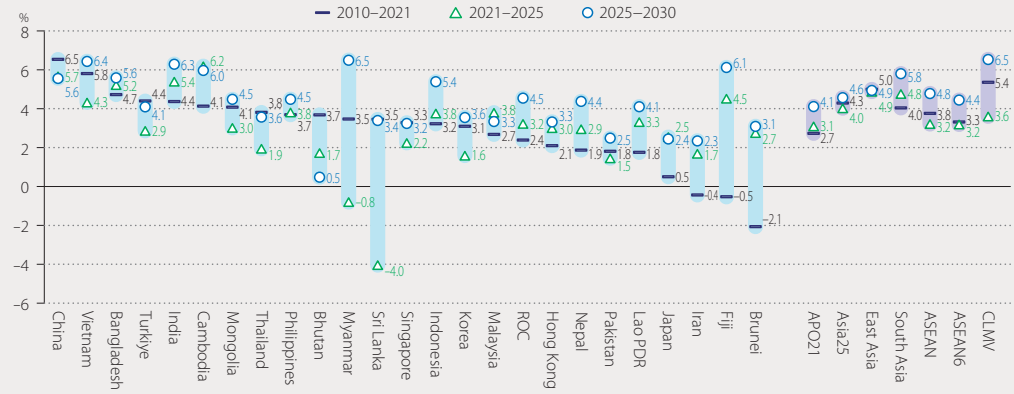


Figure 7.10 Projection of Per-Hour Labor Productivity Growth, 2021–2030

Unit: Percentage (average annual growth rate). Sources: The estimates are based on APO Productivity Database 2023 and Asia QALI Database 2023.

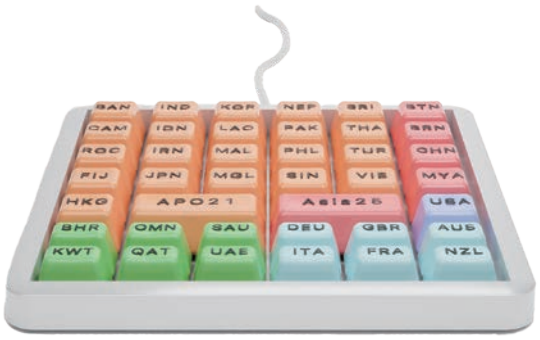
8 Methodology Notes

In this chapter we provide some technical details of the compilation of this APO Productivity Databook 2023. We begin with a description of the measurement of output and the components of GDP. We then describe the measurement of capital and labor.

8.1 Measurement of Output

8.1.1 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 change their estimation methodology and assumptions in benchmark and annual revisions. This may account for part of the differences observed in the data and interfere with comparisons of the underlying economic performance.



Between February and June of 2023, the APO-PDB project conducted the APO-PDB Metadata Survey 2023 on the national accounts and other statistical data required for international productivity comparisons among the APO member economies.[83] Since most of the economic performance indicators in this report are GDP-related, the survey was designed to discern different GDP compilation practices. The 2008 SNA is used as the standard. Since there are differences between the 2008 SNA and its predecessors (1993 SNA and 1968 SNA) in some concepts and coverage, it is important to know in which year the data series definitions and classification started to shift. This allows the identification of breaks in the time series.

Figure 8.1 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 plans for introducing the 2008 SNA), based on the APO-PDB Metadata Survey 2023 and our further investigations 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).

Countries differ in their introduction year, implementation extent, and availability of backward estimates, as Figure 8.1 suggests. In Asia25, 19 economies are currently 2008 SNA compliant (partially or fully) and are described in Figure 8.1. The starting year of the official 2008 or 1993 SNA compliant time series varies greatly 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-PDB tries to reconcile the national account

83: The list of national experts in metadata surveys is provided in Section 1.2.

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 revised series for Sri Lanka as of March 2016, Thailand as of May 2016, Japan and Turkiye as of December 2016, Iran as of August 2017, Nepal as of April 2021, Oman as of November 2021, and Vietnam as of August 2022. In Asia25, 19 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. The different statuses of SNA adaptions among economies explain the huge variations of data definitions and scope in national accounts, calling for data harmonization to conduct comparative productivity analyses better.

The Databook largely follows the concepts and definitions of the 2008 SNA and tries to reconcile the national accounts variations, particularly on the difference in the treatment of financial intermediation services indirectly measured (FISIM), military weapons systems, R&D, and software investment.[84] To develop long-time series data, it is necessary to use the past 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, adjustments are necessary to harmonize the long-term GDP estimates at current prices. Procedures for these adjustments in the APO-PDB 2023 are explained below.

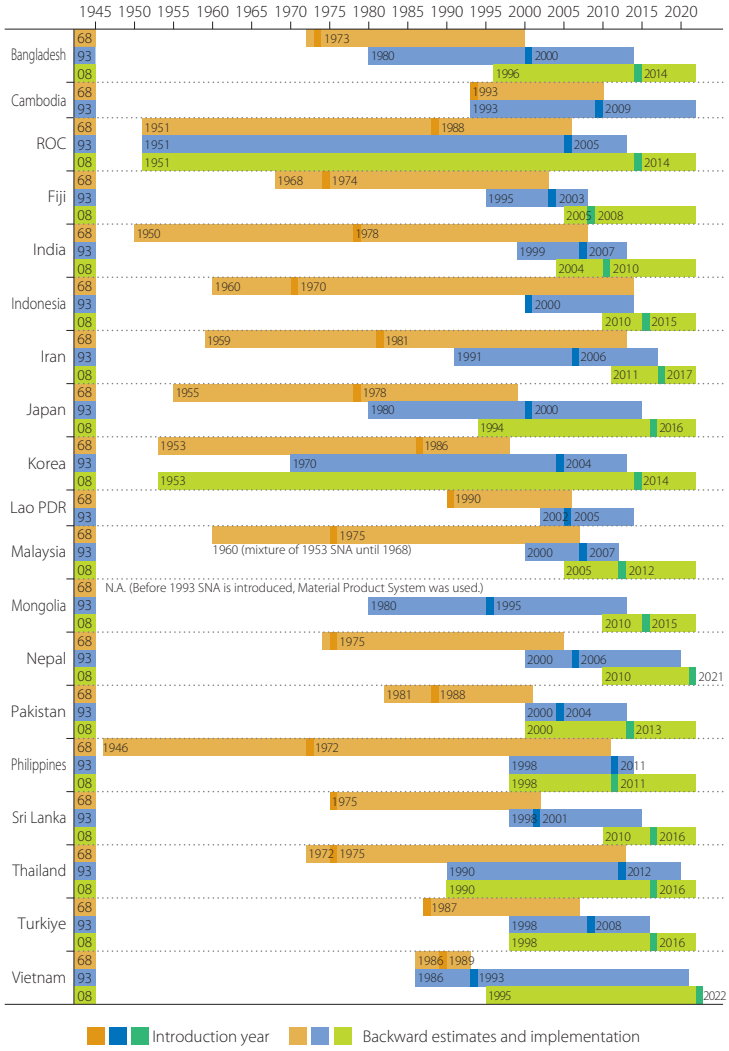


Figure 8.1 Implementation of the 1968, 1993, and 2008 SNA

Sources: APO-PDB Metadata Survey 2023 and our investigation at KEO.

84: The introductions of the 2008 SNA are usually conducted with benchmark revisions. Thus, in some countries, there are large revisions in data due to the use of newly available surveys (e.g., a new survey on services) or new benchmark data (e.g., a new development of the supply and use table), with smaller changes 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 investigations at KEO.

8.1.2 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 in the 1968 SNA 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 GDP estimates in these countries are less than others by definition. In addition, in some of the countries whose national accounts follow the 1993/2008 SNA's recommendation on FISIM, 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 with missing data in APO-PDB, using available estimates of value added in Imputed Bank Service Charge (IBSC) or financial intermediation (in instances where IBSC data is not 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 8.2 describes the countries, years, and methods to adjust FISIM in the official national accounts. As illustrated, in instances where both value-added data are unavailable, the trend of the FISIM share on GDP is applied to extrapolate past estimates (the impacts on GDP are minor).

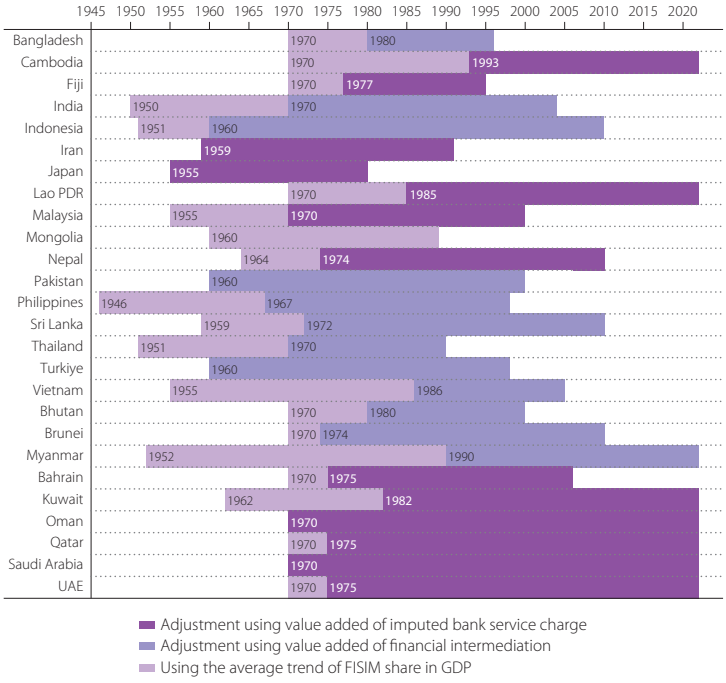


Figure 8.2 Adjustment of FISIM

Sources: APO-PDB Metadata Survey 2023 and our investigation at KEO.

Figure 8.3 plots per capita GDP levels in 2021 and the FISIM share in GDP as an average in 2000–2021 (different colors are used to distinguish the original estimates in the official national accounts from our estimates). In countries where GDP at current prices is adjusted, the adjustments in APO-PDB for FISIM increase GDP come to 0.8–1.1% for Nepal, the Lao PDR, and Oman and less than 0.4% GDP for other countries.

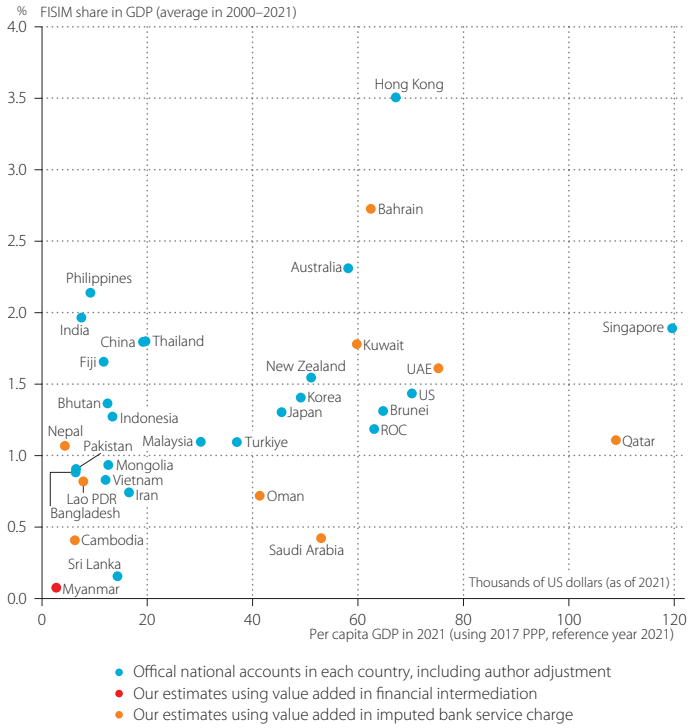


Figure 8.3 FISIM Share in GDP, 2000–2021

——Average share of FISIM production in GDP

Unit: Percentage (current-price share). Sources: Official national accounts in each country and APO Productivity Database 2023.

8.1.3 Government Consumption

Definitions of government output can differ among countries and across periods for a given country. 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 8.1. 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 APO-PDB, 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 for prices of government consumption, consisting primarily of non-market products. In APO-PDB, 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 measures of the quality-adjusted price indices of capital and labor inputs with zero TFP growth. In the retrospective estimation back to 1970, government consumption price indices were found to show unrealistic trends in the official national accounts 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-PDB.

8.1.4 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, including pre-packaged, custom, and own-account software. Among the Asia25 economies, 16 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 of software investment availability vary considerably among countries and over periods. Figure 8.4 presents the availability of the official estimates in the national accounts and the benchmark Supply and Use Tables (SUT) and Input-Output Tables (IOT) based on the APO-PDB Metadata Survey 2023 and our investigation at KEO.

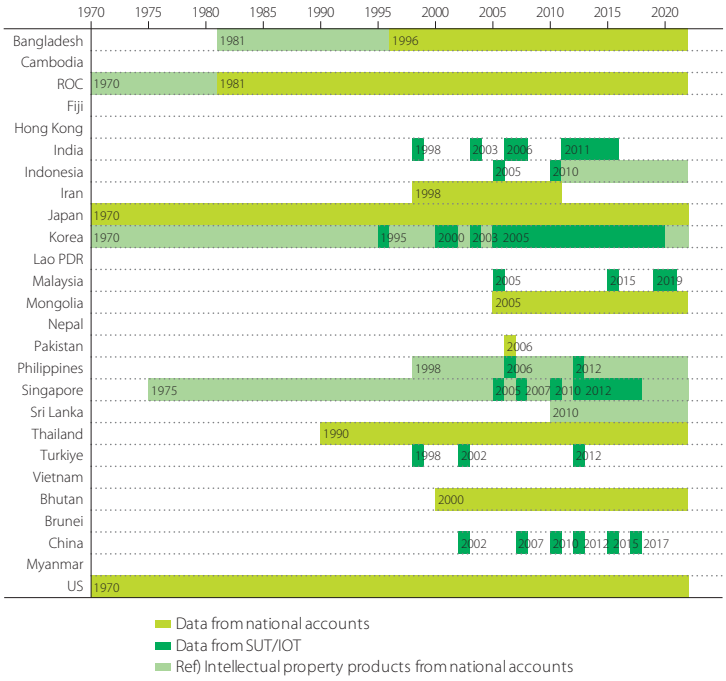


Figure 8.4 Availability of Software Investment Estimates

Sources: APO-PDB Metadata Survey 2023 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 at KEO are incorporated in the Databook series beginning with the APO-PDB 2021. In the revised data 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 the ILO Modeled Estimates (ILOEST database, ILO 2023). Based on this gross measure of labor cost, we deduct the portion of hours worked that is not used for software development. The share excluded is assumed to be equal to shares in countries where we have such data. 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 Stats (https://stats.wto.org/). The sum of the domestically produced and imported software values is used to extrapolate the official estimates of software investment (Figure 8.4) or the software investment in each country.

8.1.5 R&D Investment

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

The preferred approach is to collect data on R&D expenditures based on official surveys in each country and then estimate the R&D investment. Figure 8.5 describes the countries, years, and methods to estimate R&D 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 is 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 limitations in time-series comparisons.

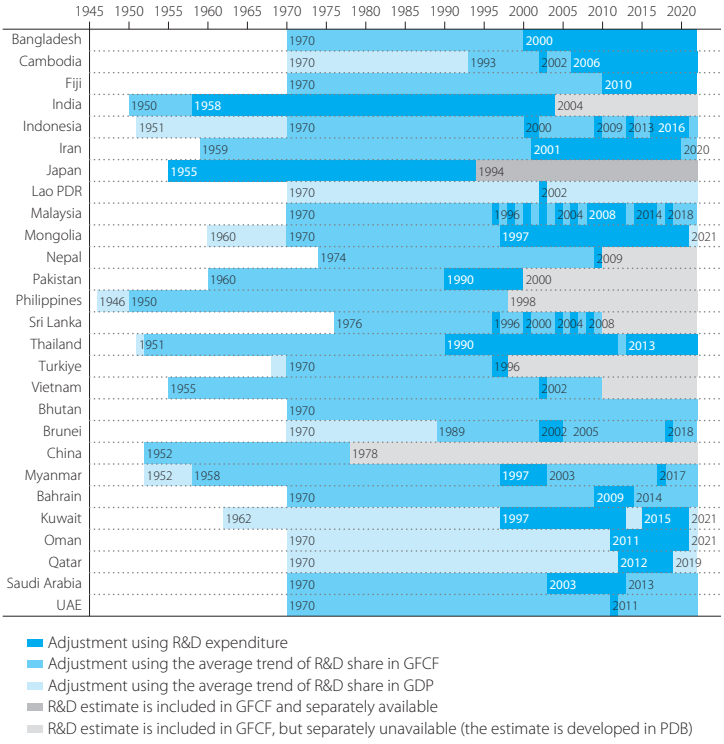


Figure 8.5 Methods for Estimating R&D Invest

Source: APO Productivity Database 2023.

8.1.6 Net Acquisitions of Valuables

Valuables are incorporated as the third type of produced non-financial assets, after fixed assets and inventory, in the 1993 SNA. 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).[85] Based on the APO-PDB Metadata Survey 2023 and our investigations at KEO, net acquisitions (acquisitions less disposals) of valuables are recorded as final demand in 11 countries in Asia; Bhutan, India, Iran, Korea, Malaysia, Mongolia, Pakistan, Philippines, ROC, Sri Lanka, and Vietnam. For example, the SNA in India has included this since 1999. However, the estimates of net acquisitions of valuables are not separately published (they are included with changes in inventories) in Korea, Malaysia, and ROC. Japan's latest system of national accounts still does not have them in final demand. The decision in the APO-PDB 2023 is to harmonize the data by excluding net acquisitions of valuables from GDP as much as possible.

8.1.7 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

85: 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.

this is not true for GDP at factor cost and GDP at basic prices. The international comparisons in Chapters 3 and 4 are based on GDP at market prices. However, by valuing output and input at the prices that producers actually receive and pay, the basic-price GDP is a more appropriate measure of 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 basic-price GDP, including our estimates when not officially available.

These concepts of GDP differ in treating indirect tax and subsidies (and import duties). Table 8.1 shows the classification of indirect taxes and subsidies, split as far as possible in the APO-PDB 2023 (there are significant challenges to the accuracy of the estimates).[86] The difference between basic-price and market-price GDP is "T2. Taxes on products" minus "S2. Subsidies on products." Since the basic-price GDP is available for some economies in Asia, such as Hong Kong, India, Korea, Mongolia, Nepal, Singapore, and Sri

Table 8.1 Classification of Indirect Taxes and Subsidies

Indirect taxes (T)		Subsidies (S)	
T1	Indirect taxes on production and imports	S1	Subsidies
T2	Indirect taxes on products	S2	Subsidies on products
T2a	Taxes and duties on imports	S2a	Subsidies on imports
T2b	Other taxes on products	S2b	Other subsidies on products
T3	Other indirect taxes on production	S3	Other subsidies on production
T3a	Taxes on payroll or workforce	S3a	Subsidies on payroll or workforce
T3b	Recurrent taxes on land, buildings or other structures	S3b	Subsidies to reduce pollution
T3c	Taxes on the use of fixed assets		
T3d	Other taxes on production		

Source: APO Productivity Database 2023. Notes: As details of these classifications are rarely published in the official SNA, the APO-PDB has approximated them as estimates based on available data and information. The types of T3 and S3 are defined based on para. 7.94 and 7.106, respectively, in the 2008 SNA. In particular, T3b and T3c are further subdivided, corresponding to the APO-PDB asset classification (Table 8.3), and the asset-specific effective property tax rates are used in measuring the user cost of capital in Section 8.2.8.

Table 8.2 Supply and Use Tables and Input-Output Tables (SUT/IOT) in Asia

	SUT / IOT
Bangladesh	1976/1977, 1981/1982, 1986/1987, 1992/1993, 1993/1994, 2000, 2005/2006, 2010/2011, 2010–2017*
Cambodia	Estimate(2003**), Benchmark (2005*), Annual (2010–2017*)
ROC	Benchmark (1981, 1986, 1991, 1996, 2001, 2004, 2006, 2011, 2016), Extended (1984, 1989, 1994, 1999, 2004), Annual (2006–2021)
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, 2019, 2020
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, 2019)
Sri Lanka	2006, 2010, 2015
Thailand	1975, 1980, 1985, 1990, 1995, 1998, 2000, 2005, 2010, 2015
Turkiye	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, 2020)
Bhutan	2007
Brunei	Benchmark (2005, 2010), Annual (2010–2017*)

Sources: Estimates by the national statistics office in each country. *ADB (2018). **Kobayashi, et al. (2012). Note: These SUT/IOT are collected and used in the development of APO Productivity Database 2023, which newly reflects the SUT/IOT of the ROC for 2021, China for 2020, Malaysia for 2019/2020, Singapore for 2019, and Sri Lanka for 2015.

86: The split estimates of indirect taxes and subsidies are introduced in APO-PDB 2023 to calculate property tax rates usein the user cost of capital formula (Section 8.2.8).

Lanka, a basic-price GDP calculation must be constructed for all other countries. To obtain the basic-price GDP, T2 is subtracted from the market-price GDP, available for all the countries studied, and S2 is added. The main data sources for estimating T2 and T3 are tax data in national accounts, the IMF's Government Finance Statistics, and the SUT/IOT in each country. Table 8.2 lists the SUT/IOT used in APO-PDB 2023.

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 Turkiye. In this sense, the industry data provided in the Databook series should be treated as a work in progress, as it is difficult to give a range of uncertainty for the data. These issues will be examined in greater detail in future issues of the Databook.

Box 13 Recording Subsidies in the SNA during the Pandemic Period

To mitigate the economic damage caused by the Covid-19 pandemic, many governments provided wage subsidies to help businesses retain employees or direct assistance to households who had lost their jobs or were forced to take unpaid leave. In the national accounts, the latter is recognized as transfers to households, while the former should be recorded as "subsidies on payroll or workforce" (S3a in Table 8.1), which is defined as "subsidies payable on the total wage or salary bill, or total workforce, or on the employment of particular types of persons such as physically disabled persons or persons who have been unemployed for long periods. The subsidies may also be intended to cover some or all of the costs of training schemes organized or financed by enterprises" in para. 7.106a in the 2008 SNA.

There appears to be variation not only in national support systems but also in how subsidies are recorded in the national accounts of different countries. Although the official estimate of S3a is published for only a few countries in Asia, the approximate impact can be gauged by the increase in total "subsidies" (S1 in Table 8.1). Figure 8.6 compares the change in subsidy rates across countries during the pandemic period (rate defined as the ratio of subsidies to market-price GDP at current prices in 2019). For example, the US subsidy rate rose by 2.3 percentage points from 0.3% in 2019 to 2.7% in 2020–2021 (two-year average). In the US NIPA, this expansion

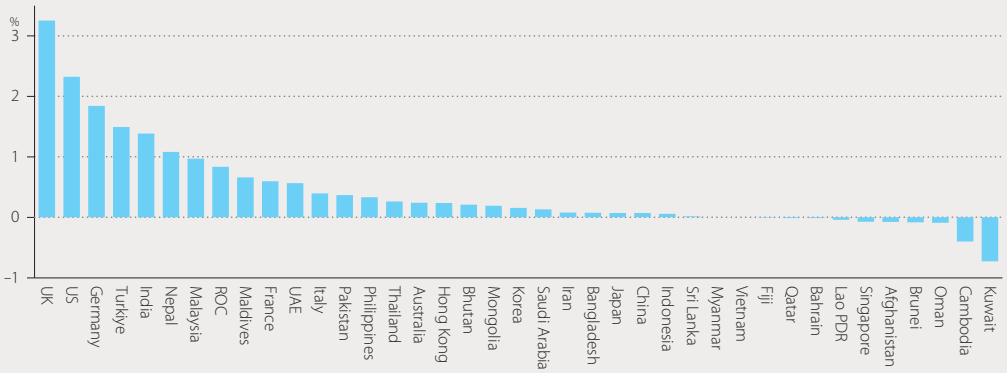


Figure 8.6 Changes in Subsidy Rates during Covid-19 Pandemic Period
——Subsidy rate is the ratio of subsidies to market-price GDP at current prices: Change between 2019 and 2020–2021 averaged rates

Unit: Percentage points (market-price GDP at current price in 2019=1.0). Source: Official national accounts in each country, including adjustments in APO-PDB.

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in subsidy originates from S3a, meaning that the gap between factor-cost GDP and basic-price GDP expanded in this period.

Similarly, the UK, Germany, and Australia had significant expansions of S1 rates, while Turkiye, Japan, and China saw little change during the pandemic. In the Japanese system of national accounts, however, subsidies defined as S3a in other countries, are treated as current transfers to firms. This treatment may yield no bias against the basic-price GDP but a bias to underestimate factor-cost GDP. In constructing our productivity accounts, the estimates of S3a are deducted from labor income (either COE or self-employed income). However, in countries where S3a is not accounted for, such as Japan, there is a bias toward overestimating the labor share. The details of subsidy schemes during the pandemic period are complex, and the APO-PDB 2023 does not reconcile the different treatments. Assessing productivity trends requires a longer-term perspective, including measurements after transient subsidies have ended.

8.2 Measurement of Capital Input

8.2.1 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 asset type. To consider the asset composition change, APO-PDB 2023 classifies 23 types of assets: 11 produced assets, seven types of land, inventory, and four types of mineral and energy resources (MER). The produced assets consist of three types of building and construction (B&C), five types of machinery and equipment (M&E), and three types of IPP. Table 8.3 presents the asset classification in APO-PDB 2023.

Detailed investment data is not always available in the official national accounts. Figure 8.7 presents the availability of GFCF data in the national accounts or benchmark SUT/IOT by country. The SUT/IOT used in APO-PDB 2023 is listed in Table 8.2. 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 8.1.4 and 8.1.5. In particular, where the division for three types of B&C (the asset codes 5–7 in Table 8.3) is difficult for the countries without detailed construction data, they are still crude estimates based on other countries' experiences. Readers are cautioned about data uncertainty and should expect that the decomposition of contributions of capital services into ICT and non-ICT capital may be revised for some countries when more reliable data becomes available.

Table 8.3 Asset Classification

asset code	group	asset code	group
1. ICT hardware	M&E	13. Land for industrial use	Land
2. Communications equipment	M&E	14. Land for commercial use	Land
3. Transportation equipment	M&E	15. Land for residential use	Land
4. Other machinery and equipment and weapon systems	M&E	16. Land for other economic use	Land
5. Dwellings	B&C	17. Land for forest use	Land
6. Non-residential buildings	B&C	18. Land for inland water use	Land
7. Other structures	B&C	19. Inventories	Inventory
8. Cultivated biological resources	M&E	20. Oil	MER
9. Research and development (R&D)	IPP	21. Coal	MER
10. Computer software	IPP	22. Gas	MER
11. Other intellectual property products	IPP	23. Mineral	MER
12. Land for agricultural use	Land		

Sources: APO Productivity Database 2023 and Asia Natural Resources Database 2023.

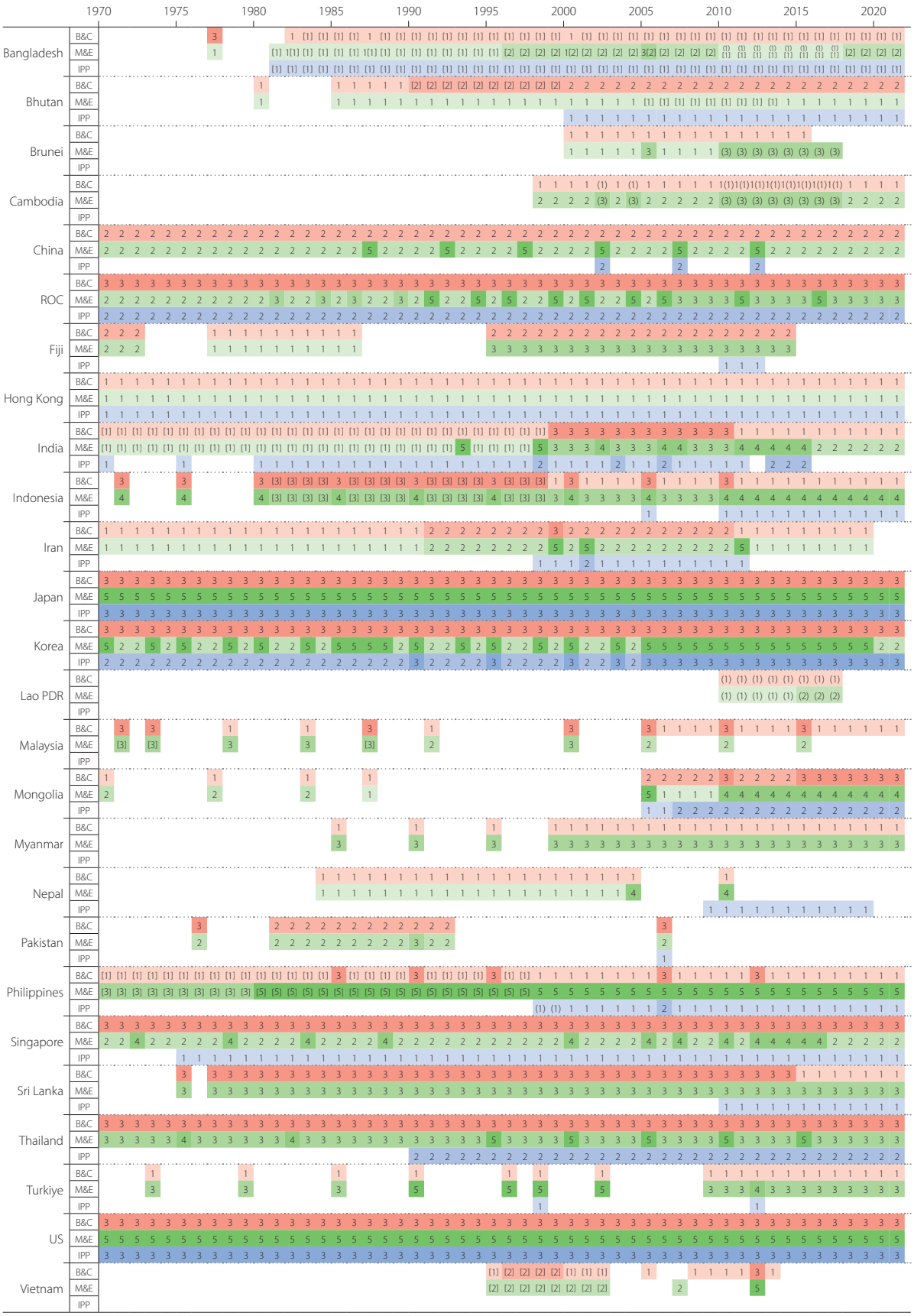

Figure 8.7 Availability of GFCF Estimates

Sources: Official national accounts and SUT/IOT in each country. Notes: 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 shows the data, but the national accounts and SUT/IOT ([#] are the estimates by the national experts of this project).

8.2.2 Produced Assets

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 APO-PDB 2023, a harmonized framework is applied in estimating capital stock and capital services, covering the Asia25 economies and the US as a reference country. The asset-specific geometric approach is used to measure net capital stock. The standard parameters on geometric depreciation rates are assumed in Table 8.4 by the country groups (D1–D6) defined in Table 6.1.

Table 8.4 Depreciation Rates of Produced Assets

asset code	δ					
	D1	D2	D3	D4	D5	D6
1. ICT 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 2023. Note: See Table 6.1 for the country groups (D1–D6).

It is well known that prices of constant-quality ICT 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 ICT to non-ICT capital in the countries compared is set equal to the relative price in the reference country, the harmonized price is formulated as $\Delta \ln \tilde{P}_{IT}^{X} = \Delta \ln P_{nIT}^{X} + (\Delta \ln P_{IT}^{ref} - \Delta \ln P_{nIT}^{ref})$, where the superscript X denotes the country included in the comparisons, P_{IT} is the price of ICT capital, and P_{nIT} is the price of non-ICT capital. The price of ICT capital in the country X, $\tilde{P}_{IT}^{X}$, is computed by the observed prices P_{IT}^{ref} and P_{nIT}^{ref} in the reference country and P_{nIT}^{X} in X. OECD (2023) applies price harmonization to 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 APO-PDB, the same price harmonization method is applied to adjust the quality improvement for ICT 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.

8.2.3 Inventory

Inventory stock has been incorporated as a capital input in our productivity account beginning with the APO-PDB 2021. The official estimates of the inventory changes recorded in the national accounts are used to estimate the inventory stock. When the official estimates of the price index for inventory changes fluctuate unrealistically, 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 extremely high 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 APO-PDB 2023.

8.2.4 Stock Loss due to Disasters

Natural disasters can significantly impact economic growth, especially in developing economies. Since APO-PDB 2021, capital stock losses due to natural disasters have been considered in the net capital stock estimates. This improves the underestimated TFP estimates.[87]

The stock losses in APO-PDB are estimated 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. 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 to 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 8.5 presents the estimated value of damages on the net capital stock of produced assets at a constant price as of 2020 (in parentheses) and the damage ratios to total stock at current prices in the year the disaster occurred during 1970–2021. The top 60 disasters in Asia are sorted by the magnitude of damage ratio to capital stock.

Table 8.5 Capital Stock Damages by Natural Disasters, 1970–2021
——Damage ratios on net capital stock at current prices and damages of capital stock at constant prices

	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	0	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	0	1.08	(0.05)	52 Lao PDR	2009	S	0.56	(0.08)
13 Turkiye	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	0	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 2023. Note: S, E, F, and O represent the types of the main disaster as storm, earthquake, flood, and others, respectively.

87: The previous edition of the Databook (APO 2022, Figure 84) presents the revision of TFP growth from the year before the disaster to 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 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 53rd in Table 8.5. Eight disasters have a damage ratio of over 3% of capital stock, 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.

8.2.5 Stock-Output Ratio

Figure 8.8 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. Note that this measure excludes land and MER. Bhutan has the highest capital-output ratio among the Asia25 economies, at 4.8 in 2021, reflecting the industry structure highly skewed in electricity generation (hydropower). Compared to the 1980 level in each country, all Asian countries, except Cambodia, Iran, Malaysia, Mongolia, Pakistan, and Vietnam, have an increasing trend in capital-output ratio.

8.2.6 Land

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

Land stock data has been developed at KEO since 2016, and these estimates were incorporated beginning with APO-PDB 2019. Land stock is defined as a natural resource in ANRD, together with MER (Section 8.2.7). The ANRD 2023 used in this edition covers the Asia25 economies. Table 8.6 defines the types of land use. In APO-PDB 2023, four types of land for economic use (ANRD code: L1100, L1211, L1212, and L1213) and three other types of land (L1220, L2000, and L3000) from the ANRD are treated as non-produced assets (APO-PDB asset code: 12–18).[88]

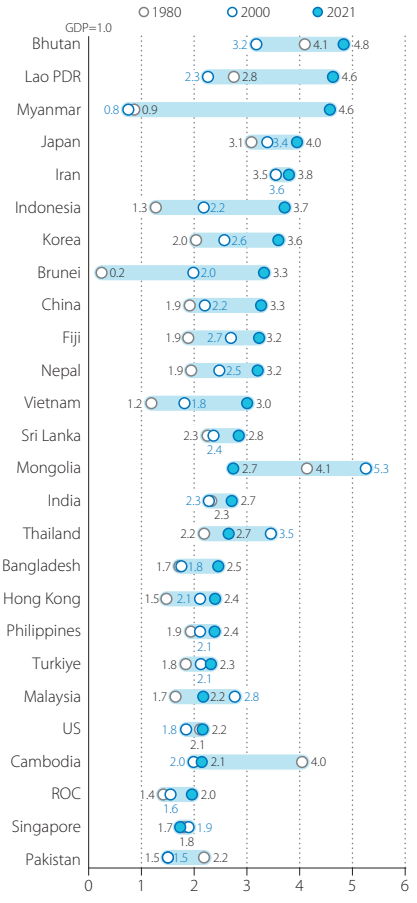

Figure 8.8 Capital-Output Ratio (Produced Assets), 1980–2021

——Ratio of the beginning-of-period net capital stock to basic-price GDP at current prices in 1980, 2000, and 2021

Unit: Percentage. Source: APO Productivity Database 2023. Note: Capital stock consists of produced assets and inventory here (excluding land and MER).

88: The APO-PDB 2022 dealt with four land types for economic use. This was revised to cover the entire land area of a country by adding three other land types in the APO-PDB 2023. However, this revision has a limited impact on the productivity account since the unit values of land for other uses are much smaller.

The land stock data consists of the current and constant prices estimated by seven 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 8.2.2), and per capita GDP, and so on. Suppose land for industrial use (code 13) is unavailable from national surveys like the manufacturing census. In that case, it is estimated based on our estimates of the productivity of industry-use land and the manufacturing GDP. Similarly, land for commercial use (code 14) is calculated based on our estimates of the productivity of commercial-use land and the service-sector GDP if it is not available in national data resources.

Table 8.6 Land Classification

Land classification in ANRD		APO-PDB asset code
L0000	Total land	
L1000	Land for economical use	
L1100	Land for agricultural use	12
L1200	Land for non-agricultural use	
L1210	Land for building use	
L1211	Land for industrial use	13
L1212	Land for commercial use	14
L1213	Land for residential use	15
L1220	Land for other use	16
L2000	Land for forest use	17
L3000	Land for inland water use	18

Source: Asia Natural Resources Database 2023. Note: The whole list of the APO-PDB asset code is provided in Table 8.3.

For countries where the land stocks at current prices are not available, samples of land price data are collected to estimate the current-price land stocks. The land price data are available mainly in urban areas. They 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 calculated 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 (Section 8.3.3).

Although further efforts to improve the estimates are required, Figure 8.9 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 2021. When including land stocks, the country order of capital-output ratios is considerably revised from Figure 8.8, based only on produced assets. In ROC, Singapore, and Hong Kong, the estimated land shares exceed 70% of total capital stock, almost twice the 38% in Japan and 35% in the US. In general, the growth rate of the land stock is about zero or much smaller than the growth rate of productive assets. Considering land stock in the measurement of capital inputs would eliminate the bias of underestimating TFP growth rates in many Asian countries.

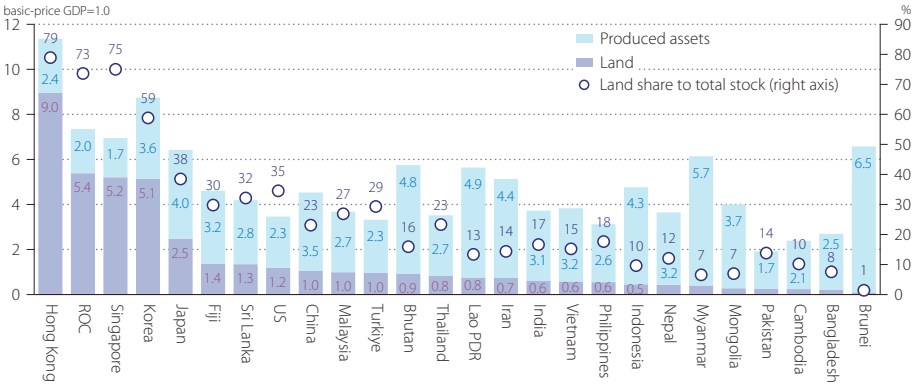

Figure 8.9 Capital-Output Ratio (Produced Assets and Land) in 2021
——Ratio of the beginning-of-period net capital stock to basic-price GDP at current prices

Unit: Percentage. Sources: Asia Land Database 2023 and APO Productivity Database 2023.

8.2.7 Mineral and Energy Resources

For resource-rich countries, the mining industry accounts for a large share of GDP (Figure 3.14). However, the APO-PDB has not considered the depletion of mineral and energy resources (MER) assets. In 2020, KEO began to develop data on MER stocks for the Asia25 economies over a long period since 1970. The latest MER data within the ANRD 2023 is now included in the APO for the first time in APO-PDB 2023.[89] Table 8.7 defines the classification of MER. In this edition, three types of energy resources (ANRD code: ME101, ME102, and ME103) and one type of mineral resource (ME200), which are defined as an aggregate of 10 types of mineral resources (ME201–ME210), are treated as non-produced assets (APO-PDB asset code: 20–23).

Table 8.7 Classification of MER

MER classification in ANRD		APO-PDB asset code
ME100	Energy resources	
ME101	Oil	20
ME102	Coal	21
ME103	Gas	22
ME200	Mineral resources	23
ME201	Bauxite	
ME202	Copper	
ME203	Gold	
ME204	Iron ore	
ME205	Lead	
ME206	Nickel	
ME207	Phosphate rock	
ME208	Silver	
ME209	Tin	
ME210	Zinc	

Source: Asia Natural Resources Database 2023.
Note: Table 8.3 provides the APO-PDB asset code.

Reserves data sometimes fluctuate widely. The ANRD adjusts reserves to match production and sets an upper limit on the number of years of availability. The main data on reserves and production rely on *International Energy Statistics* by the US Energy Information Administration for energy resources, *Mineral Commodity Summaries 2023* and *Minerals Yearbook 2023* by the US Geological Survey, and *World Mineral Statistics 1995–99* by British Geological Survey for mineral resources, as well as national data sources. Resource rents are from the World Bank (2021), and resource prices are from World Bank's *Commodity Markets Outlook*.

Figure 8.10 compares the ratio of MER stock to nominal GDP in Asia25 economies and shows that three countries have MER stocks equal to or exceeding GDP in 2021, with a further five countries exceeding 25%, as the left chart shows.[90] As can be seen in the right chart of Figure 8.10, in nine countries the share of GDP is less than 0.2% and the impact on net income and growth accounting is negligible. The effect on TFP estimates in countries with large MER stocks is discussed in Box 10.

89: The MER consists of "mineral and energy reserves located on or below the earth's surface that are economically exploitable, given current technology and relative prices" in para 10.179 in the 2008 SNA (United Nations 2009).
90: In Myanmar, jade stocks (discussed in Section 8.4) are not covered in the ANRD 2023.

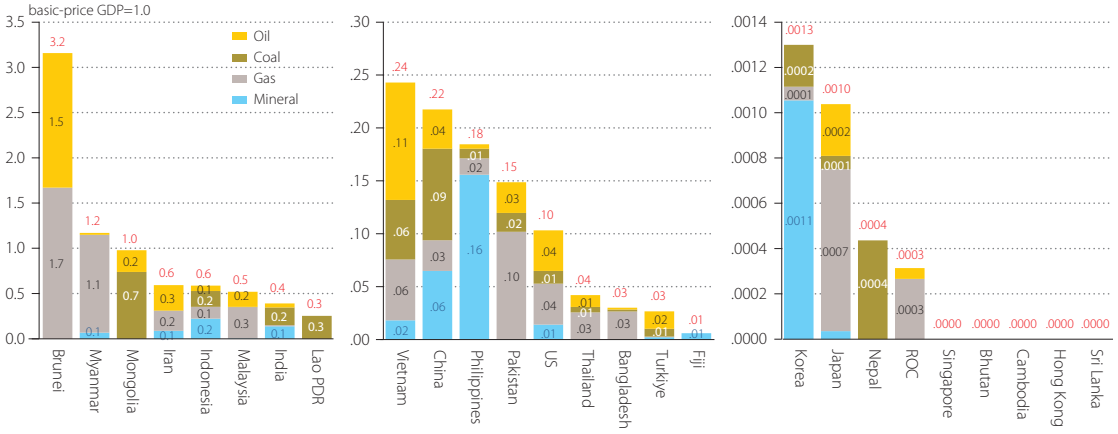

Figure 8.10 MER Capital-Output Ratio in 2021
——Ratio of the beginning-of-period net capital stock of MER to basic-price GDP at current prices

Unit: Percentage. Sources: Asia Natural Resources Database 2023 and APO Productivity Database 2023.

8.2.8 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 can differ from capital stock only at aggregated levels. For aggregating different kinds 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 APO-PDB 2023.

The user cost of capital of a new asset with a type of asset denoted as k (Table 8.3) of the period t, u_t^k, is defined as $q_{t-1}^k \{r_t + \tau_t^k + (1 + \pi_t^k)\ \delta_t^k\ - \pi_t^k\}$, where r_t, τ_t^k, δ_t^k, and q_t^k are the expected nominal rate of return, effective property tax rate, cross-section depreciation rate, asset price change, respectively. The asset-specific inflation rate π_t^k is defined as $(q_t^k / q_{t-1}^k - 1)$. The effective property tax rates by type of asset are considered for the first time in our accounts in the APO-PDB 2023. Our estimates on "T3b. Recurrent taxes on land, buildings or other structures" and "T3c. Taxes on the use of fixed assets" in Table 8.1 are further subdivided, corresponding to the asset classification in Table 8.3.

The APO-PDB follows the ex-post approach that Jorgenson and Griliches (1967) originated. Assuming constant returns to scale and competitive markets, capital compensation (V_t) can be derived from the summation of capital service cost V_t^k over all k asset types. V_t^k is defined as the product of the user cost of capital and the productive capital stock, S_t^k (i.e., $V_t = \Sigma_k V_t^k = \Sigma_k u_t^k S_t^k$). Based on this identity and the n-equations of user cost of capital, the n+1 variables of u_t^k and r_t are simultaneously determined, using the observed capital compensation V_t as the total sum of V_t^k that is not observable in each asset.

The estimated results of the ex-post real rate of return for the Asia25 economies and the US are presented in Table 8.8 as the five-year averages in the entire observation period 1970–2021. After considering the capital input of MER (Section 8.2.7) and the effective rate of property tax, the nominal rate of return has been revised significantly downwards compared to APO-PDB 2022, bringing the nominal rate of return closer to a more reasonable estimate. In 2015–2021, the real rate of return ranged from 3.0–4.7% in Hong Kong, Japan, Korea, and Singapore to over 14% in Bangladesh, the Philippines, Pakistan, and Sri Lanka, reflecting the difference in country risk. Aggregate capital services measured in APO-PDB are

Table 8.8 Average Ex-Post Real Rate of Return in Asia, 1970–2021

	1970–1974	1975–1979	1980–1984	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009	2010–2014	2015–2021
Bangladesh	19.7	14.7	12.1	19.0	21.2	19.2	19.9	19.4	19.6	22.0
Bhutan	5.8	9.4	0.0	4.4	0.8	3.6	6.6	4.2	1.2	2.6
Brunei	2.4	7.0	9.9	11.7	7.9	9.0	14.4	11.9	10.2	6.7
Cambodia	20.2	16.2	4.1	–24.9	–22.7	16.6	17.9	17.6	22.6	13.3
China	9.4	6.7	4.4	1.6	3.2	9.7	13.3	8.6	6.8	7.3
ROC	3.7	3.3	0.8	6.1	1.8	2.0	3.5	4.0	5.7	4.2
Fiji	13.0	12.9	8.5	9.5	17.2	11.1	9.7	10.1	8.9	11.6
Hong Kong	9.3	10.4	0.6	8.7	0.5	2.8	7.5	7.3	3.8	4.0
India	0.6	4.1	–1.6	0.1	–0.5	1.7	6.5	4.7	1.5	5.1
Indonesia	15.5	6.9	9.6	13.8	12.9	5.1	8.2	8.7	8.6	8.5
Iran	10.3	–0.8	–7.4	–8.4	–10.7	–11.1	–0.7	–2.3	–5.7	–4.0
Japan	–1.7	–2.9	1.6	4.1	1.6	0.7	1.8	2.7	1.8	3.0
Korea	9.7	5.1	2.7	9.3	1.9	0.0	4.1	4.5	3.3	4.7
Lao PDR	–6.2	–17.7	–28.5	–22.9	0.0	–16.7	0.6	12.1	14.9	13.4
Malaysia	15.5	14.1	6.6	9.1	10.2	11.9	11.9	12.9	12.5	13.2
Mongolia	10.4	9.3	8.2	13.4	–43.9	–6.8	8.2	6.1	3.1	9.9
Myanmar	26.7	34.0	29.8	14.6	8.1	5.8	3.6	4.1	26.7	4.6
Nepal	12.9	10.7	4.9	2.6	1.7	3.0	6.3	4.4	0.2	3.1
Pakistan	10.6	7.8	7.9	14.0	13.1	20.5	29.0	22.0	21.0	20.8
Philippines	9.1	11.5	6.4	7.0	6.6	10.6	17.2	14.4	17.9	18.2
Singapore	5.9	7.9	6.5	7.5	4.5	3.2	4.5	6.8	3.3	4.4
Sri Lanka	20.7	18.4	3.5	4.7	2.7	5.0	6.6	6.5	16.1	14.8
Thailand	14.2	11.5	8.8	14.4	12.1	7.2	10.0	10.6	11.0	12.5
Turkiye	33.7	14.7	1.0	–1.2	–14.7	–18.6	0.3	16.6	14.8	11.4
Vietnam	14.5	10.3	–18.4	–60.2	–3.3	22.1	19.1	6.4	7.0	11.0
US	3.8	1.0	0.2	4.7	3.5	6.8	6.4	4.8	6.1	7.0

Unit: Percentage. Source: APO Productivity Database 2023.

based on these ex-post estimates of rates of return. The difference between the ex-ante and ex-post approaches may cause a modest difference in the growth measure of capital services, regardless of the substantial differences in the rates of return and capital compensations.

8.3 Measurement of Labor Input

8.3.1 Hours Worked

The volume of labor can be measured in three units: number of persons in employment, number of filled jobs, and hours 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 of each type of labor. This is the primary underlying reason for the importance of choosing hours actually worked in productivity analysis. Due to the difficulty in accurately estimating the 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 of establishments and households, 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.

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 and data such as unpaid hours and worker characteristics, are unavailable. This greatly limits the variety of labor

market data collected through establishments.[91] Information on hours is from data 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 can be more than 50% in developing countries), or the public sector are also excluded. Because of these limitations, labor market data from establishment surveys often require adjustments for omissions and definition modifications during the compilation process.

In contrast, household-based labor force surveys (LFS) fully cover the economy. However, 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 LFSs are surveyed from the socio-economic perspective, they also provide rich data on worker characteristics relevant to productivity analysis.[92] Table 8.9 presents the sources of the main labor statistics used in Asia QALI Database 2023.

Table 8.9 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
Turkiye	Population and Housing Census, Labour Force Survey, Income and Living Conditions Survey
Vietnam	Population and Housing Census, Labour Force and Employment Survey, Living Standards Survey, Vietnam Statistical Data in the 20th Century, Vietnam Economy 1986–1991

Source: Asia QALI Database 2023.

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

92: The major weakness of the LFS, however, is data precision. By relying on the respondents' recollection, 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.

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.

Figure 8.11 presents a cross-country comparison of average annual hours worked per worker for 2010–2021, relative to the level of the US, based on the Asia QALI Database 2023. It indicates that workers in

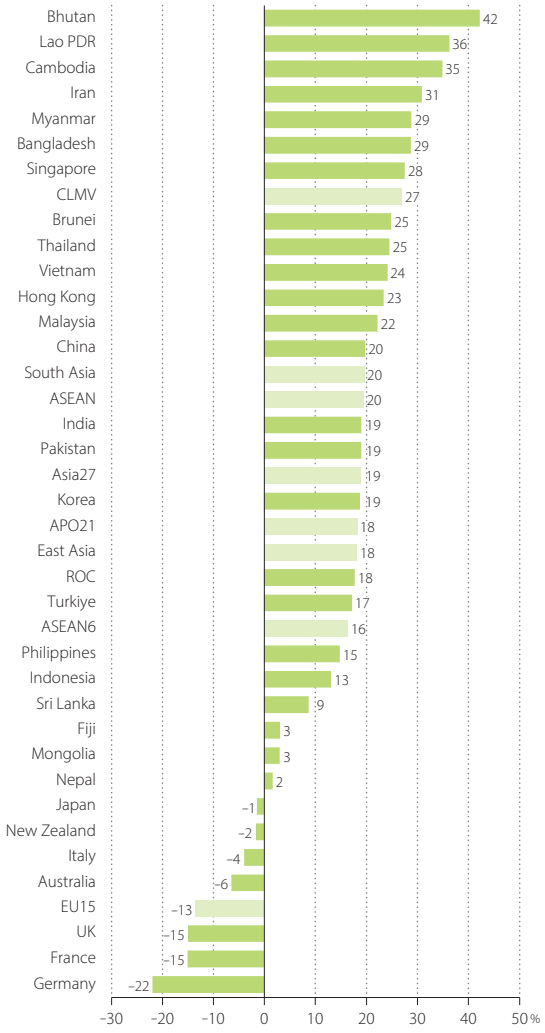

Figure 8.11 Hours Worked Per Worker relative to the US, 2010–2021

——Hours worked per worker on average, percent difference from reference county US

Unit: Percentage (relative to the US). Sources: Official national accounts and labor force survey in each country (including adjustments in APO-PDB) for Asian countries and OECD Stat for the EU15, France, Germany, Italy, New Zealand, and the UK.

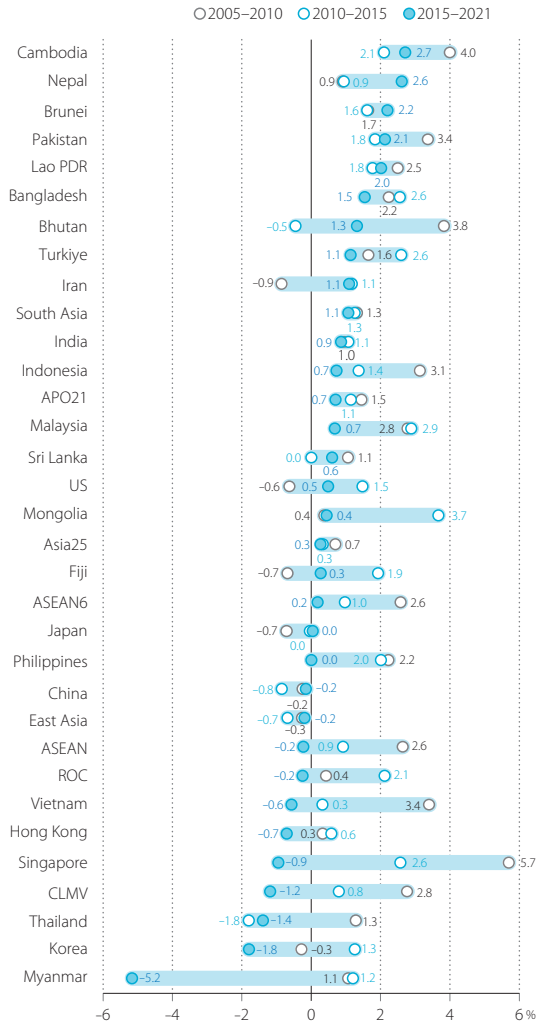

Figure 8.12 Hours Worked Growth in the Recent Periods, 2005–2021

——Growth in hours worked in 2015–2021, 2010–2015, and 2005–2010

Unit: Percentage (average annual growth rate). Source: Asia QALI Database 2023.

Asian countries work much longer than those in the US and EU. In many countries sampled, the difference in annual hours worked per person relative to the US is more than 10% of the US level.[93] Prolonged working hours are observed 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 8.12 presents the growth in hours worked for the Asia25 economies in 2015–2021, compared with those in 2010–2015 and 2005–2010. Singapore experienced a continuous significant slowdown in hours-worked growth over these sub-periods. The change in growth rates varies widely by country and over periods.

8.3.2 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).[94] Adjusting total hours worked for quality would require information on worker characteristics to differentiate the workforce into different types. These 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 8.3.1 and sample size problems as they break down the workforce into fine categories. Covering the Asia25 economies, 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 (Table 8.9). The developed data is called the Asia QALI Database, consisting of the number of workers, hours worked per worker, and hourly wages, cross-classified by gender, educational attainment, age, and employment status. The Asia QALI Database 2023 estimates total hours worked, labor qualities, and QALI in APO-PDB 2023.[95]

Figure 8.13 compares the average schooling years observed in terms of workers from 1970 to 2021 as an intuitive indicator of labor quality based on the Asia QALI Database 2023. Although there is a significant range in 2021, the average years have increased since 1970 in almost all economies. In this measure, three-country groups 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 2021. The first group mainly consists of East Asian countries; Japan, Korea, and the ROC are the leading countries (13.4 years), followed by Hong Kong, Mongolia, Sri Lanka, and Singapore. The second group is ASEAN6, China, Fiji, Turkiye, and Vietnam. The third group is South Asian countries and CLMV except Vietnam. This chart shows that improving its average educational background takes a long time.

93: Shorter hours worked in Nepal are due to frequent general strikes called "Banda," mainly 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.

94: The SNA 2008 (United Nations 2009, Chapter 19) 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 labor inputs based on models" (para. 19.42).

95: Data on hours worked by 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 in APO-PDB (Section 8.3.3). The reports on the Asia QALI Database are provided by Nomura and Akashi (2017) for South Asian countries and Nomura (2023b) for Vietnam.

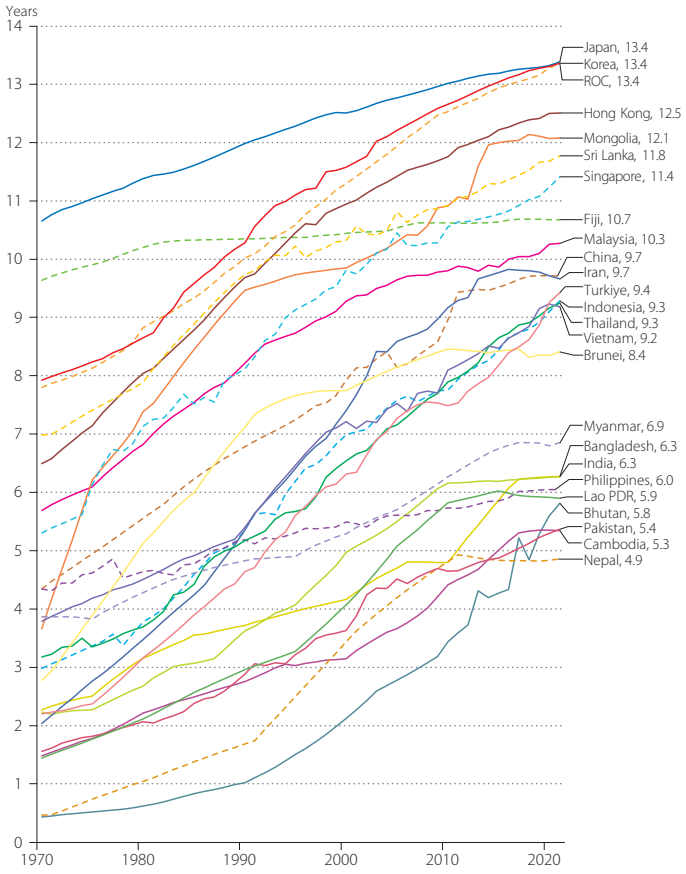

Figure 8.13 Average Schooling Years of Workers, 1970–2021

Unit: Years. Source: Asia QALI Database 2023.

8.3.3 *Labor Share*

The labor share, 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 COE (compensation of employees) are not fully available in the official national accounts for all Asian countries. Figure 8.14 summarizes the availability of the COE estimates in the official national accounts and the input-output tables in each country (Table 8.2). 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

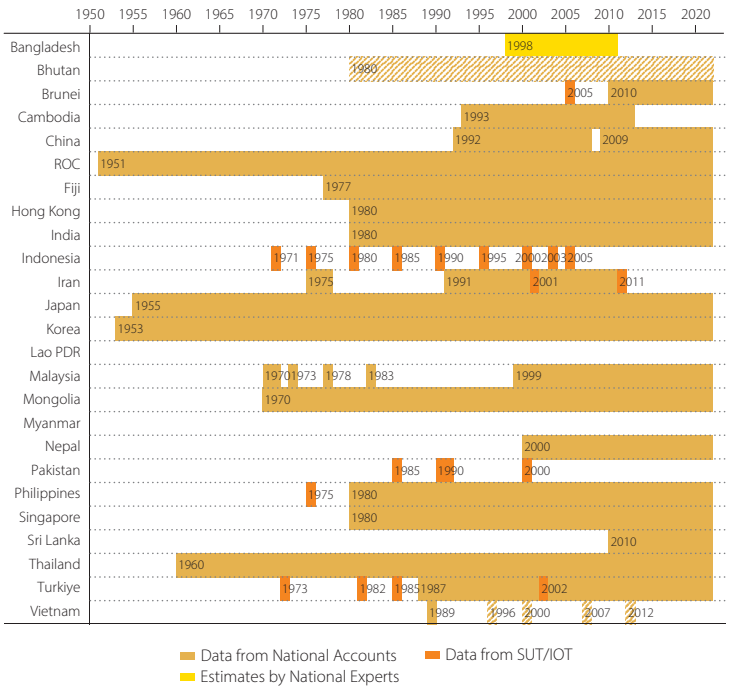

Figure 8.14 Availability of COE Estimates

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.

and Iran, the estimates are not fully available for the entire period of our observation of 1970–2021. 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 Asia QALI Database 2023 (Section 8.3.2), 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 8.6) and of other fixed assets.[96] 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.[97]

8.4 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 1952–2021 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*.

In APO-PDB 2022, the productivity account for China was considerably 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 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 (Diewert, Nomura, and Shimizu 2023). Our adjustments lead us to revise China's TFP growth rate downwards significantly (see footnote 48).

The industry-level productivity account for Bhutan was developed for the period 1990–2014 at the UNDESA project (UNDESA 2016) led by Koji Nomura and Hamid Rashid (UNDESA), with support from the National Statistics Bureau, Ministry of Labour and Human Resources, and the Gross National Happiness Commission of Royal Government of Bhutan. The aggregate productivity account is retrospectively estimated until 1970 and updated to the most recent year at KEO, based on the Bhutan system of national accounts (BTSNA) and other data from the National Statistics Office of Bhutan (https://www.nsb.gov.bt/).[98]

Industry-level productivity accounts for Myanmar were developed for 1990–2014 by Nomura and Shirane (2016) to correct the significant overestimation of GDP in Myanmar's official national

96: Since the capital stock is not measured at the industry level in the APO-PDB, the capital stock shares are estimated based on the agricultural industry's value-added share if the industry's official estimates are unavailable.
97: The WDR is set at 0.5 for Japan, 0.3 for the Asian Tigers, 0.5 for CLMV (except Myanmar), Iran, and Turkiye, and 0.2 for other countries.
98: The industry productivity account is being updated through a project with Pema Dorji of the Department of Macro, Fiscal and Development Finance, Ministry of Finance, Bhutan, which started in June 2023.

accounts (MMSNA) from the late 1990s to the late 2000s and to consider jade production, which is under-represented in the official accounts. The Databook includes these updated results based on the MMSNA and the estimates by ILO.[99]

The data sources for the EU15, the EU27, France, Germany, Italy, and the UK are the OECD.Stat (https://stats.oecd.org/), OECD (2023), and Eurostat (https://ec.europa.eu/eurostat). The data sources for the US, Australia, and New Zealand are the US Bureau of Economic Analysis (https://www.bea.gov/), the Australian Bureau of Statistics (https://www.abs.gov.au/), and the Stats NZ Tauranga Aotearoa (https://www.stats.govt.nz/), 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 the tax data of member economies. GFS data, together with national accounts for each country, play a key role in adjusting GDP at market prices to GDP at basic prices (Section 8.1.7). From its tax revenue data, "taxes on goods & services" and "taxes on international trade & transactions" are used for calculating T2. Indirect taxes on products (Table 8.1). From its expenditure data, "subsidies" are used for S2. Subsidies on products. Finally, the energy consumption and CO2 emissions data in Section 5.7 are based on IEA (2021a and 2021b).

8.5 PPP for Output and Inputs

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 the World Bank manages. 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. This approach creates national series for volumes at the prices of a common reference year (2021) and deflates these by the PPP for a fixed year (2017).

99: Some data update seems to have been delayed due to the military coup of February 2021. Our estimates are updated based on the UNSD National Accounts Main Aggregate Database for national accounts in 2020–2021 and the ILO estimates ("Employment in Myanmar in 2021: A Rapid Assessment," *ILO Brief*, January 2022) for employment data in 2021.

The left chart of Figure 8.15 shows the revision of PPPs in Asian countries at the ICP 2017 round compared to the ICP 2011 round, which has provided the benchmark estimate for the past Databook series from 2014 to 2019. The revision of 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 of 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 8.15), 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 requires additional revisions to be compared to the cross-country growth comparison. The readers should bear in mind these circumstances.

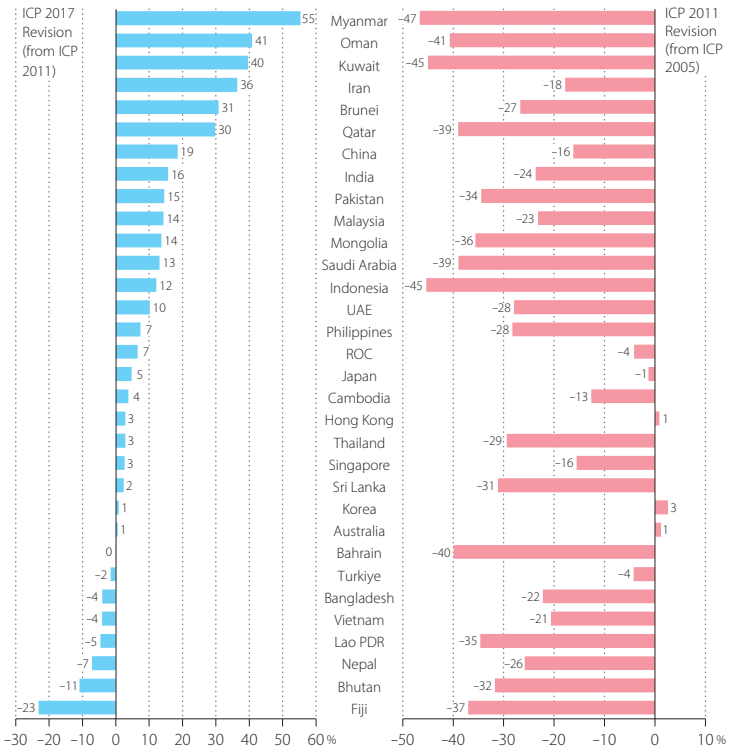

Figure 8.15 Revisions of PPP for GDP in the ICP 2005, 2011, and 2017 Rounds
——Ratios of the 2017 PPP to the 2011 PPP (left chart) and the 2011 PPP to the 2005 PPP (right chart)

Unit: Percentage. Sources: 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.

In this 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. The PPP estimates for labor and capital inputs have been updated in line with the publication of Databook 2023, based on updates to the Asia QALI, capital stock data, and the expansion of asset boundaries in APO-PDB.

9 Supplementary Tables

Table 9.1 GDP using Exchange Rate, 1970–2021

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

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2021		(%)
Japan	209	100.0	Japan	1,111	100.0	Japan	3,185	100.0	Japan	4,968	100.0	China	6,395	100.0	China	18,701	100.0
China	104	49.8	China	350	31.5	China	434	13.6	China	1,313	26.4	Japan	5,759	90.1	Japan	5,006	26.8
India	64	30.4	India	190	17.1	India	335	10.5	Korea	576	11.6	India	1,670	26.1	India	3,166	16.9
Turkiye	24	11.7	Saudi Arabia	165	14.9	Korea	283	8.9	India	482	9.7	Korea	1,144	17.9	Iran	2,002	10.7
Iran	11	5.4	Iran	98	8.8	Turkiye	204	6.4	ROC	331	6.7	Turkiye	777	12.1	Korea	1,811	9.7
Pakistan	10	4.9	Turkiye	92	8.3	ROC	166	5.2	Turkiye	274	5.5	Indonesia	756	11.8	Indonesia	1,193	6.4
Indonesia	10	4.7	Indonesia	80	7.2	Indonesia	127	4.0	Saudi Arabia	191	3.9	Saudi Arabia	533	8.3	Saudi Arabia	880	4.7
Bangladesh	9.9	4.7	Korea	65	5.9	Saudi Arabia	119	3.7	Hong Kong	172	3.5	Iran	516	8.1	Turkiye	819	4.4
Korea	9.0	4.3	UAE	44	4.0	Iran	95	3.0	Indonesia	168	3.4	ROC	444	6.9	ROC	776	4.1
Thailand	7.3	3.5	ROC	42	3.8	Thailand	89	2.8	Thailand	127	2.6	Thailand	342	5.3	Thailand	512	2.7
Philippines	6.8	3.2	Thailand	33	3.0	Hong Kong	77	2.4	Iran	113	2.3	UAE	298	4.7	Singapore	424	2.3
ROC	5.8	2.8	Philippines	33	3.0	UAE	51	1.6	UAE	106	2.1	Malaysia	255	4.0	UAE	420	2.2
Saudi Arabia	5.4	2.6	Kuwait	30	2.7	Pakistan	50	1.6	Singapore	96	1.9	Singapore	240	3.8	Bangladesh	415	2.2
Malaysia	3.9	1.9	Hong Kong	29	2.6	Philippines	47	1.5	Pakistan	96	1.9	Hong Kong	229	3.6	Philippines	394	2.1
Hong Kong	3.8	1.8	Malaysia	25	2.2	Malaysia	45	1.4	Malaysia	95	1.9	Philippines	208	3.3	Malaysia	373	2.0
Kuwait	3.0	1.4	Pakistan	24	2.2	Singapore	39	1.2	Philippines	84	1.7	Pakistan	194	3.0	Hong Kong	369	2.0
Sri Lanka	2.8	1.4	Bangladesh	19	1.7	Bangladesh	31	1.0	Bangladesh	52	1.0	Vietnam	147	2.3	Vietnam	367	2.0
Myanmar	2.7	1.3	Singapore	12	1.1	Kuwait	19	0.6	Kuwait	38	0.8	Qatar	128	2.0	Pakistan	342	1.8
Singapore	1.9	0.9	Qatar	7.9	0.7	Oman	13	0.4	Vietnam	37	0.7	Bangladesh	126	2.0	Qatar	187	1.0
Nepal	1.2	0.6	Oman	7.2	0.6	Sri Lanka	9.4	0.3	Oman	22	0.5	Kuwait	118	1.8	Kuwait	142	0.8
Vietnam	1.2	0.6	Brunei	6.2	0.6	Qatar	7.5	0.2	Sri Lanka	19	0.4	Oman	66	1.0	Oman	90	0.5
UAE	1.1	0.5	Myanmar	5.9	0.5	Vietnam	6.6	0.2	Qatar	18	0.4	Sri Lanka	58	0.9	Sri Lanka	89	0.5
Cambodia	0.8	0.4	Sri Lanka	4.9	0.4	Myanmar	6.1	0.2	Bahrain	8.4	0.2	Myanmar	37	0.6	Bahrain	39	0.2
Qatar	0.5	0.3	Bahrain	3.5	0.3	Bahrain	4.5	0.1	Myanmar	7.8	0.2	Bahrain	26	0.4	Nepal	35	0.2
Bahrain	0.4	0.2	Nepal	2.5	0.2	Nepal	4.3	0.1	Brunei	6.6	0.1	Nepal	19	0.3	Myanmar	29	0.2
Oman	0.3	0.1	Fiji	1.2	0.1	Brunei	3.9	0.1	Nepal	6.5	0.1	Brunei	14	0.2	Cambodia	27	0.1
Brunei	0.2	0.1	Vietnam	1.0	0.1	Cambodia	1.8	0.1	Cambodia	3.7	0.1	Cambodia	11	0.2	Lao PDR	19	0.1
Fiji	0.2	0.1	Cambodia	0.7	0.1	Mongolia	1.6	0.0	Lao PDR	1.8	0.0	Lao PDR	7.4	0.1	Mongolia	16	0.1
Lao PDR	0.1	0.1	Mongolia	0.5	0.0	Fiji	1.4	0.0	Fiji	1.7	0.0	Mongolia	7.2	0.1	Brunei	14	0.1
Mongolia	0.1	0.1	Lao PDR	0.3	0.0	Lao PDR	0.9	0.0	Mongolia	1.4	0.0	Fiji	3.1	0.0	Fiji	4.3	0.0
Bhutan	0.1	0.0	Bhutan	0.1	0.0	Bhutan	0.3	0.0	Bhutan	0.4	0.0	Bhutan	1.6	0.0	Bhutan	2.5	0.0
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	383	183.4	APO21	1,865	167.9	APO21	4,799	150.7	APO21	7,704	155.1	APO21	12,913	201.9	APO21	18,158	97.1
Asia25	490	234.6	Asia25	2,228	200.5	Asia25	5,243	164.6	Asia25	9,032	181.8	Asia25	19,360	302.7	Asia25	36,904	197.3
Asia31	500	239.7	Asia31	2,485	223.7	Asia31	5,457	171.4	Asia31	9,416	189.5	Asia31	20,529	321.0	Asia31	38,662	206.7
East Asia	331	158.7	East Asia	1,598	143.9	East Asia	4,147	130.2	East Asia	7,362	148.2	East Asia	13,978	218.6	East Asia	26,678	142.7
South Asia	88	42.0	South Asia	241	21.7	South Asia	430	13.5	South Asia	655	13.2	South Asia	2,068	32.3	South Asia	4,050	21.7
ASEAN	35	16.7	ASEAN	197	17.7	ASEAN	366	11.5	ASEAN	626	12.6	ASEAN	2,018	31.6	ASEAN	3,351	17.9
ASEAN6	30	14.4	ASEAN6	189	17.0	ASEAN6	351	11.0	ASEAN6	576	11.6	ASEAN6	1,815	28.4	ASEAN6	2,909	15.6
CLMV	4.8	2.3	CLMV	8.0	0.7	CLMV	15	0.5	CLMV	50	1.0	CLMV	203	3.2	CLMV	442	2.4
GCC	11	5.1	GCC	258	23.2	GCC	214	6.7	GCC	385	7.7	GCC	1,168	18.3	GCC	1,758	9.4
IPEF	1,438	688.5	IPEF	4,612	415.2	IPEF	10,495	329.5	IPEF	17,356	349.3	IPEF	27,035	422.8	IPEF	38,565	206.2
RCEP	408	195.6	RCEP	1,921	172.9	RCEP	4,637	145.6	RCEP	7,948	160.0	RCEP	16,764	262.1	RCEP	30,855	165.0
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	45	21.7	Australia	173	15.6	Australia	324	10.2	Australia	410	8.2	Australia	1,301	20.3	Australia	1,734	9.3
France	192	91.7	France	534	48.0	France	1,027	32.2	France	1,588	32.0	France	2,334	36.5	France	3,447	18.4
Germany	313	149.9	Germany	810	72.9	Germany	1,537	48.3	Germany	2,234	45.0	Germany	3,180	49.7	Germany	4,851	25.9
Italy	195	93.5	Italy	553	49.8	Italy	1,056	33.2	Italy	1,540	31.0	Italy	2,082	32.6	Italy	2,720	14.5
New Zealand	6.6	3.2	New Zealand	23	2.1	New Zealand	45	1.4	New Zealand	54	1.1	New Zealand	147	2.3	New Zealand	253	1.4
UK	202	96.8	UK	487	43.8	UK	977	30.7	UK	1,561	31.4	UK	2,295	35.9	UK	3,275	17.5
US	1,073	514.0	US	2,857	257.2	US	5,963	187.2	US	10,251	206.3	US	15,049	235.3	US	23,315	124.7
EU15	1,253	599.9	EU15	3,343	300.9	EU15	6,433	202.0	EU15	9,932	199.9	EU15	14,595	228.2	EU15	21,205	113.4
									EU27	9,474	190.7	EU27	14,508	226.9	EU27	21,759	116.4

Unit: Billions of US dollars.
Sources: Official national accounts in each country, including adjustments in APO–PDB.
Note: See Section 8.1 for the adjustments to harmonize GDP coverage across countries.

Table 9.2 GDP using PPP, 1970–2021

——GDP at constant market prices, using the 2017 PPP, the reference year 2021

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2021		(%)
Japan	1,742	100.0	Japan	2,868	100.0	Japan	4,501	100.0	China	5,521	100.0	China	14,267	100.0	China	27,811	100.0
India	757	43.5	China	1,144	39.9	China	2,349	52.2	Japan	5,078	92.0	India	5,764	40.4	India	10,589	38.1
China	714	41.0	India	1,017	35.5	India	1,666	37.0	India	2,717	49.2	Japan	5,384	37.7	Japan	5,712	20.5
Saudi Arabia	398	22.9	Saudi Arabia	649	22.6	Indonesia	909	20.2	Indonesia	1,366	24.7	Indonesia	2,243	15.7	Indonesia	3,577	12.9
Turkiye	302	17.3	Indonesia	496	17.3	Saudi Arabia	797	17.7	Korea	1,189	21.5	Korea	1,912	13.4	Turkiye	3,134	11.3
Iran	293	16.8	Turkiye	447	15.6	Turkiye	726	16.1	Turkiye	1,028	18.6	Turkiye	1,586	11.1	Korea	2,544	9.1
Indonesia	222	12.8	Iran	395	13.8	Korea	598	13.3	Saudi Arabia	981	17.8	Saudi Arabia	1,375	9.6	Saudi Arabia	1,906	6.9
Bangladesh	128	7.4	Korea	223	7.8	Iran	496	11.0	Iran	718	13.0	Iran	1,326	9.3	ROC	1,475	5.3
Philippines	111	6.4	Thailand	201	7.0	Thailand	439	9.8	Thailand	696	12.6	Thailand	1,098	7.7	Iran	1,431	5.1
Kuwait	109	6.3	Philippines	201	7.0	ROC	347	7.7	ROC	685	12.4	ROC	1,036	7.3	Pakistan	1,342	4.8
Pakistan	101	5.8	UAE	196	6.8	Pakistan	323	7.2	Pakistan	604	10.9	Pakistan	883	6.2	Thailand	1,328	4.8
Thailand	99	5.7	Pakistan	161	5.6	Philippines	259	5.8	Philippines	380	6.9	Vietnam	641	4.5	Vietnam	1,192	4.3
Korea	90	5.2	ROC	147	5.1	UAE	207	4.6	Malaysia	363	6.6	Philippines	614	4.3	Bangladesh	1,086	3.9
Vietnam	63	3.6	Bangladesh	120	4.2	Malaysia	186	4.1	UAE	347	6.3	Malaysia	610	4.3	Philippines	1,020	3.7
UAE	52	3.0	Malaysia	105	3.7	Bangladesh	174	3.9	Vietnam	306	5.5	Bangladesh	518	3.6	Malaysia	985	3.5
ROC	51	3.0	Vietnam	100	3.5	Hong Kong	174	3.9	Hong Kong	269	4.9	UAE	510	3.6	UAE	687	2.5
Malaysia	47	2.7	Hong Kong	89	3.1	Vietnam	138	3.1	Bangladesh	265	4.8	Singapore	423	3.0	Singapore	652	2.3
Hong Kong	37	2.1	Kuwait	88	3.1	Singapore	110	2.5	Singapore	231	4.2	Hong Kong	400	2.8	Hong Kong	498	1.8
Sri Lanka	31	1.8	Singapore	54	1.9	Sri Lanka	71	1.6	Sri Lanka	119	2.2	Sri Lanka	210	1.5	Sri Lanka	318	1.1
Qatar	27	1.5	Sri Lanka	46	1.6	Kuwait	64	1.4	Kuwait	98	1.8	Qatar	207	1.4	Qatar	290	1.0
Singapore	23	1.3	Qatar	35	1.2	Oman	62	1.4	Oman	93	1.7	Kuwait	199	1.4	Kuwait	230	0.8
Myanmar	19	1.1	Myanmar	32	1.1	Myanmar	42	0.9	Myanmar	77	1.4	Oman	135	0.9	Oman	189	0.7
Nepal	19	1.1	Oman	30	1.0	Nepal	35	0.8	Qatar	67	1.2	Myanmar	128	0.9	Myanmar	146	0.5
Cambodia	16	0.9	Brunei	30	1.0	Qatar	34	0.8	Nepal	57	1.0	Nepal	85	0.6	Nepal	128	0.5
Brunei	12	0.7	Nepal	23	0.8	Brunei	21	0.5	Brunei	27	0.5	Bahrain	60	0.4	Cambodia	100	0.4
Bahrain	7.3	0.4	Bahrain	15	0.5	Bahrain	16	0.4	Bahrain	27	0.5	Cambodia	49	0.3	Bahrain	94	0.3
Lao PDR	7.0	0.4	Lao PDR	9.0	0.3	Lao PDR	13	0.3	Lao PDR	25	0.4	Lao PDR	39	0.3	Lao PDR	59	0.2
Oman	5.4	0.3	Cambodia	8.3	0.3	Cambodia	12	0.3	Cambodia	23	0.4	Brunei	28	0.2	Mongolia	43	0.2
Mongolia	3.6	0.2	Mongolia	6.4	0.2	Mongolia	11	0.2	Mongolia	12	0.2	Mongolia	22	0.2	Brunei	28	0.1
Fiji	3.5	0.2	Fiji	5.6	0.2	Fiji	7.0	0.2	Fiji	8.8	0.2	Fiji	10	0.1	Fiji	11	0.0
Bhutan	0.5	0.0	Bhutan	0.8	0.0	Bhutan	1.6	0.0	Bhutan	2.6	0.0	Bhutan	5.9	0.0	Bhutan	9.4	0.0
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	4,149	238.1	APO21	6,724	234.5	APO21	11,196	248.7	APO21	16,138	292.3	APO21	24,853	174.2	APO21	37,223	133.8
Asia25	4,895	281.0	Asia25	7,931	276.5	Asia25	13,610	302.4	Asia25	21,766	394.3	Asia25	39,282	275.3	Asia25	65,216	234.5
Asia31	5,495	315.4	Asia31	8,945	311.9	Asia31	14,791	328.6	Asia31	23,380	423.5	Asia31	41,768	292.8	Asia31	68,613	246.7
East Asia	2,638	151.4	East Asia	4,479	156.2	East Asia	7,981	177.3	East Asia	12,754	231.0	East Asia	23,021	161.4	East Asia	38,083	136.9
South Asia	1,037	59.5	South Asia	1,369	47.7	South Asia	2,271	50.5	South Asia	3,764	68.2	South Asia	7,466	52.3	South Asia	13,471	48.4
ASEAN	622	35.7	ASEAN	1,236	43.1	ASEAN	2,129	47.3	ASEAN	3,493	63.3	ASEAN	5,872	41.2	ASEAN	9,086	32.7
ASEAN6	516	29.6	ASEAN6	1,086	37.9	ASEAN6	1,925	42.8	ASEAN6	3,063	55.5	ASEAN6	5,016	35.2	ASEAN6	7,590	27.3
CLMV	106	6.1	CLMV	150	5.2	CLMV	205	4.5	CLMV	429	7.8	CLMV	857	6.0	CLMV	1,497	5.4
GCC	599	34.4	GCC	1,014	35.3	GCC	1,181	26.2	GCC	1,614	29.2	GCC	2,486	17.4	GCC	3,397	12.2
IPEF	9,570	549.4	IPEF	14,016	488.7	IPEF	20,752	461.0	IPEF	29,037	526.0	IPEF	38,726	271.4	IPEF	52,696	189.5
RCEP	3,567	204.8	RCEP	5,999	209.2	RCEP	10,272	228.2	RCEP	16,259	294.5	RCEP	28,757	201.6	RCEP	46,896	168.6
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	330	19.0	Australia	442	15.4	Australia	594	13.2	Australia	842	15.3	Australia	1,143	8.0	Australia	1,493	5.4
France	1,214	69.7	France	1,472	51.3	France	1,937	43.0	France	2,536	45.9	France	2,930	20.5	France	3,317	11.9
Germany	1,195	68.6	Germany	1,709	59.6	Germany	2,186	48.6	Germany	2,683	48.6	Germany	3,039	21.3	Germany	3,384	12.2
Italy	1,977	113.5	Italy	2,607	90.9	Italy	3,163	70.3	Italy	3,876	70.2	Italy	4,225	29.6	Italy	4,930	17.7
New Zealand	1,258	72.2	New Zealand	1,835	64.0	New Zealand	2,307	51.3	New Zealand	2,707	49.0	New Zealand	2,793	19.6	New Zealand	2,740	9.9
UK	1,258	72.2	UK	1,835	64.0	UK	2,307	51.3	UK	2,707	49.0	UK	2,793	19.6	UK	2,740	9.9
US	5,999	344.4	US	8,189	285.5	US	11,223	249.3	US	15,697	284.3	US	18,678	130.9	US	23,315	83.8
EU15	7,757	445.3	EU15	10,613	370.1	EU15	13,560	301.3	EU15	16,966	307.3	EU15	19,137	134.1	EU15	21,303	76.6
									EU27	16,757	303.5	EU27	19,131	134.1	EU27	21,755	78.2

Unit: Billions of US dollars.
Sources: Official national accounts in each country, including adjustments in APO–PDB.
Note: See Section 8.1 for the adjustments to harmonize GDP coverage across countries.

Table 9.3 GDP Growth, 1990–2021

——Growth rate of GDP at constant market prices

1990–1995		1995–2000		2000–2005		2005–2010		2010–2015		2015–2021		2019–2020		2020–2021	
China	9.7	Qatar	9.8	Kuwait	12.7	Qatar	13.4	Mongolia	9.8	Cambodia	8.1	Cambodia	5.2	Bahrain	15.1
Malaysia	9.3	Lao PDR	9.2	Cambodia	9.2	China	10.7	Bangladesh	7.3	Vietnam	6.3	Vietnam	3.4	India	13.0
Thailand	8.7	Myanmar	8.0	Qatar	9.0	Bhutan	10.0	China	6.9	Bangladesh	6.3	Bangladesh	3.3	Cambodia	12.5
Singapore	8.6	Vietnam	7.7	China	8.3	India	8.1	Turkiye	6.8	Turkiye	5.7	ROC	3.1	Oman	11.8
Korea	8.3	Cambodia	7.6	Bahrain	8.0	Bahrain	7.8	Bhutan	6.5	China	5.4	Iran	2.5	Turkiye	10.8
Vietnam	8.2	China	7.4	Vietnam	7.5	Vietnam	7.3	India	6.4	India	4.8	Turkiye	1.4	China	8.5
ROC	7.6	Bhutan	6.8	Iran	7.0	Singapore	7.2	Qatar	6.4	Nepal	4.4	China	1.0	Nepal	8.3
Indonesia	7.5	UAE	6.6	India	6.9	Bangladesh	7.2	Sri Lanka	6.4	Bahrain	4.3	Brunei	0.2	Singapore	7.4
Kuwait	6.9	Singapore	6.2	Mongolia	6.3	Sri Lanka	6.5	Malaysia	6.3	Pakistan	4.1	Nepal	−0.5	Hong Kong	7.2
Pakistan	6.6	ROC	6.0	Bhutan	6.3	Mongolia	6.4	Myanmar	6.1	Philippines	3.6	Pakistan	−0.6	ROC	6.4
Hong Kong	5.9	Pakistan	6.0	Bangladesh	6.2	Lao PDR	6.2	UAE	5.8	ROC	3.5	Korea	−0.8	Philippines	6.1
Sri Lanka	5.6	Korea	5.4	Myanmar	5.6	Cambodia	6.1	Philippines	5.8	Indonesia	3.4	Indonesia	−2.3	Pakistan	5.8
Bahrain	5.3	India	5.3	Malaysia	5.5	Indonesia	5.4	Saudi Arabia	5.4	Singapore	3.3	Singapore	−2.7	Bangladesh	5.6
Nepal	5.0	Bahrain	5.0	Thailand	5.2	Iran	5.2	Indonesia	5.3	Mongolia	2.8	Qatar	−2.8	Vietnam	5.4
Oman	4.9	Sri Lanka	4.9	Korea	5.1	Philippines	4.9	Lao PDR	5.0	Malaysia	2.7	Sri Lanka	−2.8	Malaysia	4.9
Cambodia	4.6	Nepal	4.5	Turkiye	5.0	Malaysia	4.8	Vietnam	4.9	Lao PDR	2.5	Bahrain	−3.7	UAE	4.0
India	4.4	Bangladesh	4.5	Singapore	4.9	Myanmar	4.7	Cambodia	4.7	Korea	2.5	Saudi Arabia	−4.3	Korea	4.0
Myanmar	4.2	Philippines	4.5	Sri Lanka	4.8	Korea	4.4	Singapore	4.7	Bhutan	2.3	Lao PDR	−4.4	Iran	3.7
Lao PDR	4.1	Turkiye	4.1	UAE	4.8	Nepal	4.3	Oman	4.4	Oman	2.0	Japan	−4.4	Indonesia	3.4
Bangladesh	3.9	Malaysia	4.1	Philippines	4.7	ROC	4.2	Fiji	3.7	Sri Lanka	1.6	Mongolia	−4.5	Lao PDR	3.3
Qatar	3.8	Iran	4.1	Indonesia	4.5	Thailand	3.9	Bahrain	3.7	Iran	1.6	Oman	−4.6	Bhutan	2.8
UAE	3.7	Mongolia	3.6	Pakistan	4.4	Hong Kong	3.8	Kuwait	3.6	Hong Kong	1.3	Thailand	−4.8	Saudi Arabia	2.4
Iran	3.3	Oman	3.2	Saudi Arabia	4.3	Turkiye	3.7	Pakistan	3.4	Saudi Arabia	1.0	Malaysia	−4.9	Japan	2.2
Philippines	3.2	Hong Kong	2.8	Hong Kong	4.1	Oman	3.6	Thailand	3.2	Thailand	0.5	India	−5.9	Kuwait	2.2
Saudi Arabia	3.2	Brunei	2.2	ROC	4.1	Pakistan	3.2	Nepal	2.9	Qatar	0.4	Hong Kong	−6.5	Qatar	1.9
Bhutan	3.0	Fiji	2.0	Oman	3.7	UAE	2.9	ROC	2.9	Japan	0.1	Kuwait	−9.0	Mongolia	1.6
Brunei	2.9	Kuwait	1.7	Nepal	3.5	Saudi Arabia	2.4	Hong Kong	2.8	UAE	0.1	Bhutan	−9.7	Sri Lanka	0.4
Turkiye	2.9	Japan	1.1	Lao PDR	3.1	Kuwait	1.5	Korea	2.7	Brunei	−0.5	UAE	−9.9	Thailand	−1.3
Fiji	2.6	Saudi Arabia	1.0	Fiji	2.0	Fiji	0.7	Japan	1.1	Kuwait	−0.6	Philippines	−10.2	Fiji	−5.2
Japan	1.3	Indonesia	0.7	Japan	1.2	Japan	0.0	Brunei	0.4	Fiji	−2.2	Myanmar	−17.8	Brunei	−11.6
Mongolia	−1.8	Thailand	0.5	Brunei	0.7	Brunei	−0.1	Iran	−0.4	Myanmar	−2.9	Fiji	−18.6	Myanmar	−15.4
(region)		(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	4.2	APO21	3.1	APO21	4.3	APO21	4.3	APO21	4.1	APO21	3.3	APO21	−2.9	APO21	6.9
Asia25	5.2	Asia25	4.1	Asia25	5.4	Asia25	6.4	Asia25	5.2	Asia25	4.1	Asia25	−1.3	Asia25	7.5
Asia31	5.1	Asia31	4.0	Asia31	5.4	Asia31	6.2	Asia31	5.2	Asia31	4.0	Asia31	−1.5	Asia31	7.3
East Asia	5.1	East Asia	4.3	East Asia	5.1	East Asia	6.7	East Asia	5.1	East Asia	4.2	East Asia	0.0	East Asia	7.2
South Asia	4.8	South Asia	5.3	South Asia	6.4	South Asia	7.3	South Asia	6.1	South Asia	4.7	South Asia	−4.4	South Asia	11.3
ASEAN	7.4	ASEAN	2.5	ASEAN	5.1	ASEAN	5.3	ASEAN	5.0	ASEAN	3.1	ASEAN	−3.4	ASEAN	3.4
ASEAN6	7.5	ASEAN6	1.8	ASEAN6	4.8	ASEAN6	5.1	ASEAN6	5.0	ASEAN6	2.8	ASEAN6	−4.2	ASEAN6	3.4
CLMV	7.0	CLMV	7.8	CLMV	7.0	CLMV	6.8	CLMV	5.1	CLMV	5.1	CLMV	0.5	CLMV	3.6
GCC	3.6	GCC	2.6	GCC	5.3	GCC	3.3	GCC	5.3	GCC	0.8	GCC	−5.7	GCC	3.5
IPEF	3.2	IPEF	3.5	IPEF	3.2	IPEF	2.6	IPEF	3.1	IPEF	2.5	IPEF	−3.4	IPEF	6.2
RCEP	5.4	RCEP	3.8	RCEP	5.1	RCEP	6.3	RCEP	5.1	RCEP	3.9	RCEP	−0.7	RCEP	6.3
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
Australia	3.2	Australia	3.8	Australia	3.4	Australia	2.7	Australia	2.7	Australia	2.2	Australia	2.2	Australia	3.6
France	1.2	France	2.9	France	1.7	France	0.8	France	1.0	France	1.0	France	−8.0	France	6.9
Germany	2.1	Germany	2.0	Germany	0.6	Germany	1.1	Germany	1.8	Germany	1.1	Germany	−3.8	Germany	3.1
Italy	1.2	Italy	2.0	Italy	0.9	Italy	−0.3	Italy	−0.7	Italy	0.2	Italy	−9.5	Italy	6.5
New Zealand	3.1	New Zealand	3.0	New Zealand	3.9	New Zealand	1.5	New Zealand	3.0	New Zealand	3.2	New Zealand	0.0	New Zealand	4.7
UK	2.3	UK	3.1	UK	2.4	UK	0.5	UK	1.7	UK	0.7	UK	−11.5	UK	6.9
US	2.5	US	4.2	US	2.5	US	1.0	US	2.1	US	2.0	US	−2.9	US	5.7
EU15	1.6	EU15	2.9	EU15	1.7	EU15	0.7	EU15	1.0	EU15	1.0	EU15	−7.2	EU15	5.5
		EU27	2.8	EU27	1.7	EU27	1.0	EU27	1.0	EU27	1.3	EU27	−5.8	EU27	5.2

Unit: Percentage (average annual growth rate).
Sources: Official national accounts in each country, including adjustments in APO-PDB.
Note: See Section 8.1 for the adjustments to harmonize GDP coverage across countries.

Table 9.4 Population, 1970–2021

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2021		(%)
China	830	40.2	China	987	39.1	China	1,143	37.5	China	1,267	35.9	China	1,341	33.8	China	1,413	32.2
India	558	27.0	India	697	27.6	India	870	28.6	India	1,060	30.0	India	1,241	31.3	India	1,408	32.1
Indonesia	116	5.6	Indonesia	147	5.8	Indonesia	179	5.9	Indonesia	206	5.8	Indonesia	238	6.0	Indonesia	267	6.1
Japan	105	5.1	Japan	117	4.6	Japan	124	4.1	Pakistan	138	3.9	Pakistan	174	4.4	Pakistan	206	4.7
Bangladesh	71	3.4	Bangladesh	85	3.4	Pakistan	112	3.7	Japan	127	3.6	Bangladesh	147	3.7	Bangladesh	169	3.9
Pakistan	61	2.9	Pakistan	83	3.3	Bangladesh	109	3.6	Bangladesh	124	3.5	Japan	128	3.2	Japan	126	2.9
Vietnam	43	2.1	Vietnam	54	2.1	Vietnam	66	2.2	Vietnam	78	2.2	Philippines	92	2.3	Philippines	111	2.5
Philippines	37	1.8	Philippines	48	1.9	Philippines	61	2.0	Philippines	77	2.2	Vietnam	87	2.2	Vietnam	99	2.2
Turkiye	36	1.7	Thailand	45	1.8	Turkiye	56	1.9	Turkiye	68	1.9	Iran	74	1.9	Iran	87	2.0
Thailand	34	1.7	Turkiye	45	1.8	Iran	55	1.8	Iran	64	1.8	Turkiye	74	1.9	Turkiye	85	1.9
Korea	32	1.6	Iran	39	1.5	Thailand	55	1.8	Thailand	61	1.7	Thailand	66	1.7	Thailand	69	1.6
Iran	28	1.4	Korea	38	1.5	Korea	43	1.4	Korea	47	1.3	Korea	50	1.2	Myanmar	54	1.2
Myanmar	27	1.3	Myanmar	33	1.3	Myanmar	40	1.3	Myanmar	46	1.3	Myanmar	49	1.2	Korea	52	1.2
ROC	15	0.7	ROC	18	0.7	ROC	20	0.7	Malaysia	23	0.7	Saudi Arabia	29	0.7	Saudi Arabia	36	0.8
Sri Lanka	13	0.6	Sri Lanka	15	0.6	Malaysia	18	0.6	Nepal	23	0.6	Malaysia	29	0.7	Malaysia	33	0.7
Nepal	11	0.5	Nepal	15	0.6	Nepal	18	0.6	ROC	22	0.6	Nepal	26	0.7	Nepal	29	0.7
Malaysia	11	0.5	Malaysia	14	0.5	Sri Lanka	17	0.6	Saudi Arabia	22	0.6	ROC	23	0.6	ROC	23	0.5
Cambodia	6.8	0.3	Saudi Arabia	10	0.4	Saudi Arabia	16	0.5	Sri Lanka	19	0.5	Sri Lanka	21	0.5	Sri Lanka	22	0.5
Saudi Arabia	6.1	0.3	Cambodia	6.6	0.3	Cambodia	8.8	0.3	Cambodia	12	0.3	Cambodia	14	0.3	Cambodia	16	0.4
Hong Kong	4.0	0.2	Hong Kong	5.1	0.2	Hong Kong	5.7	0.2	Hong Kong	6.7	0.2	UAE	8.3	0.2	UAE	9.1	0.2
Lao PDR	2.5	0.1	Lao PDR	3.2	0.1	Lao PDR	4.1	0.1	Lao PDR	5.2	0.1	Hong Kong	7.0	0.2	Lao PDR	7.4	0.2
Singapore	2.1	0.1	Singapore	2.4	0.1	Singapore	3.0	0.1	Singapore	4.0	0.1	Lao PDR	6.3	0.2	Hong Kong	7.4	0.2
Mongolia	1.2	0.1	Mongolia	1.7	0.1	Kuwait	2.1	0.1	UAE	3.0	0.1	Singapore	5.1	0.1	Singapore	5.5	0.1
Kuwait	0.7	0.0	Kuwait	1.4	0.1	Mongolia	2.1	0.1	Oman	2.4	0.1	Kuwait	2.9	0.1	Oman	4.6	0.1
Oman	0.7	0.0	Oman	1.1	0.0	UAE	1.8	0.1	Mongolia	2.4	0.1	Oman	2.8	0.1	Kuwait	3.9	0.1
Fiji	0.5	0.0	UAE	1.0	0.0	Oman	1.6	0.1	Kuwait	1.9	0.1	Mongolia	2.8	0.1	Mongolia	3.4	0.1
Bhutan	0.3	0.0	Fiji	0.6	0.0	Fiji	0.7	0.0	Fiji	0.8	0.0	Qatar	1.7	0.0	Qatar	2.7	0.1
UAE	0.2	0.0	Bhutan	0.4	0.0	Bhutan	0.6	0.0	Bahrain	0.6	0.0	Bahrain	1.2	0.0	Bahrain	1.5	0.0
Bahrain	0.2	0.0	Bahrain	0.3	0.0	Bahrain	0.5	0.0	Qatar	0.6	0.0	Fiji	0.9	0.0	Fiji	0.9	0.0
Brunei	0.1	0.0	Qatar	0.2	0.0	Qatar	0.4	0.0	Bhutan	0.6	0.0	Bhutan	0.7	0.0	Bhutan	0.8	0.0
Qatar	0.1	0.0	Brunei	0.2	0.0	Brunei	0.3	0.0	Brunei	0.3	0.0	Brunei	0.4	0.0	Brunei	0.4	0.0
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	1,187	57.5	APO21	1,478	58.5	APO21	1,828	60.0	APO21	2,167	61.4	APO21	2,505	63.1	APO21	2,824	64.4
Asia25	2,055	99.6	Asia25	2,512	99.4	Asia25	3,023	99.3	Asia25	3,501	99.1	Asia25	3,923	98.8	Asia25	4,328	98.7
Asia31	2,063	100.0	Asia31	2,526	100.0	Asia31	3,046	100.0	Asia31	3,531	100.0	Asia31	3,969	100.0	Asia31	4,385	100.0
East Asia	987	47.8	East Asia	1,167	46.2	East Asia	1,338	43.9	East Asia	1,473	41.7	East Asia	1,551	39.1	East Asia	1,624	37.0
South Asia	713	34.6	South Asia	895	35.4	South Asia	1,127	37.0	South Asia	1,364	38.6	South Asia	1,609	40.5	South Asia	1,835	41.8
ASEAN	280	13.5	ASEAN	354	14.0	ASEAN	435	14.3	ASEAN	512	14.5	ASEAN	586	14.8	ASEAN	661	15.1
ASEAN6	200	9.7	ASEAN6	257	10.2	ASEAN6	316	10.4	ASEAN6	371	10.5	ASEAN6	430	10.8	ASEAN6	485	11.1
CLMV	79	3.8	CLMV	97	3.8	CLMV	119	3.9	CLMV	140	4.0	CLMV	157	3.9	CLMV	176	4.0
GCC	8.1	0.4	GCC	14	0.6	GCC	22	0.7	GCC	30	0.9	GCC	46	1.2	GCC	58	1.3
IPEF	79	3.8	IPEF	97	3.8	IPEF	119	3.9	IPEF	140	4.0	IPEF	157	3.9	IPEF	176	4.0
RCEP	200	9.7	RCEP	257	10.2	RCEP	316	10.4	RCEP	371	10.5	RCEP	430	10.8	RCEP	485	11.1
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	13	0.6	Australia	15	0.6	Australia	17	0.6	Australia	19	0.5	Australia	22	0.6	Australia	26	0.6
France	52	2.5	France	55	2.2	France	58	1.9	France	61	1.7	France	65	1.6	France	68	1.6
Germany	78	3.8	Germany	78	3.1	Germany	79	2.6	Germany	81	2.3	Germany	80	2.0	Germany	83	1.9
Italy	54	2.6	Italy	56	2.2	Italy	57	1.9	Italy	57	1.6	Italy	60	1.5	Italy	59	1.3
New Zealand	2.8	0.1	New Zealand	3.2	0.1	New Zealand	3.3	0.1	New Zealand	3.7	0.1	New Zealand	4.2	0.1	New Zealand	4.9	0.1
UK	56	2.7	UK	56	2.2	UK	57	1.9	UK	59	1.7	UK	63	1.6	UK	68	1.5
US	205	9.9	US	227	9.0	US	250	8.2	US	282	8.0	US	309	7.8	US	332	7.6
EU15	342	16.6	EU15	357	14.1	EU15	366	12.0	EU15	378	10.7	EU15	397	10.0	EU15	412	9.4
			EU27	405	16.0	EU27	418	13.7	EU27	428	12.1	EU27	441	11.1	EU27	447	10.2

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

Table 9.5 Per Capita GDP using Exchange Rate, 1970–2021

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

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2021		(%)
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	77.7	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	49.8	64.1
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	51.3
Turkiye	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	35.0	45.0
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	33.2	42.7
Iran	0.40	19.9	Turkiye	2.07	21.8	Turkiye	3.62	14.0	Turkiye	4.05	10.3	Turkiye	10.5	22.3	Iran	23.1	29.8
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	13.2	17.0
Malaysia	0.36	17.9	Malaysia	1.78	18.7	Fiji	1.85	7.2	Fiji	2.09	5.3	Iran	6.94	14.7	Malaysia	11.4	14.7
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	Turkiye	9.67	12.4
Sri Lanka	0.23	11.4	Thailand	0.74	7.8	Thailand	1.63	6.3	Iran	1.75	4.5	China	4.77	10.1	Thailand	7.40	9.5
Bhutan	0.22	11.0	Philippines	0.69	7.2	Philippines	0.77	3.0	Philippines	1.09	2.8	Fiji	3.65	7.7	Fiji	4.76	6.1
Thailand	0.21	10.6	Indonesia	0.54	5.7	Mongolia	0.76	3.0	China	1.04	2.6	Indonesia	3.18	6.7	Mongolia	4.59	5.9
Philippines	0.18	9.3	China	0.35	3.7	Indonesia	0.71	2.8	Sri Lanka	1.01	2.6	Sri Lanka	2.80	5.9	Indonesia	4.47	5.8
Pakistan	0.17	8.4	Sri Lanka	0.33	3.5	Sri Lanka	0.55	2.2	Indonesia	0.82	2.1	Mongolia	2.61	5.5	Sri Lanka	4.03	5.2
Bangladesh	0.14	7.0	Bhutan	0.33	3.5	Bhutan	0.55	2.1	Bhutan	0.74	1.9	Bhutan	2.29	4.9	Vietnam	3.72	4.8
China	0.13	6.3	Pakistan	0.29	3.1	Pakistan	0.44	1.7	Pakistan	0.69	1.8	Philippines	2.26	4.8	Philippines	3.56	4.6
Cambodia	0.12	5.9	Mongolia	0.28	3.0	India	0.38	1.5	Mongolia	0.60	1.5	Vietnam	1.69	3.6	Bhutan	3.37	4.3
India	0.11	5.7	India	0.27	2.9	China	0.38	1.5	Vietnam	0.47	1.2	India	1.35	2.8	Lao PDR	2.61	3.4
Nepal	0.11	5.5	Bangladesh	0.22	2.3	Bangladesh	0.29	1.1	India	0.45	1.2	Lao PDR	1.18	2.5	Bangladesh	2.45	3.2
Myanmar	0.10	4.9	Myanmar	0.18	1.9	Nepal	0.24	0.9	Bangladesh	0.42	1.1	Pakistan	1.12	2.4	India	2.25	2.9
Mongolia	0.09	4.7	Nepal	0.17	1.8	Lao PDR	0.22	0.8	Lao PDR	0.35	0.9	Bangladesh	0.86	1.8	Cambodia	1.71	2.2
Indonesia	0.09	4.3	Cambodia	0.11	1.2	Cambodia	0.20	0.8	Cambodia	0.31	0.8	Cambodia	0.82	1.7	Pakistan	1.66	2.1
Lao PDR	0.05	2.4	Lao PDR	0.10	1.1	Myanmar	0.15	0.6	Nepal	0.29	0.7	Myanmar	0.75	1.6	Nepal	1.21	1.6
Vietnam	0.03	1.4	Vietnam	0.02	0.2	Vietnam	0.10	0.4	Myanmar	0.17	0.4	Nepal	0.70	1.5	Myanmar	0.53	0.7
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	26.2	33.7
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	36.7	47.3
Oman	0.45	22.6	Oman	6.61	69.6	Oman	8.22	31.9	Oman	9.37	23.9	Oman	23.7	50.2	Oman	19.7	25.4
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	70.1	90.2
Saudi Arabia	0.88	44.2	Saudi Arabia	16.2	171.2	Saudi Arabia	7.40	28.7	Saudi Arabia	8.88	22.7	Saudi Arabia	18.1	38.4	Saudi Arabia	24.5	31.5
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	46.0	59.2
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	32.6	41.9
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	0.32	16.2	APO21	1.26	13.3	APO21	2.63	10.2	APO21	3.55	9.1	APO21	5.16	10.9	APO21	6.43	8.3
Asia25	0.24	12.0	Asia25	0.89	9.4	Asia25	1.74	6.8	Asia25	2.59	6.6	Asia25	4.97	10.5	Asia25	8.60	11.1
Asia31	0.24	12.2	Asia31	0.99	10.4	Asia31	1.80	7.0	Asia31	2.68	6.9	Asia31	5.21	11.0	Asia31	8.89	11.4
East Asia	0.34	16.8	East Asia	1.37	14.4	East Asia	3.10	12.0	East Asia	5.00	12.8	East Asia	9.01	19.1	East Asia	16.4	21.1
South Asia	0.12	6.2	South Asia	0.27	2.8	South Asia	0.38	1.5	South Asia	0.48	1.2	South Asia	1.28	2.7	South Asia	2.21	2.8
ASEAN	0.12	6.2	ASEAN	0.56	5.9	ASEAN	0.84	3.3	ASEAN	1.22	3.1	ASEAN	3.44	7.3	ASEAN	5.07	6.5
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	6.00	7.7
CLMV	0.06	3.0	CLMV	0.08	0.9	CLMV	0.13	0.5	CLMV	0.36	0.9	CLMV	1.30	2.7	CLMV	2.52	3.2
GCC	1.32	65.9	GCC	18.1	190.8	GCC	9.56	37.1	GCC	12.8	32.7	GCC	25.2	53.4	GCC	30.5	39.2
IPEF	1.24	62.2	IPEF	3.27	34.5	IPEF	6.21	24.1	IPEF	8.73	22.3	IPEF	11.9	25.2	IPEF	15.2	19.6
RCEP	0.32	16.2	RCEP	1.27	13.4	RCEP	2.63	10.2	RCEP	4.02	10.3	RCEP	7.87	16.7	RCEP	13.5	17.4
(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	59.1	125.0	Australia	67.5	86.9
France	3.69	184.8	France	9.67	101.9	France	17.6	68.4	France	26.1	66.6	France	35.9	76.0	France	50.5	65.0
Germany	4.03	201.9	Germany	10.3	108.9	Germany	19.4	75.2	Germany	27.4	70.1	Germany	39.6	83.9	Germany	58.3	75.0
Italy	3.63	181.9	Italy	9.80	103.2	Italy	18.6	72.2	Italy	27.0	69.1	Italy	34.8	73.7	Italy	46.0	59.2
New Zealand	2.35	117.8	New Zealand	7.40	78.0	New Zealand	13.8	53.5	New Zealand	14.6	37.4	New Zealand	35.1	74.4	New Zealand	51.7	66.5
UK	3.64	182.2	UK	8.64	91.0	UK	17.1	66.3	UK	26.5	67.7	UK	36.6	77.4	UK	48.5	62.4
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	70.2	90.4
EU15	3.66	183.5	EU15	9.35	98.6	EU15	17.6	68.2	EU15	26.3	67.2	EU15	36.7	77.8	EU15	51.5	66.2
									EU27	22.1	56.5	EU27	32.9	69.7	EU27	48.7	62.6

Unit: Thousands of US dollars.
Sources: Official national accounts in each country, including adjustments in APO–PDB.
Note: See Section 8.1 for the adjustments to harmonize GDP coverage across countries.

Table 9.6 Per Capita GDP, 1970–2021

——GDP at constant market prices per person, using the 2017 PPP, the reference year 2021

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2021		(%)
Japan	16.6	100.0	Japan	24.5	100.0	Japan	36.4	100.0	Singapore	57.4	100.0	Singapore	83.4	100.0	Singapore	119.6	100.0
Singapore	11.3	67.6	Singapore	22.4	91.6	Singapore	36.3	99.6	Hong Kong	40.4	70.4	Hong Kong	57.0	68.4	Hong Kong	67.2	56.1
Iran	10.3	61.9	Hong Kong	17.7	72.1	Hong Kong	30.5	83.9	Japan	40.0	69.7	ROC	44.7	53.6	ROC	63.1	52.8
Hong Kong	9.28	55.7	Iran	10.2	41.5	ROC	17.0	46.7	ROC	30.8	53.6	Japan	42.0	50.4	Korea	49.2	41.1
Turkiye	8.48	50.9	Turkiye	9.99	40.8	Korea	14.0	38.3	Korea	25.3	44.1	Korea	38.6	46.3	Japan	45.5	38.1
Fiji	6.71	40.3	Fiji	8.78	35.8	Turkiye	12.9	35.3	Malaysia	15.5	26.9	Turkiye	21.5	25.8	Turkiye	37.0	30.9
Malaysia	4.35	26.1	ROC	8.23	33.6	Malaysia	10.3	28.2	Turkiye	15.2	26.4	Malaysia	21.3	25.6	Malaysia	30.2	25.2
ROC	3.49	21.0	Malaysia	7.56	30.9	Fiji	9.43	25.9	Thailand	11.5	20.0	Iran	17.8	21.4	China	19.7	16.5
Philippines	3.04	18.2	Korea	5.86	23.9	Iran	9.01	24.8	Iran	11.2	19.5	Thailand	16.7	20.0	Thailand	19.2	16.1
Thailand	2.89	17.3	Thailand	4.48	18.3	Thailand	8.05	22.1	Fiji	10.9	19.1	Fiji	11.7	14.0	Iran	16.5	13.8
Mongolia	2.85	17.1	Philippines	4.17	17.0	Mongolia	5.23	14.4	Indonesia	6.62	11.5	China	10.6	12.8	Sri Lanka	14.4	12.0
Korea	2.79	16.8	Mongolia	3.88	15.8	Indonesia	5.07	13.9	Sri Lanka	6.23	10.9	Sri Lanka	10.1	12.2	Indonesia	13.4	11.2
Lao PDR	2.77	16.7	Indonesia	3.36	13.7	Philippines	4.27	11.7	Philippines	4.96	8.7	Indonesia	9.44	11.3	Mongolia	12.6	10.6
Sri Lanka	2.46	14.8	Sri Lanka	3.15	12.9	Sri Lanka	4.15	11.4	Mongolia	4.96	8.6	Bhutan	8.78	10.5	Bhutan	12.5	10.4
Cambodia	2.36	14.2	Lao PDR	2.81	11.5	Lao PDR	3.07	8.4	Lao PDR	4.73	8.2	Mongolia	8.10	9.7	Vietnam	12.1	10.1
Indonesia	1.91	11.5	Bhutan	2.01	8.2	Bhutan	2.90	8.0	Bhutan	4.43	7.7	Vietnam	7.36	8.8	Fiji	11.7	9.8
Bangladesh	1.81	10.8	Pakistan	1.95	8.0	Pakistan	2.88	7.9	Pakistan	4.38	7.6	Philippines	6.65	8.0	Philippines	9.21	7.7
Bhutan	1.79	10.8	Vietnam	1.87	7.6	Vietnam	2.09	5.7	China	4.36	7.6	Lao PDR	6.28	7.5	Lao PDR	7.90	6.6
Pakistan	1.66	10.0	Nepal	1.56	6.4	China	2.05	5.6	Vietnam	3.94	6.9	Pakistan	5.09	6.1	India	7.52	6.3
Nepal	1.65	9.9	India	1.46	6.0	Nepal	1.96	5.4	India	2.56	4.5	India	4.65	5.6	Pakistan	6.50	5.4
Vietnam	1.48	8.9	Bangladesh	1.40	5.7	India	1.91	5.3	Nepal	2.51	4.4	Cambodia	3.52	4.2	Bangladesh	6.42	5.4
India	1.36	8.2	Cambodia	1.26	5.1	Bangladesh	1.60	4.4	Bangladesh	2.13	3.7	Bangladesh	3.52	4.2	Cambodia	6.28	5.3
China	0.86	5.2	China	1.16	4.7	Cambodia	1.39	3.8	Cambodia	1.90	3.3	Nepal	3.22	3.9	Nepal	4.37	3.7
Myanmar	0.71	4.2	Myanmar	0.96	3.9	Myanmar	1.04	2.9	Myanmar	1.68	2.9	Myanmar	2.59	3.1	Myanmar	2.72	2.3
Bahrain	35.2	211.5	Bahrain	44.8	182.9	Bahrain	33.2	91.1	Bahrain	43.0	74.9	Bahrain	48.9	58.6	Bahrain	62.4	52.2
Kuwait	147.9	888.5	Kuwait	64.6	263.8	Kuwait	30.6	84.1	Kuwait	52.7	91.9	Kuwait	68.5	82.1	Kuwait	59.8	50.0
Oman	7.96	47.8	Oman	27.4	111.7	Oman	38.3	105.3	Oman	38.9	67.8	Oman	48.7	58.4	Oman	41.4	34.6
Qatar	245.2	1472.9	Qatar	157.3	642.0	Qatar	81.1	222.7	Qatar	109.5	190.9	Qatar	121.5	145.8	Qatar	108.9	91.1
Saudi Arabia	65.2	391.8	Saudi Arabia	63.8	260.4	Saudi Arabia	49.8	136.7	Saudi Arabia	45.5	79.4	Saudi Arabia	46.8	56.1	Saudi Arabia	53.0	44.3
UAE	209.7	1259.9	UAE	188.4	769.1	UAE	116.6	320.3	UAE	115.7	201.7	UAE	61.8	74.1	UAE	75.3	62.9
Brunei	94.2	566.0	Brunei	158.8	648.3	Brunei	84.1	230.8	Brunei	84.4	147.1	Brunei	73.0	87.6	Brunei	64.8	54.1
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	3.50	21.0	APO21	4.55	18.6	APO21	6.12	16.8	APO21	7.45	13.0	APO21	9.92	11.9	APO21	13.2	11.0
Asia25	2.39	14.4	Asia25	3.17	13.0	Asia25	4.52	12.4	Asia25	6.25	10.9	Asia25	10.08	12.1	Asia25	15.2	12.7
Asia31	2.68	16.1	Asia31	3.56	14.5	Asia31	4.87	13.4	Asia31	6.66	11.6	Asia31	10.6	12.7	Asia31	15.8	13.2
East Asia	2.67	16.1	East Asia	3.84	15.7	East Asia	5.96	16.4	East Asia	8.66	15.1	East Asia	14.8	17.8	East Asia	23.4	19.6
South Asia	1.45	8.7	South Asia	1.53	6.2	South Asia	2.01	5.5	South Asia	2.76	4.8	South Asia	4.64	5.6	South Asia	7.34	6.1
ASEAN	2.22	13.4	ASEAN	3.49	14.3	ASEAN	4.89	13.4	ASEAN	6.83	11.9	ASEAN	10.0	12.0	ASEAN	13.8	11.5
ASEAN6	2.58	15.5	ASEAN6	4.23	17.3	ASEAN6	6.09	16.7	ASEAN6	8.25	14.4	ASEAN6	11.7	14.0	ASEAN6	15.6	13.1
CLMV	1.33	8.0	CLMV	1.54	6.3	CLMV	1.72	4.7	CLMV	3.06	5.3	CLMV	5.47	6.6	CLMV	8.52	7.1
GCC	74.0	444.7	GCC	71.3	290.8	GCC	52.7	144.7	GCC	53.7	93.6	GCC	53.7	64.4	GCC	58.9	49.2
IPEF	8.26	49.6	IPEF	10.0	40.6	IPEF	12.3	33.7	IPEF	14.6	25.5	IPEF	17.0	20.4	IPEF	20.8	17.4
RCEP	2.83	17.0	RCEP	3.96	16.2	RCEP	5.82	16.0	RCEP	8.23	14.3	RCEP	13.5	16.2	RCEP	20.6	17.2
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	26.2	157.2	Australia	30.1	122.7	Australia	34.8	95.6	Australia	44.2	77.1	Australia	51.9	62.2	Australia	58.1	48.6
France	23.0	138.2	France	31.0	126.4	France	37.5	103.1	France	44.1	76.8	France	46.7	56.1	France	49.6	41.5
Germany	25.4	152.8	Germany	33.3	135.9	Germany	39.9	109.4	Germany	47.6	82.9	Germany	52.6	63.1	Germany	59.3	49.5
Italy	23.4	140.4	Italy	32.5	132.7	Italy	40.7	111.7	Italy	47.5	82.8	Italy	46.7	56.0	Italy	46.4	38.8
New Zealand	24.5	147.3	New Zealand	27.0	110.1	New Zealand	30.5	83.8	New Zealand	36.7	63.9	New Zealand	42.8	51.4	New Zealand	51.1	42.7
UK	21.8	131.1	UK	26.1	106.7	UK	33.8	92.9	UK	43.1	75.1	UK	46.7	56.0	UK	49.1	41.1
US	29.3	175.8	US	36.0	147.1	US	45.0	123.5	US	55.6	97.0	US	60.4	72.4	US	70.2	58.7
EU15	22.7	136.2	EU15	29.7	121.2	EU15	37.0	101.7	EU15	44.9	78.3	EU15	48.2	57.8	EU15	51.7	43.2
									EU27	39.1	68.2	EU27	43.4	52.1	EU27	48.6	40.7

Unit: Thousands of US dollars.
Sources: Official national accounts in each country, including adjustments in APO–PDB.
Note: See Section 8.1 for the adjustments to harmonize GDP coverage across countries.

Table 9.7 Final Demand Shares in GDP, 1970–2021

——Shares of final demands to GDP at current prices

	1970				1990				2000				2010				2021			
	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	39.1	15.8	25.7	19.5
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	69.5	5.9	31.0	−6.4
Bhutan	68.0	34.2	25.0	−27.1	49.6	32.6	21.1	−3.3	51.2	21.9	45.8	−18.9	52.1	20.4	56.4	−28.9	65.2	21.6	34.1	−20.8
Brunei	21.2	8.3	15.2	55.3	39.2	21.8	19.5	19.5	30.4	25.5	18.9	25.3	14.7	22.2	23.7	39.4	33.1	22.4	31.3	13.2
Cambodia	69.0	22.5	10.2	−1.8	96.0	5.7	6.6	−8.3	89.1	5.2	17.6	−11.9	81.7	6.3	17.4	−5.4	68.7	7.6	26.7	−3.0
China	60.2	9.9	29.8	0.1	54.0	12.4	31.1	2.5	51.3	15.5	31.0	2.2	38.3	13.9	44.3	3.5	41.8	15.1	40.6	2.4
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	44.6	13.5	27.0	14.9
Fiji	66.9	14.0	22.3	−3.1	73.5	17.1	14.0	−4.7	67.4	17.3	20.4	−5.1	72.6	15.0	18.8	−6.4	82.5	25.1	19.6	−27.3
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	65.0	12.5	17.6	4.8
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	61.3	11.2	30.1	−2.6
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	56.4	9.1	31.8	2.7
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	45.0	12.3	30.2	12.5
Japan	46.8	10.5	41.5	1.3	49.9	13.4	36.0	0.7	53.7	16.5	28.4	1.4	56.9	19.2	22.6	1.3	53.5	21.4	25.6	−0.5
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	46.2	18.2	32.1	3.6
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	40.6	22.1	22.7	14.6
Lao PDR	79.2	35.0	21.7	−35.8	78.5	7.2	27.4	−13.2	77.5	6.7	29.9	−14.1	72.8	10.7	22.7	−6.2	46.9	13.6	42.4	−2.8
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	57.9	12.7	22.3	7.1
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	51.6	14.5	35.8	−1.9
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	30.1	10.0	35.4	24.5
Nepal	90.9	5.4	6.4	−2.7	83.1	6.2	20.4	−9.7	75.9	6.4	26.0	−8.2	85.6	8.6	28.6	−22.7	88.9	8.6	36.7	−34.2
Oman	25.0	11.2	16.8	47.0	43.1	23.7	20.8	12.4	37.7	18.6	18.9	24.7	33.2	16.2	29.1	21.5	44.3	21.7	23.1	10.9
Pakistan	76.6	10.3	15.8	−2.7	71.6	14.1	19.2	−4.9	76.1	9.9	16.2	−2.2	79.9	10.9	15.9	−6.7	83.6	10.9	14.4	−8.9
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	75.3	15.6	21.2	−12.0
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	22.9	16.0	37.3	23.8
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	42.2	23.6	25.8	8.3
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	30.9	10.8	23.1	35.3
Sri Lanka	79.4	6.3	16.9	−2.5	81.0	7.0	18.7	−6.7	73.0	7.5	28.3	−8.9	67.1	8.5	31.5	−7.1	63.0	9.4	35.0	−7.4
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	52.5	18.0	29.5	0.0
Turkiye	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	55.3	13.1	31.9	−0.2
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	35.5	14.5	31.4	18.5
Vietnam	38.8	64.2	21.7	−24.7	80.1	14.8	14.3	−9.1	61.5	11.4	29.1	−2.1	58.1	10.4	37.2	−5.6	56.7	9.6	33.6	0.1
(region)																				
APO21	60.6	11.2	28.8	−0.6	57.1	11.9	31.8	−0.7	58.8	13.0	25.9	2.3	57.2	13.8	28.6	0.4	57.3	13.5	28.6	0.6
Asia25	60.7	11.0	28.9	−0.6	56.6	12.0	31.6	−0.2	57.0	13.6	27.1	2.3	50.2	13.8	34.3	1.7	50.6	14.2	33.8	1.4
Asia31	57.7	11.4	28.1	2.8	55.9	13.1	30.5	0.6	55.8	14.1	26.6	3.4	49.2	14.0	34.0	2.8	50.1	14.5	33.5	2.0
East Asia	51.8	10.4	37.2	0.6	51.4	13.0	34.2	1.4	52.9	15.4	29.9	1.8	44.8	15.1	37.0	3.1	44.3	16.2	37.0	2.6
South Asia	76.6	8.4	15.7	−0.7	66.3	11.4	24.9	−2.6	67.3	11.6	22.8	−1.7	61.9	11.0	32.2	−5.1	64.5	10.7	28.8	−4.0
ASEAN	66.3	16.4	22.7	−5.4	61.7	9.7	30.0	−1.4	58.7	9.5	23.3	8.5	54.8	10.9	28.8	5.6	55.9	11.8	28.9	3.4
ASEAN6	68.7	10.5	23.4	−2.5	59.6	9.4	31.6	−0.7	57.4	9.5	23.0	10.1	54.3	11.1	28.1	6.4	56.2	12.2	28.0	3.7
CLMV	53.1	49.9	19.2	−22.1	82.4	12.7	13.8	−8.9	68.0	9.4	25.4	−2.9	57.8	9.3	32.4	0.6	54.5	9.7	33.7	2.2
GCC	33.5	14.7	21.4	30.3	47.4	25.7	17.8	9.2	40.4	21.0	19.6	19.0	32.8	16.7	29.7	20.8	39.1	20.7	27.6	12.6
IPEF	59.1	15.6	25.2	0.1	59.8	14.4	26.6	−0.8	62.0	13.9	24.9	−0.7	61.7	15.4	24.1	−1.3	61.6	14.5	25.3	−1.4
RCEP	54.4	11.8	34.2	−0.4	53.8	12.6	33.0	0.6	54.3	14.4	28.2	3.2	46.7	14.5	35.4	3.4	46.5	15.6	35.4	2.4
(reference)																				
Australia	54.3	13.9	32.1	−0.3	57.3	18.6	24.2	−0.1	58.0	18.5	23.4	0.1	53.9	18.6	26.5	1.0	48.9	22.0	23.2	5.9
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	52.7	24.3	25.0	−1.9
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	49.3	22.2	23.2	5.3
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	19.8	20.0	2.4
New Zealand	64.2	14.9	23.8	−2.9	60.2	18.4	20.5	0.9	57.9	17.1	22.0	3.0	57.8	19.7	20.2	2.3	57.2	21.4	25.4	−3.9
UK	57.0	17.8	24.2	1.1	59.7	18.6	23.2	−1.5	66.4	16.7	18.1	−1.2	64.1	21.5	16.0	−1.7	60.9	22.5	17.5	−0.8
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	68.2	14.4	21.1	−3.7
EU15	56.5	16.0	28.0	−0.5	56.6	19.5	24.6	−0.7	57.7	19.1	22.7	0.5	56.9	21.7	20.2	1.1	52.6	22.3	22.1	3.0
EU27									55.9	19.7	23.6	0.8	55.7	21.6	21.1	1.6	51.0	22.0	23.2	3.7

Unit: Percentage.
Sources: Official national accounts in each country, including adjustments in APO–PDB.
Note: Final demand shares in country groups are computed using the PPP for GDP. Household consumption includes the consumption of NPISHs. The investment consists of GFCF plus changes in inventories.

Table 9.8 Per-Worker Labor Productivity Level, 1970–2021

——GDP at constant basic prices per worker, using the 2017 PPP, the reference year 2021

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2021		(%)
Iran	37.5	100.0	Japan	48.6	100.0	Japan	69.5	100.0	Singapore	103.6	100.0	Singapore	130.4	100.0	Singapore	175.9	100.0
Singapore	33.6	89.7	Singapore	46.3	95.1	Singapore	66.9	96.3	Hong Kong	80.6	77.8	Hong Kong	110.7	84.9	Hong Kong	132.3	75.2
Japan	33.0	88.2	Iran	39.6	81.3	Hong Kong	62.2	89.5	Japan	75.8	73.2	ROC	93.7	71.9	ROC	122.6	69.7
Turkiye	24.9	66.4	Hong Kong	38.4	79.0	ROC	39.1	56.3	ROC	67.8	65.4	Japan	81.5	62.4	Turkiye	90.0	51.2
Hong Kong	23.3	62.2	Turkiye	28.3	58.2	Iran	38.8	55.9	Korea	49.5	47.8	Korea	70.0	53.7	Korea	83.3	47.4
Fiji	20.5	54.7	Fiji	23.4	48.2	Turkiye	35.4	50.9	Turkiye	47.2	45.5	Iran	62.9	48.3	Japan	81.9	46.6
Malaysia	12.7	33.9	ROC	20.9	43.0	Korea	28.9	41.7	Iran	41.4	39.9	Turkiye	61.9	47.5	Malaysia	60.9	34.6
ROC	10.1	27.0	Malaysia	20.5	42.1	Malaysia	26.0	37.4	Malaysia	36.7	35.5	Malaysia	47.9	36.7	Iran	58.0	33.0
Philippines	9.3	24.9	Korea	14.8	30.5	Fiji	22.2	32.0	Fiji	23.9	23.1	Thailand	25.2	19.3	Sri Lanka	35.6	20.2
Korea	8.8	23.4	Philippines	11.3	23.3	Thailand	13.1	18.8	Thailand	18.4	17.7	Fiji	23.7	18.1	Mongolia	34.9	19.8
Mongolia	7.1	19.0	Mongolia	10.7	22.0	Mongolia	12.6	18.1	Sri Lanka	15.3	14.8	Sri Lanka	23.6	18.1	China	33.4	19.0
Sri Lanka	6.7	17.9	Sri Lanka	8.8	18.0	Indonesia	11.5	16.6	Pakistan	14.8	14.2	Indonesia	20.0	15.4	Thailand	33.0	18.8
Thailand	6.4	17.0	Indonesia	8.7	17.8	Sri Lanka	11.4	16.3	Indonesia	14.6	14.1	Mongolia	19.7	15.1	Indonesia	26.3	15.0
Indonesia	5.7	15.2	Thailand	8.6	17.6	Philippines	11.1	16.0	Mongolia	13.3	12.9	China	16.8	12.9	Fiji	24.7	14.0
Bangladesh	5.4	14.4	Pakistan	6.2	12.7	Pakistan	9.6	13.9	Philippines	13.1	12.7	Bhutan	16.5	12.7	Philippines	23.6	13.4
Pakistan	5.1	13.7	Lao PDR	5.6	11.5	Bhutan	8.4	12.0	Bhutan	11.7	11.3	Philippines	16.2	12.4	Bhutan	22.3	12.7
Cambodia	4.9	13.2	Bhutan	5.4	11.1	Lao PDR	6.2	8.9	Lao PDR	8.9	8.6	Pakistan	15.6	12.0	Vietnam	20.5	11.7
Lao PDR	4.8	12.9	Vietnam	4.0	8.3	Bangladesh	4.6	6.7	Vietnam	7.1	6.9	Vietnam	11.7	9.0	Pakistan	19.2	10.9
Bhutan	4.7	12.5	Bangladesh	3.9	8.1	Nepal	4.6	6.6	China	6.9	6.6	Lao PDR	11.2	8.6	India	17.6	10.0
Vietnam	3.8	10.3	Nepal	3.2	6.7	India	4.2	6.0	India	6.0	5.8	India	10.8	8.3	Bangladesh	15.2	8.6
Nepal	3.7	9.8	India	2.9	6.1	Vietnam	4.0	5.8	Nepal	5.9	5.7	Bangladesh	8.5	6.5	Lao PDR	13.6	7.7
India	2.8	7.5	Myanmar	2.7	5.6	China	3.3	4.7	Bangladesh	5.6	5.4	Nepal	7.8	6.0	Nepal	9.7	5.5
Myanmar	2.1	5.6	Cambodia	2.7	5.5	Cambodia	2.9	4.1	Myanmar	4.0	3.8	Myanmar	5.6	4.3	Cambodia	8.8	5.0
China	1.8	4.7	China	2.1	4.4	Myanmar	2.7	3.9	Cambodia	3.6	3.4	Cambodia	5.5	4.3	Myanmar	6.4	3.6
Bahrain	126.6	338.1	Bahrain	115.0	236.3	Bahrain	79.0	113.7	Bahrain	98.0	94.6	Bahrain	84.7	65.0	Bahrain	111.0	63.1
Kuwait	494.7	1320.8	Kuwait	192.6	395.9	Kuwait	75.6	108.8	Kuwait	126.9	122.5	Kuwait	126.5	97.0	Kuwait	113.0	64.3
Oman	115.0	307.0	Oman	164.1	337.4	Oman	175.6	252.9	Oman	151.5	146.2	Oman	104.4	80.1	Oman	83.1	47.3
Qatar	456.5	1218.8	Qatar	292.9	602.0	Qatar	157.8	227.2	Qatar	217.8	210.2	Qatar	162.4	124.5	Qatar	143.5	81.6
Saudi Arabia	328.2	876.5	Saudi Arabia	221.4	455.1	Saudi Arabia	165.5	238.2	Saudi Arabia	159.8	154.3	Saudi Arabia	140.1	107.5	Saudi Arabia	201.6	114.6
UAE	483.6	1291.4	UAE	349.6	718.7	UAE	223.6	322.0	UAE	197.0	190.2	UAE	149.1	114.3	UAE	177.8	101.1
Brunei	321.6	858.8	Brunei	460.2	946.1	Brunei	214.3	308.5	Brunei	194.7	187.9	Brunei	158.5	121.5	Brunei	130.3	74.1
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	8.9	23.7	APO21	10.9	22.4	APO21	14.7	21.1	APO21	18.1	17.4	APO21	23.5	18.0	APO21	31.1	17.7
Asia25	5.8	15.4	Asia25	7.0	14.4	Asia25	9.4	13.5	Asia25	13.1	12.7	Asia25	21.0	16.1	Asia25	32.7	18.6
Asia31	6.5	17.3	Asia31	7.9	16.2	Asia31	10.2	14.6	Asia31	14.0	13.5	Asia31	22.1	17.0	Asia31	34.1	19.4
East Asia	6.1	16.3	East Asia	7.7	15.9	East Asia	10.4	15.0	East Asia	15.0	14.5	East Asia	25.7	19.7	East Asia	42.8	24.4
South Asia	3.4	9.1	South Asia	3.5	7.2	South Asia	5.0	7.2	South Asia	7.1	6.9	South Asia	11.7	9.0	South Asia	18.6	10.6
ASEAN	6.3	16.8	ASEAN	8.7	17.9	ASEAN	10.9	15.7	ASEAN	14.7	14.2	ASEAN	20.2	15.5	ASEAN	27.8	15.8
ASEAN6	7.4	19.7	ASEAN6	10.6	21.7	ASEAN6	13.5	19.5	ASEAN6	18.1	17.5	ASEAN6	24.3	18.6	ASEAN6	32.2	18.3
CLMV	3.7	9.8	CLMV	3.8	7.8	CLMV	3.9	5.5	CLMV	6.4	6.1	CLMV	10.1	7.7	CLMV	16.4	9.3
GCC	332.1	886.7	GCC	222.7	457.9	GCC	153.9	221.6	GCC	157.1	151.7	GCC	132.1	101.3	GCC	159.2	90.5
IPEF	20.1	53.6	IPEF	22.6	46.5	IPEF	27.2	39.2	IPEF	32.8	31.6	IPEF	38.4	29.5	IPEF	47.0	26.7
RCEP	6.7	17.9	RCEP	8.3	17.1	RCEP	10.7	15.4	RCEP	15.0	14.5	RCEP	24.3	18.6	RCEP	38.6	21.9
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	56.6	151.1	Australia	64.9	133.4	Australia	69.8	100.5	Australia	87.4	84.3	Australia	95.8	73.4	Australia	105.7	60.1
France	49.5	132.0	France	66.6	136.8	France	81.6	117.5	France	92.4	89.2	France	99.8	76.5	France	102.9	58.5
Germany	64.2	171.5	Germany	83.4	171.6	Germany	93.4	134.5	Germany	87.4	84.3	Germany	92.7	71.1	Germany	98.8	56.2
Italy	56.4	150.7	Italy	76.8	157.8	Italy	91.2	131.4	Italy	105.4	101.8	Italy	101.1	77.5	Italy	97.9	55.7
New Zealand	57.3	153.0	New Zealand	58.6	120.4	New Zealand	60.0	86.4	New Zealand	69.4	67.0	New Zealand	75.9	58.2	New Zealand	82.2	46.7
UK	45.0	120.2	UK	52.5	108.0	UK	64.3	92.6	UK	82.3	79.5	UK	89.4	68.6	UK	91.3	51.9
US	73.5	196.1	US	79.5	163.4	US	91.0	131.1	US	110.5	106.7	US	129.4	99.2	US	147.2	83.7
EU15	49.4	131.8	EU15	63.8	131.1	EU15	76.3	109.8	EU15	89.6	86.5	EU15	95.0	72.8	EU15	98.2	55.9
									EU27	80.0	77.2	EU27	87.3	67.0	EU27	92.9	52.9

Unit: Thousands of US dollars (as of 2021).
Source: APO Productivity Database 2023.

Table 9.9 Per-Worker Labor Productivity Growth, 1990–2021

——Growth in GDP at constant prices per worker, using the 2017 PPP

1990–1995		1995–2000		2000–2005		2005–2010		2010–2015		2015–2021		2019–2020		2020–2021	
Kuwait	10.6	Lao PDR	6.8	China	7.6	China	10.3	Mongolia	7.7	Vietnam	6.4	Turkiye	6.0	Bahrain	15.5
China	8.7	Oman	6.4	Cambodia	7.0	India	7.0	Sri Lanka	6.9	China	6.0	Vietnam	5.3	Saudi Arabia	15.0
Malaysia	6.7	China	6.2	Kuwait	6.4	Bhutan	6.8	China	6.5	Saudi Arabia	5.8	Brunei	5.1	Cambodia	10.3
Thailand	6.5	Vietnam	5.8	Vietnam	5.1	Sri Lanka	5.3	Bangladesh	5.8	Cambodia	5.7	Cambodia	4.7	Singapore	10.0
Indonesia	6.4	Myanmar	5.3	India	4.7	Mongolia	5.1	India	5.2	Bangladesh	4.9	Iran	3.6	China	9.1
Korea	5.9	ROC	5.1	Turkiye	4.5	Iran	5.1	Myanmar	4.8	India	3.8	ROC	3.1	India	8.7
ROC	5.9	Korea	4.8	Malaysia	4.0	Vietnam	4.9	Bhutan	4.6	Singapore	3.4	Bangladesh	2.0	Vietnam	7.4
Vietnam	5.8	Qatar	4.7	Thailand	3.8	Bangladesh	4.6	Philippines	4.1	Turkiye	3.3	China	1.5	Hong Kong	7.3
Pakistan	4.8	Cambodia	4.5	Bangladesh	3.6	Lao PDR	3.7	UAE	4.1	Bahrain	3.2	Bahrain	0.8	Qatar	7.1
Hong Kong	4.6	Singapore	4.2	Indonesia	3.6	Nepal	3.6	Vietnam	3.6	Mongolia	3.2	Korea	0.0	ROC	6.9
Singapore	4.5	Turkiye	4.2	Korea	3.5	Myanmar	3.4	Indonesia	3.5	ROC	3.1	Sri Lanka	−0.6	Mongolia	4.9
Sri Lanka	4.4	India	4.2	Myanmar	3.5	Korea	3.4	Fiji	3.5	Philippines	2.8	Singapore	−1.1	Nepal	4.5
Bhutan	4.3	Pakistan	3.7	Sri Lanka	3.4	Hong Kong	3.1	Turkiye	3.5	Pakistan	2.3	Hong Kong	−1.2	Bangladesh	4.3
India	3.1	Philippines	3.1	ROC	3.4	ROC	3.1	Thailand	3.4	Hong Kong	1.9	Kuwait	−1.5	Malaysia	4.3
Bahrain	2.9	Bangladesh	2.8	Iran	3.3	Philippines	2.7	Lao PDR	3.2	Nepal	1.8	Indonesia	−1.8	Indonesia	3.9
Nepal	2.6	Bhutan	2.6	Singapore	3.3	Indonesia	2.7	Malaysia	2.9	Korea	1.8	Pakistan	−2.6	Kuwait	3.8
Myanmar	2.1	Mongolia	2.5	Hong Kong	3.2	Thailand	2.5	Cambodia	2.3	Thailand	1.7	Philippines	−2.7	Pakistan	3.5
Qatar	1.7	Nepal	2.4	Mongolia	2.7	Cambodia	1.8	Nepal	2.0	Indonesia	1.7	Saudi Arabia	−3.1	Oman	3.5
Turkiye	1.5	Sri Lanka	1.6	Nepal	2.2	Malaysia	1.3	Singapore	1.8	Malaysia	1.6	Nepal	−3.6	UAE	3.3
Bangladesh	1.0	Bahrain	1.4	Fiji	2.0	Singapore	1.3	ROC	1.6	Bhutan	1.2	Oman	−3.7	Iran	3.0
Saudi Arabia	0.9	Japan	1.2	Pakistan	1.6	Turkiye	1.0	Bahrain	1.6	Sri Lanka	1.0	Japan	−3.7	Korea	2.8
Iran	0.8	UAE	1.1	Philippines	1.4	Japan	0.1	Pakistan	1.4	Lao PDR	0.5	Qatar	−3.8	Japan	2.5
Japan	0.6	Fiji	1.0	Japan	1.4	Bahrain	−0.2	Korea	1.4	Oman	0.3	Malaysia	−4.6	Thailand	2.1
Lao PDR	0.5	Hong Kong	0.6	Oman	1.1	Pakistan	−0.5	Hong Kong	1.2	Iran	0.1	Bhutan	−5.1	Philippines	1.9
Fiji	0.5	Iran	0.5	Lao PDR	0.9	Brunei	−2.2	Japan	0.7	Qatar	−0.2	Mongolia	−5.9	Lao PDR	1.1
Philippines	0.3	Thailand	0.3	Qatar	0.2	Fiji	−2.2	Saudi Arabia	0.3	UAE	−0.5	Lao PDR	−6.5	Bhutan	−0.4
Cambodia	−0.1	Malaysia	0.2	Bhutan	0.0	Saudi Arabia	−2.5	Kuwait	−0.6	Japan	−0.5	India	−7.2	Sri Lanka	−1.0
Brunei	−0.9	Kuwait	−0.2	Saudi Arabia	−0.2	UAE	−3.2	Brunei	−0.9	Kuwait	−1.4	Thailand	−7.4	Turkiye	−2.8
Mongolia	−1.4	Brunei	−1.0	Brunei	−1.9	Qatar	−6.1	Iran	−1.7	Myanmar	−1.9	UAE	−8.0	Fiji	−6.7
UAE	−3.6	Saudi Arabia	−1.6	UAE	−2.3	Kuwait	−6.4	Qatar	−2.2	Fiji	−2.2	Fiji	−15.2	Myanmar	−7.0
Oman	−9.3	Indonesia	−1.6	Bahrain	−2.7	Oman	−8.6	Oman	−4.9	Brunei	−2.6	Myanmar	−17.3	Brunei	−12.1
(region)		(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	2.4	APO21	1.7	APO21	2.5	APO21	2.8	APO21	2.9	APO21	2.3	APO21	−3.1	APO21	5.1
Asia25	3.8	Asia25	2.9	Asia25	4.1	Asia25	5.4	Asia25	4.3	Asia25	3.8	Asia25	−1.2	Asia25	6.8
Asia31	3.7	Asia31	2.7	Asia31	4.0	Asia31	5.1	Asia31	4.3	Asia31	3.6	Asia31	−1.4	Asia31	6.7
East Asia	4.0	East Asia	3.2	East Asia	4.4	East Asia	6.3	East Asia	4.7	East Asia	4.6	East Asia	0.5	East Asia	7.6
South Asia	3.2	South Asia	4.0	South Asia	4.1	South Asia	5.8	South Asia	4.9	South Asia	3.6	South Asia	−5.8	South Asia	7.5
ASEAN	5.4	ASEAN	0.6	ASEAN	3.4	ASEAN	2.9	ASEAN	3.5	ASEAN	2.5	ASEAN	−2.3	ASEAN	4.4
ASEAN6	5.7	ASEAN6	0.1	ASEAN6	3.3	ASEAN6	2.6	ASEAN6	3.4	ASEAN6	1.8	ASEAN6	−3.0	ASEAN6	3.5
CLMV	4.5	CLMV	5.6	CLMV	4.7	CLMV	4.5	CLMV	3.7	CLMV	5.0	CLMV	1.6	CLMV	6.5
GCC	0.5	GCC	−0.1	GCC	0.0	GCC	−3.4	GCC	0.4	GCC	2.8	GCC	−3.9	GCC	9.6
IPEF	1.6	IPEF	2.1	IPEF	1.7	IPEF	1.5	IPEF	2.0	IPEF	1.7	IPEF	−2.6	IPEF	4.8
RCEP	4.1	RCEP	2.6	RCEP	4.1	RCEP	5.5	RCEP	4.4	RCEP	4.1	RCEP	0.1	RCEP	6.8
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
Australia	2.4	Australia	2.1	Australia	1.3	Australia	0.5	Australia	1.4	Australia	0.4	Australia	3.8	Australia	0.6
France	1.2	France	1.3	France	1.1	France	0.4	France	0.6	France	0.0	France	−7.4	France	4.4
Germany	−2.4	Germany	1.0	Germany	0.9	Germany	0.3	Germany	0.8	Germany	0.4	Germany	−3.0	Germany	2.9
Italy	1.9	Italy	1.0	Italy	−0.3	Italy	−0.5	Italy	−0.4	Italy	−0.1	Italy	−7.3	Italy	6.0
New Zealand	1.2	New Zealand	1.7	New Zealand	1.0	New Zealand	0.8	New Zealand	1.1	New Zealand	0.4	New Zealand	−1.3	New Zealand	2.4
UK	3.1	UK	1.8	UK	1.5	UK	0.2	UK	0.3	UK	0.1	UK	−10.6	UK	7.2
US	1.5	US	2.4	US	1.8	US	1.4	US	0.7	US	1.5	US	3.4	US	2.5
EU15	1.9	EU15	1.3	EU15	0.8	EU15	0.3	EU15	0.6	EU15	0.1	EU15	−5.8	EU15	4.3
		EU27	1.8	EU27	1.2	EU27	0.5	EU27	0.7	EU27	0.4	EU27	−4.4	EU27	3.8

Unit: Percentage (average annual growth rate).
Source: APO Productivity Database 2023.

Table 9.10 Per-Hour Labor Productivity Level, 1970–2021

——GDP at constant basic prices per hour, using the 2017 PPP, the reference year 2021

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2010		(%)	2021		(%)
Singapore	15.4	100.0	Japan	22.6	100.0	Japan	33.2	100.0	Singapore	43.2	100.0	Singapore	56.2	100.0	Singapore	80.7	100.0
Iran	14.9	97.0	Singapore	21.8	96.1	Singapore	29.5	88.8	Japan	40.2	93.1	Hong Kong	48.1	85.5	Hong Kong	60.6	75.1
Japan	14.6	95.2	Iran	15.7	69.3	Hong Kong	27.3	82.1	Hong Kong	34.6	80.1	ROC	45.4	80.8	ROC	59.1	73.2
Turkiye	12.5	81.4	Hong Kong	15.5	68.5	ROC	17.5	52.8	ROC	31.1	72.0	Japan	45.4	80.7	Japan	48.0	59.4
Fiji	10.9	70.9	Turkiye	14.0	62.0	Turkiye	16.8	50.5	Turkiye	22.4	51.8	Korea	31.1	55.3	Turkiye	46.0	57.1
Hong Kong	9.2	60.0	Fiji	12.5	55.3	Iran	15.2	45.9	Korea	19.6	45.4	Turkiye	28.4	50.5	Korea	43.7	54.2
Malaysia	5.7	37.2	Malaysia	9.2	40.5	Fiji	12.7	38.1	Iran	16.5	38.1	Iran	26.5	47.0	Malaysia	28.8	35.8
ROC	4.4	28.6	ROC	9.0	39.9	Malaysia	11.6	34.9	Malaysia	16.4	37.9	Malaysia	21.5	38.2	Iran	25.2	31.2
Philippines	4.2	27.2	Korea	5.5	24.3	Korea	10.8	32.5	Fiji	13.2	30.5	Fiji	13.8	24.6	Sri Lanka	18.5	22.9
Sri Lanka	3.5	23.0	Philippines	5.3	23.3	Mongolia	6.2	18.5	Sri Lanka	7.7	17.7	Sri Lanka	12.6	22.5	Mongolia	18.3	22.7
Mongolia	3.5	22.6	Mongolia	5.2	23.1	Indonesia	6.1	18.3	Indonesia	7.4	17.1	Mongolia	11.7	20.8	Thailand	16.3	20.2
Korea	3.2	21.2	Indonesia	4.7	20.6	Sri Lanka	5.7	17.2	Thailand	7.3	17.0	Thailand	10.7	19.0	China	15.8	19.6
Indonesia	3.1	20.3	Sri Lanka	4.5	19.7	Philippines	5.2	15.6	Mongolia	7.1	16.4	Indonesia	9.7	17.2	Indonesia	13.8	17.1
Thailand	2.6	16.9	Thailand	3.2	14.0	Thailand	5.1	15.3	Pakistan	6.8	15.6	Philippines	7.9	14.0	Fiji	13.1	16.2
Bangladesh	2.5	16.1	Pakistan	2.8	12.3	Pakistan	4.4	13.1	Philippines	6.2	14.4	China	7.7	13.7	Philippines	11.8	14.6
Pakistan	2.3	15.0	Lao PDR	2.3	10.2	Bhutan	3.0	8.9	Bhutan	4.1	9.6	Pakistan	7.3	13.0	Vietnam	9.6	12.0
Cambodia	2.2	14.6	Bhutan	1.9	8.4	Lao PDR	2.6	7.7	Lao PDR	3.7	8.5	Bhutan	6.1	10.8	Bhutan	9.1	11.3
Nepal	2.1	13.7	Nepal	1.9	8.3	Nepal	2.5	7.6	Nepal	3.3	7.5	India	5.1	9.1	Pakistan	8.9	11.1
Lao PDR	2.0	13.0	Bangladesh	1.8	7.9	India	2.0	6.1	China	3.2	7.5	Vietnam	5.1	9.1	India	8.3	10.3
Vietnam	1.7	10.8	Vietnam	1.7	7.6	Bangladesh	2.0	6.0	Vietnam	3.0	6.9	Lao PDR	4.6	8.2	Bangladesh	6.5	8.1
Bhutan	1.6	10.7	India	1.4	6.3	Vietnam	1.7	5.2	India	2.9	6.7	Nepal	4.3	7.7	Lao PDR	5.6	6.9
India	1.4	8.8	Cambodia	1.1	4.9	China	1.6	4.8	Bangladesh	2.5	5.9	Bangladesh	3.9	6.9	Nepal	5.3	6.6
China	0.9	5.7	Myanmar	1.1	4.8	Cambodia	1.3	3.9	Myanmar	1.6	3.7	Myanmar	2.3	4.1	Cambodia	3.6	4.5
Myanmar	0.8	5.4	China	1.1	4.6	Myanmar	1.1	3.3	Cambodia	1.6	3.6	Cambodia	2.3	4.1	Myanmar	3.4	4.2
Brunei	144.1	938.5	Brunei	201.0	887.8	Brunei	94.7	284.9	Brunei	86.0	199.2	Brunei	71.5	127.2	Brunei	57.0	70.6
(region)			(region)			(region)			(region)			(region)			(region)		
APO21	4.2	27.1	APO21	5.1	22.6	APO21	6.9	20.7	APO21	8.5	19.7	APO21	11.1	19.7	APO21	15.0	18.6
Asia25	2.8	18.0	Asia25	3.4	14.9	Asia25	4.5	13.5	Asia25	6.2	14.3	Asia25	9.8	17.4	Asia25	15.7	19.4
East Asia	2.9	19.1	East Asia	3.7	16.5	East Asia	5.1	15.3	East Asia	7.1	16.5	East Asia	11.9	21.2	East Asia	20.6	25.6
South Asia	1.6	10.7	South Asia	1.7	7.5	South Asia	2.4	7.1	South Asia	3.4	7.9	South Asia	5.6	9.9	South Asia	8.7	10.8
ASEAN	2.9	19.1	ASEAN	4.0	17.5	ASEAN	5.0	15.1	ASEAN	6.7	15.4	ASEAN	9.2	16.3	ASEAN	13.9	17.2
ASEAN6	3.6	23.3	ASEAN6	5.0	22.0	ASEAN6	6.4	19.4	ASEAN6	8.5	19.6	ASEAN6	11.4	20.3	ASEAN6	16.4	20.3
CLMV	1.5	10.0	CLMV	1.6	7.0	CLMV	1.6	4.9	CLMV	2.6	6.1	CLMV	4.3	7.6	CLMV	7.8	9.6
IPEF	9.6	62.4	IPEF	10.9	48.3	IPEF	13.1	39.5	IPEF	15.9	36.8	IPEF	18.7	33.3	IPEF	23.4	29.1
RCEP	3.2	21.0	RCEP	4.0	17.7	RCEP	5.2	15.5	RCEP	7.0	16.3	RCEP	11.2	20.0	RCEP	18.8	23.3
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
Australia	30.8	200.6	Australia	35.6	157.4	Australia	39.2	117.9	Australia	49.3	114.3	Australia	56.6	100.7	Australia	65.0	80.6
France	24.8	161.6	France	36.9	162.7	France	49.6	149.2	France	59.3	137.4	France	64.8	115.2	France	69.0	85.6
									Germany	59.6	138.0	Germany	65.0	115.6	Germany	73.2	90.7
									Italy	57.0	131.9	Italy	56.9	101.1	Italy	58.7	72.8
						New Zealand	33.2	99.8	New Zealand	37.8	87.5	New Zealand	43.2	76.9	New Zealand	47.5	58.9
UK	25.3	165.1	UK	32.4	143.3	UK	39.7	119.6	UK	52.8	122.4	UK	59.3	105.5	UK	61.0	75.6
US	36.7	239.3	US	42.0	185.6	US	49.0	147.4	US	60.3	139.7	US	73.0	129.8	US	82.2	101.9
									EU15	55.6	128.7	EU15	60.5	107.6	EU15	65.2	80.8

Unit: US dollar.
Source: APO Productivity Database 2023.

Table 9.11 Per-Hour Labor Productivity Growth, 1990–2021

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

1990–1995		1995–2000		2000–2005		2005–2010		2010–2015		2015–2019		2019–2020		2020–2021	
China	8.8	Lao PDR	6.7	Vietnam	6.8	China	10.9	China	7.7	Vietnam	6.4	Turkiye	9.8	China	10.9
Malaysia	6.6	Korea	5.6	China	6.4	India	6.9	Bhutan	7.0	Myanmar	5.8	Cambodia	6.7	Vietnam	10.7
Korea	6.4	ROC	5.5	Cambodia	5.8	Bhutan	6.1	Sri Lanka	6.4	Bangladesh	5.6	Vietnam	4.6	Singapore	10.5
Thailand	6.2	Myanmar	5.5	Thailand	5.2	Iran	6.1	Mongolia	6.2	Turkiye	5.3	Korea	4.3	Indonesia	9.8
Indonesia	6.2	China	5.3	India	4.6	Mongolia	6.0	India	5.2	China	5.2	ROC	3.9	Mongolia	8.9
Vietnam	6.0	Vietnam	5.1	Korea	4.6	Sri Lanka	5.4	Myanmar	4.9	India	5.2	Iran	3.1	India	8.6
ROC	5.9	Turkiye	4.7	Sri Lanka	4.6	Bangladesh	5.0	Thailand	4.8	Philippines	5.2	Bangladesh	1.8	Cambodia	7.7
Pakistan	4.8	India	4.1	Mongolia	4.0	Korea	4.7	Bangladesh	4.7	Cambodia	4.4	China	1.5	ROC	7.0
Sri Lanka	4.8	Mongolia	4.0	ROC	3.8	Vietnam	3.9	Vietnam	4.6	Korea	4.2	Hong Kong	0.7	Hong Kong	4.9
Hong Kong	4.8	Pakistan	3.9	Singapore	3.8	ROC	3.7	Turkiye	4.2	Thailand	4.0	Singapore	0.7	Thailand	4.7
Bhutan	4.3	Singapore	3.7	Myanmar	3.7	Lao PDR	3.7	Indonesia	3.9	Singapore	3.6	Malaysia	0.2	Myanmar	4.5
Singapore	3.9	Bangladesh	3.4	Bangladesh	3.5	Myanmar	3.6	Philippines	3.8	Pakistan	3.2	Philippines	–0.1	Nepal	4.3
India	3.1	Cambodia	3.0	Malaysia	3.4	Hong Kong	3.5	Malaysia	3.4	ROC	2.9	Sri Lanka	–0.7	Bangladesh	4.2
Nepal	2.5	Philippines	2.8	Iran	3.4	Nepal	3.4	Lao PDR	3.3	Nepal	2.5	Indonesia	–2.6	Korea	4.2
Myanmar	2.1	Bhutan	2.5	Indonesia	3.1	Philippines	2.7	Cambodia	2.6	Bhutan	2.3	Thailand	–2.7	Malaysia	3.3
Japan	1.8	Nepal	2.4	Hong Kong	3.1	Thailand	2.4	Hong Kong	2.3	Malaysia	2.2	Mongolia	–3.2	Iran	2.8
Bangladesh	1.4	Japan	2.0	Turkiye	2.7	Indonesia	2.3	Singapore	2.1	Indonesia	2.1	Pakistan	–3.6	Pakistan	2.6
Turkiye	1.1	Fiji	1.2	Nepal	2.3	Cambodia	2.1	Nepal	2.0	Mongolia	2.1	Japan	–3.6	Japan	2.1
Iran	0.9	Thailand	1.2	Philippines	2.0	Malaysia	2.0	Fiji	1.8	Lao PDR	2.1	Nepal	–3.7	Lao PDR	1.1
Philippines	0.8	Sri Lanka	1.0	Pakistan	1.8	Turkiye	2.0	Korea	1.7	Sri Lanka	2.0	Bhutan	–4.7	Philippines	1.1
Cambodia	0.8	Iran	0.6	Japan	1.8	Singapore	1.5	Pakistan	1.6	Hong Kong	1.5	Lao PDR	–6.5	Bhutan	1.0
Lao PDR	0.5	Malaysia	0.2	Bhutan	1.6	Fiji	1.4	Japan	1.1	Brunei	1.4	India	–7.2	Fiji	0.8
Fiji	–0.5	Hong Kong	0.0	Lao PDR	0.9	Japan	0.7	ROC	0.8	Fiji	1.1	Brunei	–10.2	Sri Lanka	–1.0
Brunei	–0.8	Brunei	–1.1	Fiji	–0.4	Pakistan	–0.2	Brunei	–1.3	Japan	0.4	Myanmar	–14.1	Turkiye	–3.4
Mongolia	–1.2	Indonesia	–2.4	Brunei	–1.9	Brunei	–1.8	Iran	–1.5	Iran	–0.8	Fiji	–19.8	Brunei	–11.8
(region)		(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	2.5	APO21	1.7	APO21	2.6	APO21	2.8	APO21	2.9	APO21	3.1	APO21	–2.8	APO21	5.8
Asia25	3.9	Asia25	2.5	Asia25	3.5	Asia25	5.7	Asia25	4.8	Asia25	4.0	Asia25	–1.0	Asia25	8.1
East Asia	4.2	East Asia	2.6	East Asia	3.4	East Asia	7.0	East Asia	5.8	East Asia	4.0	East Asia	0.7	East Asia	9.2
South Asia	3.3	South Asia	4.0	South Asia	4.1	South Asia	5.8	South Asia	4.7	South Asia	4.9	South Asia	–5.9	South Asia	7.4
ASEAN	5.4	ASEAN	0.3	ASEAN	3.8	ASEAN	2.6	ASEAN	4.0	ASEAN	3.6	ASEAN	–1.3	ASEAN	8.2
ASEAN6	5.6	ASEAN6	0.0	ASEAN6	3.5	ASEAN6	2.4	ASEAN6	4.0	ASEAN6	2.8	ASEAN6	–1.8	ASEAN6	7.1
CLMV	4.6	CLMV	5.1	CLMV	5.7	CLMV	4.0	CLMV	4.3	CLMV	6.2	CLMV	2.1	CLMV	10.6
IPEF	1.7	IPEF	2.1	IPEF	1.8	IPEF	1.4	IPEF	2.1	IPEF	2.2	IPEF	–2.3	IPEF	5.6
RCEP	4.2	RCEP	2.0	RCEP	3.4	RCEP	5.9	RCEP	5.4	RCEP	3.8	RCEP	0.4	RCEP	9.1
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
Australia	2.3	Australia	2.3	Australia	1.8	Australia	0.9	Australia	1.6	Australia	–0.1	Australia	6.0	Australia	0.1
France	1.8	France	1.8	France	1.4	France	0.3	France	0.8	France	0.8	France	0.2	France	–1.3
		Germany	1.9	Germany	1.4	Germany	0.4	Germany	1.1	Germany	1.0	Germany	1.3	Germany	1.0
		Italy	1.1	Italy	0.1	Italy	–0.1	Italy	0.2	Italy	0.2	Italy	2.3	Italy	–1.1
New Zealand	0.9	New Zealand	1.7	New Zealand	1.2	New Zealand	1.5	New Zealand	1.1	New Zealand	–0.1	New Zealand	1.2	New Zealand	3.0
UK	3.5	UK	2.2	UK	1.6	UK	0.7	UK	0.1	UK	0.8	UK	1.3	UK	–2.2
US	1.6	US	2.5	US	2.2	US	1.6	US	0.6	US	0.9	US	4.0	US	1.1
				EU15	1.1	EU15	0.6	EU15	0.8	EU15	0.6	EU15	1.5	EU15	–0.5

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

Table 9.12 TFP Growth, 1990–2021

——Growth in total factor productivity

1990–1995		1995–2000		2000–2005		2005–2010		2010–2015		2015–2019		2019–2020		2020–2021	
China	4.7	Mongolia	3.7	Cambodia	4.0	China	3.7	Malaysia	2.7	India	2.4	Cambodia	3.3	Singapore	9.5
Sri Lanka	3.5	Lao PDR	3.3	Iran	3.7	Bhutan	3.4	Fiji	2.2	Cambodia	2.2	Iran	2.0	India	6.8
ROC	3.3	ROC	2.6	Mongolia	3.1	Iran	3.3	India	2.0	Vietnam	2.2	ROC	1.7	China	6.2
Vietnam	3.2	Iran	2.5	India	2.6	Sri Lanka	2.8	Turkiye	1.6	Myanmar	2.2	Turkiye	0.5	Hong Kong	5.7
Cambodia	2.1	Cambodia	2.1	Thailand	2.4	India	2.6	Vietnam	1.4	China	1.7	Korea	0.2	Vietnam	5.4
Pakistan	1.9	Korea	1.9	Malaysia	2.4	Hong Kong	2.1	Mongolia	1.3	ROC	1.7	Vietnam	–0.5	Cambodia	5.0
India	1.7	India	1.9	Hong Kong	1.9	Singapore	2.1	China	1.3	Thailand	1.6	China	–2.6	Indonesia	4.8
Korea	1.5	Pakistan	1.8	Sri Lanka	1.8	ROC	2.0	Bhutan	1.1	Pakistan	1.5	Bangladesh	–2.8	ROC	4.5
Hong Kong	1.5	China	1.5	Philippines	1.7	Lao PDR	1.9	Pakistan	1.1	Korea	1.5	Singapore	–3.1	Thailand	3.7
Iran	1.3	Sri Lanka	1.3	ROC	1.7	Fiji	1.3	Nepal	1.1	Turkiye	1.3	Hong Kong	–3.1	Bhutan	3.7
Singapore	1.0	Myanmar	1.0	Singapore	1.3	Korea	1.3	Hong Kong	1.0	Singapore	1.2	Brunei	–3.1	Pakistan	3.6
Indonesia	0.9	Vietnam	0.8	China	1.2	Nepal	1.2	Sri Lanka	1.0	Hong Kong	0.9	Pakistan	–3.3	Malaysia	3.5
Malaysia	0.7	Singapore	0.6	Korea	0.8	Philippines	1.1	Japan	0.9	Nepal	0.9	Japan	–4.8	Turkiye	3.5
Myanmar	0.4	Turkiye	0.5	Japan	0.7	Malaysia	1.1	Thailand	0.5	Malaysia	0.8	Sri Lanka	–5.4	Nepal	2.9
Japan	–0.2	Japan	0.4	Turkiye	0.4	Bangladesh	0.9	Philippines	0.5	Philippines	0.8	Nepal	–5.8	Korea	2.6
Bhutan	–0.2	Bhutan	0.2	Vietnam	0.4	Indonesia	0.6	ROC	0.5	Mongolia	0.5	Malaysia	–6.4	Iran	2.6
Mongolia	–0.2	Philippines	0.1	Indonesia	0.4	Myanmar	0.4	Singapore	0.3	Brunei	0.3	Mongolia	–6.4	Philippines	2.5
Philippines	–0.3	Bangladesh	0.0	Pakistan	0.2	Thailand	0.4	Korea	0.2	Bangladesh	0.3	Indonesia	–7.1	Japan	1.9
Lao PDR	–0.6	Fiji	–0.2	Bangladesh	0.1	Japan	–0.3	Bangladesh	0.1	Fiji	0.3	Thailand	–7.6	Mongolia	1.8
Nepal	–0.7	Brunei	–0.4	Nepal	–0.3	Brunei	–1.0	Lao PDR	–0.5	Japan	0.2	Philippines	–8.5	Bangladesh	0.0
Bangladesh	–0.7	Nepal	–1.0	Lao PDR	–0.4	Pakistan	–1.2	Brunei	–0.8	Bhutan	–0.5	Bhutan	–8.7	Lao PDR	–0.7
Thailand	–1.4	Malaysia	–1.5	Fiji	–0.9	Cambodia	–1.3	Indonesia	–1.1	Iran	–0.7	Lao PDR	–9.1	Sri Lanka	–1.7
Turkiye	–1.4	Hong Kong	–1.6	Brunei	–1.3	Turkiye	–1.4	Myanmar	–1.3	Indonesia	–0.7	India	–9.1	Myanmar	–2.1
Fiji	–1.4	Thailand	–3.1	Myanmar	–1.4	Mongolia	–2.2	Cambodia	–1.7	Lao PDR	–1.0	Myanmar	–14.4	Fiji	–3.0
Brunei	–2.1	Indonesia	–5.0	Bhutan	–1.9	Vietnam	–2.3	Iran	–2.2	Sri Lanka	–2.2	Fiji	–20.5	Brunei	–10.0
(region)		(region)		(region)		(region)		(region)		(region)		(region)		(region)	
APO21	0.5	APO21	0.1	APO21	1.3	APO21	0.9	APO21	0.9	APO21	1.0	APO21	–4.9	APO21	4.3
Asia25	1.3	Asia25	0.5	Asia25	1.3	Asia25	1.9	Asia25	1.0	Asia25	1.3	Asia25	–4.1	Asia25	5.1
East Asia	1.4	East Asia	0.8	East Asia	1.0	East Asia	2.5	East Asia	1.3	East Asia	1.5	East Asia	–2.6	East Asia	5.5
South Asia	1.6	South Asia	1.7	South Asia	2.0	South Asia	1.9	South Asia	1.5	South Asia	1.9	South Asia	–7.9	South Asia	5.5
ASEAN	0.9	ASEAN	–2.3	ASEAN	1.6	ASEAN	0.7	ASEAN	0.5	ASEAN	0.6	ASEAN	–5.9	ASEAN	4.0
ASEAN6	0.4	ASEAN6	–3.0	ASEAN6	1.4	ASEAN6	0.9	ASEAN6	0.2	ASEAN6	0.3	ASEAN6	–6.6	ASEAN6	3.5
CLMV	2.4	CLMV	1.0	CLMV	0.3	CLMV	–1.6	CLMV	0.7	CLMV	2.1	CLMV	–2.5	CLMV	4.5
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
US	0.9	US	1.1	US	0.8	US	0.1	US	0.4	US	0.4	US	–0.5	US	2.5

Unit: Percentage (average annual growth rate). Source: APO Productivity Database 2023.

Table 9.13 Output Growth and Contributions of Labor, Capital, and TFP, 1970–2021

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		ICT		Non–ICT			
Bangladesh	1970–1975	−5.2	0.6	(−12)	0.0	(−1)	0.0	(0)	−0.2	(4)	−5.6	(108)
	1975–1980	3.8	1.4	(38)	0.8	(22)	0.1	(2)	1.9	(51)	−0.5	(−13)
	1980–1985	2.9	1.3	(44)	0.4	(14)	0.1	(2)	2.3	(79)	−1.2	(−40)
	1985–1990	4.6	1.3	(28)	0.4	(9)	0.1	(2)	2.4	(53)	0.4	(8)
	1990–1995	3.9	1.2	(31)	0.5	(13)	0.1	(2)	2.8	(72)	−0.7	(−18)
	1995–2000	4.5	0.5	(12)	0.1	(3)	0.2	(4)	3.7	(82)	0.0	(0)
	2000–2005	6.2	1.1	(19)	0.4	(6)	0.5	(7)	4.1	(65)	0.1	(2)
	2005–2010	7.2	0.9	(12)	0.3	(4)	0.7	(10)	4.5	(62)	0.9	(13)
	2010–2015	7.3	0.9	(13)	0.8	(11)	0.5	(7)	5.0	(69)	0.1	(1)
	2015–2021	6.3	0.5	(8)	0.3	(5)	0.3	(5)	5.4	(86)	−0.3	(−4)
	1970–2021	4.2	1.0	(23)	0.4	(10)	0.2	(6)	3.2	(77)	−0.7	(−16)
Brunei	1970–1975	5.3	0.7	(14)	0.3	(6)	0.0	(0)	6.5	(122)	−2.3	(−43)
	1975–1980	12.3	0.8	(6)	0.2	(2)	0.2	(1)	1.6	(13)	9.5	(77)
	1980–1985	−3.4	0.4	(−11)	0.4	(−12)	0.0	(−1)	−2.9	(87)	−1.3	(38)
	1985–1990	−2.3	1.0	(−44)	0.4	(−15)	0.0	(0)	0.7	(−29)	−4.4	(189)
	1990–1995	3.3	0.8	(23)	0.2	(6)	0.2	(7)	4.2	(127)	−2.1	(−63)
	1995–2000	2.3	0.7	(29)	0.0	(2)	0.1	(4)	1.9	(83)	−0.4	(−18)
	2000–2005	0.8	0.5	(68)	0.2	(22)	0.1	(7)	1.4	(177)	−1.3	(−175)
	2005–2010	0.1	0.4	(304)	0.2	(158)	0.1	(105)	0.4	(347)	−1.0	(−814)
	2010–2015	0.8	0.3	(42)	0.0	(−1)	0.1	(15)	1.1	(137)	−0.8	(−93)
	2015–2021	0.1	0.7	(970)	0.0	(13)	0.1	(115)	1.3	(1794)	−2.0	(−2792)
	1970–2021	1.9	0.6	(33)	0.2	(10)	0.1	(5)	1.6	(85)	−0.6	(−33)
China	1970–1975	4.2	1.6	(39)	0.4	(10)	0.0	(1)	3.0	(71)	−0.9	(−21)
	1975–1980	5.3	1.6	(31)	0.3	(5)	0.0	(1)	2.5	(48)	0.8	(15)
	1980–1985	8.1	2.0	(24)	0.5	(6)	0.1	(1)	2.7	(34)	2.9	(35)
	1985–1990	6.4	1.3	(21)	0.5	(7)	0.1	(1)	3.4	(53)	1.1	(17)
	1990–1995	9.8	0.5	(5)	1.0	(10)	0.1	(1)	3.5	(35)	4.7	(48)
	1995–2000	7.4	0.9	(13)	0.4	(5)	0.2	(3)	4.3	(59)	1.5	(20)
	2000–2005	8.3	0.9	(10)	0.8	(9)	0.7	(9)	4.8	(57)	1.2	(14)
	2005–2010	10.7	−0.1	(−1)	0.9	(8)	0.5	(4)	5.8	(54)	3.7	(35)
	2010–2015	6.9	−0.4	(−6)	0.7	(10)	0.6	(8)	4.9	(70)	1.3	(18)
	2015–2021	5.4	−0.1	(−1)	−0.4	(−7)	0.4	(8)	3.7	(68)	1.7	(32)
	1970–2021	7.2	0.8	(11)	0.5	(7)	0.3	(4)	3.8	(53)	1.8	(25)
Fiji	1970–1975	5.6	1.7	(30)	0.9	(17)	0.1	(1)	2.8	(50)	0.1	(3)
	1975–1980	3.7	1.3	(36)	1.3	(36)	0.0	(1)	2.9	(79)	−1.9	(−52)
	1980–1985	0.7	1.3	(182)	0.8	(112)	0.1	(8)	1.5	(216)	−2.9	(−418)
	1985–1990	3.7	0.9	(24)	1.4	(37)	0.3	(7)	0.4	(10)	0.8	(22)
	1990–1995	2.6	1.4	(52)	1.3	(49)	0.1	(4)	1.3	(49)	−1.4	(−54)
	1995–2000	2.0	0.4	(21)	0.7	(36)	−0.1	(−2)	1.2	(58)	−0.2	(−12)
	2000–2005	2.0	1.1	(57)	0.6	(32)	0.1	(4)	1.0	(51)	−0.9	(−43)
	2005–2010	0.7	−0.3	(−44)	0.2	(25)	0.1	(14)	−0.6	(−80)	1.3	(185)
	2010–2015	3.7	0.9	(23)	0.1	(2)	0.1	(4)	0.4	(10)	2.2	(60)
	2015–2021	−2.2	0.1	(−5)	0.2	(−9)	0.1	(−6)	1.1	(−50)	−3.7	(170)
	1970–2021	2.2	0.9	(40)	0.7	(34)	0.1	(4)	1.2	(55)	−0.7	(−33)
India	1970–1975	2.8	1.9	(66)	0.3	(12)	0.0	(0)	0.9	(31)	−0.3	(−9)
	1975–1980	3.1	1.9	(60)	0.5	(17)	0.0	(1)	1.2	(39)	−0.5	(−17)
	1980–1985	5.0	1.6	(31)	0.8	(16)	0.0	(1)	1.3	(26)	1.4	(27)
	1985–1990	5.8	1.4	(24)	0.9	(15)	0.1	(1)	1.4	(25)	2.0	(35)
	1990–1995	5.0	1.3	(26)	0.4	(9)	0.1	(2)	1.5	(30)	1.7	(34)
	1995–2000	5.7	1.0	(18)	1.0	(17)	0.2	(3)	1.6	(29)	1.9	(33)
	2000–2005	6.5	1.2	(19)	0.6	(9)	0.2	(2)	2.0	(30)	2.6	(40)
	2005–2010	7.8	0.5	(7)	1.2	(15)	0.3	(4)	3.2	(41)	2.6	(33)
	2010–2015	6.2	0.6	(10)	0.8	(12)	0.2	(3)	2.6	(42)	2.0	(32)
	2015–2021	4.6	0.5	(11)	0.3	(7)	0.2	(5)	2.3	(50)	1.2	(27)
	1970–2021	5.2	1.2	(23)	0.7	(13)	0.1	(2)	1.8	(35)	1.4	(28)
Iran	1970–1975	9.2	0.6	(7)	0.6	(6)	0.0	(0)	2.1	(22)	5.9	(64)
	1975–1980	−3.2	0.9	(−27)	0.1	(−3)	0.0	(0)	0.0	(1)	−4.2	(129)
	1980–1985	3.5	0.9	(26)	0.1	(4)	0.0	(1)	0.3	(8)	2.1	(61)
	1985–1990	1.1	0.9	(88)	0.7	(63)	0.0	(3)	0.7	(67)	−1.3	(−121)
	1990–1995	3.3	0.6	(19)	0.5	(15)	0.1	(2)	0.8	(26)	1.3	(39)
	1995–2000	4.1	0.8	(21)	0.3	(8)	0.1	(2)	0.4	(9)	2.5	(60)
	2000–2005	7.0	0.8	(11)	0.4	(6)	0.2	(3)	1.9	(27)	3.7	(53)
	2005–2010	5.2	−0.2	(−3)	0.4	(7)	0.1	(2)	1.6	(30)	3.3	(64)
	2010–2015	−0.4	0.3	(−65)	0.3	(−83)	0.1	(−20)	1.1	(−265)	−2.2	(533)
	2015–2021	1.6	0.3	(17)	0.1	(5)	0.0	(0)	0.9	(58)	0.3	(19)
	1970–2021	3.1	0.6	(19)	0.3	(11)	0.1	(2)	1.0	(31)	1.1	(37)
Bhutan	1970–1975	2.9	1.4	(49)	0.1	(4)	0.0	(1)	2.4	(83)	−1.1	(−36)
	1975–1980	6.2	1.5	(24)	−0.2	(−3)	0.1	(1)	1.7	(27)	3.2	(51)
	1980–1985	6.1	1.1	(18)	0.7	(11)	0.1	(1)	2.3	(37)	2.0	(32)
	1985–1990	7.2	0.9	(13)	1.7	(23)	0.1	(1)	2.5	(34)	2.1	(29)
	1990–1995	3.1	−0.6	(−19)	1.5	(48)	0.2	(7)	2.1	(70)	−0.2	(−6)
	1995–2000	6.8	2.0	(30)	0.6	(8)	0.8	(12)	3.3	(48)	0.2	(2)
	2000–2005	6.4	2.3	(36)	0.7	(12)	0.0	(0)	5.3	(83)	−1.9	(−30)
	2005–2010	9.9	1.6	(16)	1.1	(11)	0.4	(4)	3.5	(35)	3.4	(34)
	2010–2015	6.5	−0.2	(−3)	0.9	(13)	0.2	(3)	4.5	(69)	1.1	(18)
	2015–2021	2.4	0.6	(23)	0.3	(13)	0.0	(−1)	2.8	(114)	−1.2	(−49)
	1970–2021	5.7	1.1	(19)	0.7	(13)	0.2	(3)	3.0	(53)	0.7	(12)
Cambodia	1970–1975	−5.4	0.6	(−11)	0.3	(−5)	−0.6	(10)	2.3	(−42)	−8.0	(147)
	1975–1980	−7.5	−0.3	(4)	0.3	(−4)	−0.1	(1)	0.1	(−1)	−7.5	(100)
	1980–1985	1.2	0.9	(70)	0.2	(13)	0.0	(−1)	−0.2	(−17)	0.4	(36)
	1985–1990	6.7	0.8	(13)	0.2	(3)	0.0	(0)	−0.2	(−3)	5.9	(88)
	1990–1995	4.6	1.5	(32)	0.3	(7)	0.0	(0)	0.7	(16)	2.1	(45)
	1995–2000	7.7	2.2	(28)	0.7	(10)	0.0	(0)	2.6	(34)	2.1	(28)
	2000–2005	9.2	1.7	(19)	0.6	(6)	0.0	(0)	2.9	(32)	4.0	(43)
	2005–2010	6.1	1.8	(30)	0.4	(6)	0.0	(0)	5.2	(85)	−1.3	(−22)
	2010–2015	4.7	1.0	(22)	1.7	(37)	0.1	(1)	3.6	(76)	−1.7	(−36)
	2015–2021	7.9	1.6	(20)	0.2	(3)	0.0	(1)	3.1	(40)	2.9	(36)
	1970–2021	3.6	1.2	(33)	0.5	(13)	0.0	(−1)	2.0	(56)	−0.1	(−2)
ROC	1970–1975	9.7	1.8	(19)	0.1	(1)	0.3	(3)	3.6	(37)	4.0	(41)
	1975–1980	11.3	1.7	(16)	1.1	(10)	0.2	(2)	3.4	(31)	4.7	(42)
	1980–1985	7.6	1.2	(16)	0.2	(3)	0.3	(4)	2.5	(33)	3.4	(44)
	1985–1990	9.6	1.0	(10)	0.8	(8)	0.3	(3)	2.3	(24)	5.2	(55)
	1990–1995	7.6	1.0	(13)	0.6	(8)	0.3	(3)	2.4	(32)	3.3	(44)
	1995–2000	6.0	0.3	(4)	0.6	(10)	0.6	(9)	2.0	(34)	2.6	(42)
	2000–2005	4.1	0.1	(3)	0.9	(21)	0.2	(6)	1.2	(29)	1.7	(42)
	2005–2010	4.2	0.2	(5)	0.9	(22)	0.0	(1)	1.0	(24)	2.0	(48)
	2010–2015	2.9	1.0	(36)	0.6	(21)	0.1	(2)	0.7	(25)	0.5	(16)
	2015–2021	3.5	−0.1	(−3)	0.4	(13)	0.1	(2)	0.9	(27)	2.1	(62)
	1970–2021	6.6	0.8	(12)	0.6	(10)	0.2	(3)	2.0	(30)	2.9	(45)
Hong Kong	1970–1975	6.5	1.9	(30)	0.1	(2)	0.2	(2)	2.7	(42)	1.5	(24)
	1975–1980	11.3	2.0	(18)	0.7	(7)	0.2	(2)	3.6	(32)	4.8	(42)
	1980–1985	5.4	0.9	(16)	0.6	(11)	0.3	(5)	3.1	(57)	0.5	(10)
	1985–1990	8.0	0.2	(2)	1.0	(13)	0.3	(4)	2.4	(30)	4.0	(51)
	1990–1995	5.9	0.6	(10)	0.9	(15)	0.4	(6)	2.6	(44)	1.5	(25)
	1995–2000	2.8	1.5	(52)	0.5	(16)	0.6	(21)	1.9	(68)	−1.6	(−58)
	2000–2005	4.1	0.5	(13)	0.3	(6)	0.3	(8)	1.0	(25)	1.9	(47)
	2005–2010	3.8	0.2	(5)	0.3	(7)	0.3	(8)	1.0	(25)	2.1	(55)
	2010–2015	2.8	0.3	(11)	0.6	(22)	0.3	(11)	0.6	(20)	1.0	(36)
	2015–2021	1.2	−0.4	(−32)	0.4	(31)	0.1	(12)	0.1	(6)	1.0	(83)
	1970–2021	5.1	0.7	(14)	0.5	(10)	0.3	(6)	1.9	(36)	1.7	(33)
Indonesia	1970–1975	8.3	1.5	(18)	0.8	(9)	0.0	(0)	4.0	(48)	2.0	(25)
	1975–1980	7.8	1.4	(18)	0.5	(7)	0.1	(1)	3.7	(48)	2.0	(26)
	1980–1985	4.7	1.4	(30)	0.5	(10)	0.1	(2)	2.1	(45)	0.6	(14)
	1985–1990	7.5	0.9	(12)	1.2	(16)	0.2	(2)	3.2	(43)	1.9	(26)
	1990–1995	7.5	0.5	(7)	2.4	(32)	0.2	(3)	3.5	(46)	0.9	(12)
	1995–2000	0.7	1.1	(176)	1.0	(148)	0.1	(19)	3.5	(531)	−5.0	(−774)
	2000–2005	4.5	0.5	(12)	1.4	(32)	0.2	(4)	1.9	(43)	0.4	(9)
	2005–2010	5.4	1.1	(20)	0.6	(12)	0.1	(2)	3.0	(54)	0.6	(12)
	2010–2015	5.3	0.5	(10)	2.1	(41)	0.2	(4)	3.5	(67)	−1.1	(−21)
	2015–2021	3.4	0.3	(10)	0.8	(24)	0.1	(4)	3.0	(88)	−0.9	(−26)
	1970–2021	5.4	0.9	(17)	1.1	(21)	0.1	(2)	3.1	(57)	0.1	(3)
Japan	1970–1975	4.4	−0.4	(−10)	1.0	(23)	0.2	(5)	2.7	(62)	0.8	(19)
	1975–1980	4.7	0.7	(14)	0.8	(18)	0.2	(4)	1.6	(33)	1.5	(31)
	1980–1985	4.3	0.5	(11)	0.6	(15)	0.4	(9)	1.4	(33)	1.4	(33)
	1985–1990	4.9	0.4	(8)	0.6	(12)	0.5	(10)	1.6	(34)	1.7	(36)
	1990–1995	1.3	−0.2	(−18)	0.4	(32)	0.3	(19)	1.1	(79)	−0.2	(−12)
	1995–2000	1.0	−0.6	(−55)	0.4	(40)	0.3	(33)	0.5	(44)	0.4	(38)
	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	(829)	0.4	(−880)	0.1	(−310)	0.1	(−154)	−0.3	(615)
	2010–2015	1.0	0.0	(−2)	0.2	(18)	0.1	(11)	−0.1	(−12)	0.9	(85)
	2015–2021	0.1	0.0	(22)	0.2	(358)	0.1	(136)	0.1	(160)	−0.4	(−577)
	1970–2021	2.2	0.0	(−2)	0.5	(23)	0.2	(11)	0.9	(40)	0.6	(28)

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		ICT		Non–ICT			
Korea	1970–1975	9.4	1.6	(17)	0.2	(3)	0.1	(1)	4.3	(45)	3.2	(34)
	1975–1980	7.7	1.3	(17)	0.6	(7)	0.4	(5)	6.0	(78)	−0.6	(−7)
	1980–1985	8.9	1.1	(13)	1.7	(20)	0.4	(4)	3.5	(39)	2.2	(25)
	1985–1990	9.9	1.6	(16)	1.4	(14)	0.5	(5)	4.1	(42)	2.2	(22)
	1990–1995	8.3	1.0	(12)	1.6	(19)	0.4	(5)	3.7	(45)	1.5	(19)
	1995–2000	5.6	0.0	(0)	0.7	(12)	0.6	(10)	2.4	(43)	1.9	(34)
	2000–2005	5.0	0.2	(4)	1.2	(25)	0.4	(8)	2.3	(47)	0.8	(16)
	2005–2010	4.4	−0.1	(−3)	1.0	(23)	0.2	(4)	2.1	(47)	1.3	(30)
	2010–2015	3.0	0.6	(21)	0.6	(19)	0.1	(2)	1.5	(52)	0.2	(6)
	2015–2021	2.4	−0.9	(−39)	0.4	(17)	0.1	(5)	1.4	(57)	1.5	(61)
	1970–2021	6.4	0.6	(10)	0.9	(15)	0.3	(5)	3.1	(49)	1.4	(22)
Malaysia	1970–1975	7.7	1.3	(16)	0.4	(5)	0.1	(1)	3.6	(48)	2.3	(30)
	1975–1980	8.3	1.3	(15)	0.8	(9)	0.1	(1)	4.6	(55)	1.6	(19)
	1980–1985	5.1	1.3	(25)	0.8	(16)	0.1	(2)	4.3	(85)	−1.5	(−29)
	1985–1990	6.6	1.3	(20)	0.7	(10)	0.2	(3)	2.5	(37)	2.0	(30)
	1990–1995	9.4	1.0	(11)	1.1	(12)	0.4	(4)	6.2	(66)	0.7	(8)
	1995–2000	4.1	1.3	(31)	0.6	(14)	0.4	(11)	3.3	(81)	−1.5	(−37)
	2000–2005	5.6	0.7	(13)	0.8	(15)	0.7	(13)	0.9	(17)	2.4	(43)
	2005–2010	4.8	1.0	(20)	0.5	(10)	0.5	(11)	1.8	(37)	1.1	(23)
	2010–2015	6.4	1.1	(17)	0.4	(7)	0.4	(6)	1.8	(28)	2.7	(41)
	2015–2021	2.9	0.3	(9)	0.6	(22)	0.2	(6)	1.7	(60)	0.1	(2)
	1970–2021	6.0	1.0	(17)	0.7	(11)	0.3	(5)	3.1	(51)	1.0	(16)
Myanmar	1970–1975	2.6	1.1	(40)	−0.1	(−5)	0.0	(1)	1.7	(64)	0.0	(0)
	1975–1980	7.6	1.3	(16)	0.6	(8)	0.1	(2)	4.6	(61)	1.0	(13)
	1980–1985	4.7	1.2	(25)	0.5	(12)	0.1	(2)	4.9	(104)	−2.0	(−42)
	1985–1990	0.6	1.2	(197)	0.7	(118)	0.0	(6)	0.8	(137)	−2.2	(−358)
	1990–1995	4.2	1.3	(32)	0.3	(7)	0.1	(2)	2.1	(51)	0.4	(9)
	1995–2000	8.0	1.6	(20)	0.6	(7)	0.2	(3)	4.5	(57)	1.0	(13)
	2000–2005	5.6	1.0	(18)	0.7	(13)	0.1	(2)	5.2	(93)	−1.4	(−26)
	2005–2010	4.8	0.5	(11)	0.7	(15)	0.1	(2)	3.0	(63)	0.4	(8)
	2010–2015	6.1	0.5	(8)	0.7	(11)	0.2	(3)	6.0	(99)	−1.3	(−21)
	2015–2021	−2.7	−3.5	(133)	−0.1	(3)	0.1	(−2)	2.2	(−82)	−1.3	(49)
	1970–2021	4.0	0.5	(13)	0.5	(11)	0.1	(2)	3.5	(87)	−0.5	(−14)
Pakistan	1970–1975	3.6	1.2	(34)	0.7	(20)	0.0	(1)	1.6	(45)	0.0	(0)
	1975–1980	5.8	1.7	(30)	1.0	(17)	0.0	(0)	2.5	(44)	0.5	(9)
	1980–1985	6.1	1.4	(24)	0.1	(2)	0.0	(1)	2.4	(40)	2.1	(34)
	1985–1990	8.0	1.4	(18)	1.1	(13)	0.1	(1)	2.8	(36)	2.6	(32)
	1990–1995	6.7	0.9	(13)	0.8	(11)	0.1	(1)	3.1	(46)	1.9	(29)
	1995–2000	6.0	0.9	(15)	0.3	(5)	0.0	(0)	3.0	(51)	1.8	(29)
	2000–2005	4.3	0.9	(20)	0.5	(12)	0.1	(3)	2.6	(59)	0.2	(5)
	2005–2010	2.9	1.1	(38)	0.1	(5)	0.1	(4)	2.8	(94)	−1.2	(−40)
	2010–2015	3.4	0.7	(20)	0.5	(16)	0.1	(2)	1.1	(31)	1.1	(32)
	2015–2021	4.3	0.9	(22)	0.5	(11)	0.1	(3)	1.7	(40)	1.1	(25)
	1970–2021	5.1	1.1	(22)	0.6	(11)	0.1	(1)	2.4	(46)	1.0	(20)
Singapore	1970–1975	8.8	2.6	(29)	0.5	(6)	0.3	(4)	4.9	(55)	0.5	(6)
	1975–1980	8.0	2.3	(29)	0.6	(8)	0.3	(3)	3.6	(45)	1.2	(15)
	1980–1985	6.5	1.4	(21)	1.3	(20)	0.6	(10)	4.4	(68)	−1.2	(−19)
	1985–1990	7.7	2.1	(28)	0.7	(9)	0.8	(11)	2.6	(33)	1.5	(20)
	1990–1995	8.6	2.1	(24)	1.7	(19)	0.7	(8)	3.3	(38)	1.0	(11)
	1995–2000	6.2	1.1	(17)	1.0	(16)	0.6	(9)	3.0	(48)	0.6	(9)
	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)	0.4	(6)	1.9	(26)	2.1	(28)
	2010–2015	4.7	1.1	(24)	0.6	(12)	0.8	(17)	1.9	(41)	0.3	(6)
	2015–2021	3.6	−0.4	(−12)	0.8	(23)	0.6	(16)	0.7	(21)	1.8	(52)
	1970–2021	6.6	1.5	(23)	0.9	(13)	0.6	(8)	2.7	(42)	0.9	(14)
Thailand	1970–1975	5.5	0.9	(17)	1.4	(26)	0.1	(1)	2.8	(50)	0.3	(6)
	1975–1980	7.4	2.7	(37)	1.1	(14)	0.2	(3)	3.2	(43)	0.2	(3)
	1980–1985	5.3	1.0	(19)	1.8	(35)	0.3	(6)	3.2	(60)	−1.1	(−20)
	1985–1990	9.8	1.5	(15)	1.7	(18)	0.4	(4)	4.1	(41)	2.2	(22)
	1990–1995	8.1	0.7	(9)	1.8	(22)	0.7	(9)	6.3	(77)	−1.4	(−17)
	1995–2000	0.7	−0.2	(−22)	1.9	(251)	0.1	(13)	2.1	(274)	−3.1	(−416)
	2000–2005	5.3	0.1	(1)	1.8	(34)	0.4	(7)	0.6	(12)	2.4	(45)
	2005–2010	3.7	0.5	(13)	0.8	(22)	0.7	(19)	1.3	(37)	0.4	(10)
	2010–2015	3.0	−0.7	(−24)	1.6	(53)	0.6	(18)	1.0	(35)	0.5	(18)
	2015–2021	1.6	−0.5	(−33)	0.3	(21)	0.0	(2)	1.3	(83)	0.4	(27)
	1970–2021	5.0	0.6	(12)	1.4	(28)	0.3	(7)	2.6	(52)	0.1	(2)

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		ICT		Non–ICT			
Lao PDR	1970–1975	3.5	1.0	(28)	0.1	(4)	0.0	(0)	1.0	(29)	1.4	(40)
	1975–1980	1.6	0.1	(9)	0.1	(9)	0.0	(0)	0.8	(49)	0.5	(33)
	1980–1985	4.3	0.5	(13)	0.2	(4)	0.1	(1)	1.8	(41)	1.7	(41)
	1985–1990	2.6	1.7	(66)	0.1	(5)	0.1	(2)	2.2	(82)	−1.5	(−55)
	1990–1995	4.1	1.6	(39)	0.1	(3)	0.2	(4)	2.7	(67)	−0.6	(−14)
	1995–2000	9.2	1.1	(12)	0.5	(5)	0.1	(1)	4.1	(45)	3.3	(36)
	2000–2005	3.1	0.9	(30)	0.4	(13)	0.1	(4)	2.0	(66)	−0.4	(−14)
	2005–2010	6.2	0.9	(15)	0.8	(12)	0.2	(3)	2.5	(40)	1.9	(30)
	2010–2015	5.0	0.6	(13)	0.6	(12)	0.1	(2)	4.2	(84)	−0.5	(−10)
	2015–2021	2.5	0.7	(29)	0.0	(0)	0.0	(1)	4.1	(162)	−2.3	(−92)
	1970–2021	4.2	0.9	(22)	0.3	(7)	0.1	(2)	2.6	(61)	0.3	(7)
Mongolia	1970–1975	6.5	0.5	(8)	2.4	(37)	0.1	(1)	3.0	(46)	0.5	(7)
	1975–1980	5.4	0.8	(15)	0.7	(13)	0.1	(2)	4.5	(83)	−0.8	(−14)
	1980–1985	6.6	0.8	(12)	0.4	(6)	0.2	(2)	5.2	(78)	0.1	(1)
	1985–1990	3.8	1.4	(36)	0.3	(7)	0.1	(2)	2.9	(77)	−0.8	(−22)
	1990–1995	−1.8	−0.2	(12)	−1.2	(68)	0.0	(−2)	−0.2	(9)	−0.2	(13)
	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	(16)	0.3	(5)	1.4	(22)	3.1	(50)
	2005–2010	6.4	0.0	(0)	0.3	(5)	0.4	(6)	7.8	(122)	−2.2	(−34)
	2010–2015	9.8	1.1	(11)	1.0	(10)	0.0	(0)	6.4	(65)	1.3	(14)
	2015–2021	2.8	0.1	(5)	0.7	(24)	0.2	(7)	2.2	(80)	−0.5	(−16)
	1970–2021	4.9	0.5	(10)	0.6	(12)	0.2	(3)	3.3	(67)	0.4	(8)
Nepal	1970–1975	0.9	1.9	(211)	0.3	(33)	0.1	(6)	0.8	(89)	−2.2	(−239)
	1975–1980	2.9	2.0	(71)	0.3	(11)	0.1	(2)	1.5	(53)	−1.1	(−37)
	1980–1985	2.7	1.2	(42)	2.6	(97)	0.0	(2)	1.8	(67)	−2.9	(−108)
	1985–1990	6.0	0.7	(12)	2.4	(41)	0.0	(1)	1.9	(31)	0.9	(15)
	1990–1995	5.1	1.7	(33)	2.2	(43)	0.0	(0)	1.8	(36)	−0.7	(−13)
	1995–2000	4.5	1.4	(32)	2.3	(51)	0.1	(1)	1.7	(37)	−1.0	(−21)
	2000–2005	3.6	0.8	(23)	1.5	(41)	0.0	(1)	1.5	(42)	−0.3	(−7)
	2005–2010	4.3	0.6	(13)	0.9	(20)	0.0	(0)	1.8	(41)	1.2	(26)
	2010–2015	2.9	0.6	(21)	−0.1	(−2)	0.0	(0)	1.3	(44)	1.1	(36)
	2015–2021	4.4	1.6	(37)	0.0	(0)	0.0	(1)	2.6	(59)	0.1	(3)
	1970–2021	3.8	1.3	(34)	1.2	(33)	0.0	(1)	1.7	(45)	−0.5	(−12)
Philippines	1970–1975	6.3	1.9	(31)	0.2	(3)	0.2	(2)	3.4	(54)	0.6	(10)
	1975–1980	5.6	1.1	(20)	0.7	(13)	0.1	(2)	4.7	(84)	−1.1	(−20)
	1980–1985	−0.5	1.2	(−211)	0.4	(−74)	0.2	(−44)	3.4	(−628)	−5.8	(1057)
	1985–1990	5.7	1.0	(17)	0.7	(12)	0.1	(1)	1.1	(20)	2.8	(50)
	1990–1995	3.2	1.0	(31)	0.1	(4)	0.1	(3)	2.2	(70)	−0.3	(−8)
	1995–2000	4.5	0.7	(16)	1.0	(22)	0.3	(8)	2.4	(53)	0.1	(2)
	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)	2.2	(45)	1.1	(23)
	2010–2015	5.7	0.8	(13)	0.4	(8)	0.1	(2)	3.9	(68)	0.5	(8)
	2015–2021	3.8	0.0	(0)	0.4	(12)	0.2	(4)	3.7	(97)	−0.5	(−13)
	1970–2021	4.4	0.9	(22)	0.5	(11)	0.2	(4)	2.9	(66)	−0.1	(−2)
Sri Lanka	1970–1975	3.5	0.8	(22)	0.3	(9)	0.0	(1)	2.0	(58)	0.4	(10)
	1975–1980	4.8	0.8	(17)	0.2	(5)	0.0	(1)	2.6	(55)	1.1	(23)
	1980–1985	4.7	0.1	(3)	0.9	(19)	0.1	(2)	2.9	(61)	0.7	(16)
	1985–1990	3.6	1.5	(42)	0.2	(5)	0.0	(−1)	0.9	(24)	1.1	(29)
	1990–1995	5.6	0.4	(7)	0.8	(15)	0.0	(1)	0.8	(14)	3.5	(64)
	1995–2000	4.9	1.9	(39)	0.1	(2)	0.1	(2)	1.5	(30)	1.3	(26)
	2000–2005	4.9	0.0	(1)	0.9	(19)	0.3	(6)	1.8	(37)	1.8	(37)
	2005–2010	6.5	0.4	(6)	−0.2	(−4)	0.2	(4)	3.4	(52)	2.8	(43)
	2010–2015	6.3	0.0	(0)	0.2	(4)	0.2	(2)	4.9	(78)	1.0	(16)
	2015–2021	1.7	0.2	(11)	0.3	(18)	0.4	(22)	3.5	(200)	−2.6	(−151)
	1970–2021	4.6	0.6	(13)	0.4	(8)	0.1	(3)	2.4	(53)	1.0	(22)
Turkiye	1970–1975	5.0	0.9	(18)	0.2	(4)	0.1	(2)	5.5	(110)	−1.7	(−34)
	1975–1980	2.7	0.4	(16)	0.4	(13)	0.1	(2)	4.4	(164)	−2.6	(−95)
	1980–1985	5.2	0.5	(9)	0.1	(3)	0.1	(2)	2.8	(53)	1.7	(33)
	1985–1990	4.5	0.8	(19)	0.4	(9)	0.2	(4)	3.1	(70)	−0.1	(−2)
	1990–1995	2.7	0.4	(16)	0.4	(13)	0.1	(3)	3.2	(119)	−1.4	(−52)
	1995–2000	4.1	−0.2	(−4)	0.6	(14)	0.3	(7)	2.9	(69)	0.5	(13)
	2000–2005	5.0	0.7	(15)	1.0	(19)	0.1	(3)	2.8	(55)	0.4	(8)
	2005–2010	3.7	0.6	(15)	0.5	(14)	0.2	(6)	3.8	(102)	−1.4	(−38)
	2010–2015	6.8	0.9	(14)	0.7	(11)	0.3	(4)	3.3	(49)	1.6	(23)
	2015–2021	5.8	0.3	(6)	0.7	(12)	0.2	(3)	3.1	(53)	1.6	(27)
	1970–2021	4.6	0.5	(12)	0.5	(11)	0.2	(4)	3.5	(76)	−0.1	(−2)

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		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		ICT		Non–ICT			
Vietnam	1970–1975	4.1	3.1	(76)	0.4	(10)	0.0	(0)	1.2	(29)	–0.6	(–15)
	1975–1980	5.3	1.7	(33)	0.7	(14)	0.0	(0)	3.3	(62)	–0.5	(–9)
	1980–1985	3.2	1.9	(58)	0.3	(10)	0.0	(1)	1.5	(47)	–0.5	(–15)
	1985–1990	3.0	1.5	(50)	0.1	(3)	0.0	(0)	4.8	(159)	–3.4	(–113)
	1990–1995	8.3	1.0	(12)	0.1	(1)	0.0	(0)	3.9	(47)	3.2	(39)
	1995–2000	7.8	1.0	(13)	0.1	(2)	0.1	(1)	5.9	(75)	0.8	(10)
	2000–2005	7.5	0.3	(4)	1.1	(14)	0.1	(1)	5.7	(76)	0.4	(5)
	2005–2010	7.2	1.4	(19)	0.7	(10)	0.1	(1)	7.3	(101)	–2.3	(–32)
	2010–2015	5.0	0.1	(3)	0.3	(6)	0.2	(3)	3.0	(60)	1.4	(27)
	2015–2021	6.3	–0.3	(–4)	0.9	(14)	0.2	(3)	3.3	(52)	2.3	(36)
	1970–2021	5.8	1.1	(20)	0.5	(8)	0.1	(1)	4.0	(69)	0.1	(2)
APO21	1970–1975	4.9	1.2	(26)	0.3	(6)	0.1	(3)	2.6	(53)	0.6	(13)
	1975–1980	4.4	1.5	(33)	0.4	(9)	0.1	(3)	2.1	(47)	0.4	(8)
	1980–1985	4.6	1.2	(26)	0.5	(10)	0.2	(5)	1.8	(39)	0.9	(19)
	1985–1990	5.7	1.1	(20)	0.6	(11)	0.3	(5)	2.1	(37)	1.5	(27)
	1990–1995	4.2	0.9	(21)	0.6	(13)	0.2	(5)	2.1	(49)	0.5	(13)
	1995–2000	3.2	0.7	(23)	0.5	(17)	0.3	(8)	1.6	(48)	0.1	(3)
	2000–2005	4.2	0.8	(19)	0.6	(15)	0.2	(5)	1.3	(31)	1.3	(30)
	2005–2010	4.3	0.7	(16)	0.6	(15)	0.1	(3)	1.9	(45)	0.9	(20)
	2010–2015	4.1	0.5	(13)	0.7	(18)	0.1	(3)	1.8	(44)	0.9	(21)
	2015–2021	3.3	0.3	(11)	0.3	(11)	0.1	(4)	1.9	(57)	0.6	(18)
	1970–2021	4.3	0.9	(21)	0.5	(12)	0.2	(4)	1.9	(45)	0.8	(18)
East Asia	1970–1975	4.7	1.4	(29)	0.4	(9)	0.2	(4)	2.9	(61)	–0.1	(–2)
	1975–1980	5.3	1.6	(30)	0.3	(6)	0.1	(3)	2.0	(38)	1.2	(23)
	1980–1985	5.7	1.9	(32)	0.5	(9)	0.3	(5)	1.9	(33)	1.2	(21)
	1985–1990	5.9	1.3	(22)	0.5	(8)	0.3	(6)	2.3	(39)	1.5	(25)
	1990–1995	5.1	0.5	(9)	1.0	(20)	0.2	(4)	2.0	(39)	1.4	(27)
	1995–2000	4.3	0.9	(21)	0.4	(9)	0.3	(7)	1.9	(45)	0.8	(18)
	2000–2005	5.1	0.8	(17)	0.8	(15)	0.3	(6)	2.2	(44)	1.0	(19)
	2005–2010	6.7	–0.1	(–2)	0.9	(13)	0.2	(3)	3.2	(48)	2.5	(38)
	2010–2015	5.1	–0.3	(–7)	0.7	(13)	0.3	(6)	3.2	(63)	1.3	(25)
	2015–2021	4.1	–0.1	(–2)	–0.3	(–7)	0.3	(6)	2.8	(67)	1.5	(36)
	1970–2021	5.2	0.8	(15)	0.5	(10)	0.3	(5)	2.4	(47)	1.2	(24)
ASEAN	1970–1975	6.5	1.5	(23)	0.5	(8)	0.1	(1)	3.4	(52)	1.0	(15)
	1975–1980	7.0	1.5	(21)	0.4	(6)	0.1	(1)	3.7	(52)	1.4	(19)
	1980–1985	3.8	1.3	(34)	0.5	(14)	0.2	(5)	2.8	(73)	–1.0	(–25)
	1985–1990	7.0	1.1	(16)	0.7	(10)	0.2	(3)	3.0	(43)	2.0	(28)
	1990–1995	7.3	0.8	(10)	1.0	(13)	0.3	(4)	4.3	(59)	0.9	(12)
	1995–2000	2.5	0.9	(34)	0.8	(31)	0.2	(7)	3.0	(119)	–2.3	(–91)
	2000–2005	5.1	0.5	(10)	1.1	(21)	0.3	(5)	1.7	(33)	1.6	(30)
	2005–2010	5.3	1.0	(19)	0.6	(12)	0.3	(5)	2.7	(51)	0.7	(13)
	2010–2015	5.0	0.4	(7)	1.1	(22)	0.3	(6)	2.7	(55)	0.5	(9)
	2015–2021	3.3	–0.1	(–3)	0.6	(17)	0.2	(5)	2.6	(78)	0.1	(3)
	1970–2021	5.2	0.9	(16)	0.7	(14)	0.2	(4)	3.0	(57)	0.5	(9)
CLMV	1970–1975	2.7	2.0	(77)	0.4	(14)	–0.1	(–3)	1.4	(51)	–1.0	(–39)
	1975–1980	4.3	1.3	(31)	0.7	(16)	0.0	(0)	2.7	(63)	–0.5	(–11)
	1980–1985	3.3	1.5	(46)	0.4	(12)	0.0	(1)	1.7	(51)	–0.4	(–11)
	1985–1990	2.9	1.4	(48)	0.3	(9)	0.0	(1)	3.7	(129)	–2.5	(–87)
	1990–1995	7.0	1.1	(16)	0.1	(2)	0.0	(1)	3.3	(48)	2.4	(34)
	1995–2000	7.8	1.2	(15)	0.2	(3)	0.1	(1)	5.3	(68)	1.0	(13)
	2000–2005	7.0	0.5	(8)	0.9	(13)	0.1	(1)	5.2	(74)	0.3	(4)
	2005–2010	6.8	1.1	(17)	0.7	(11)	0.1	(1)	6.4	(95)	–1.6	(–24)
	2010–2015	5.1	0.3	(6)	0.5	(9)	0.2	(3)	3.4	(67)	0.7	(15)
	2015–2021	5.1	–0.6	(–12)	0.6	(13)	0.1	(3)	3.1	(62)	1.7	(34)
	1970–2021	5.2	1.0	(19)	0.5	(9)	0.1	(1)	3.6	(70)	0.1	(1)

		Output	Labor				Capital				TFP	
			Hours Worked		Labor Quality		ICT		Non–ICT			
US	1970–1975	2.6	0.7	(25)	0.1	(3)	0.1	(4)	1.3	(48)	0.5	(19)
	1975–1980	3.6	1.6	(43)	0.0	(0)	0.2	(6)	1.0	(28)	0.8	(22)
	1980–1985	3.2	0.9	(28)	0.2	(6)	0.3	(10)	0.7	(23)	1.0	(33)
	1985–1990	3.2	1.1	(35)	0.2	(7)	0.3	(11)	0.9	(28)	0.6	(20)
	1990–1995	2.5	0.5	(21)	0.3	(13)	0.3	(11)	0.5	(21)	0.9	(34)
	1995–2000	4.2	1.0	(24)	0.4	(10)	0.7	(16)	1.0	(23)	1.1	(27)
	2000–2005	2.5	0.2	(7)	0.4	(15)	0.4	(15)	0.8	(31)	0.8	(32)
	2005–2010	1.0	–0.4	(–38)	0.3	(34)	0.3	(33)	0.5	(56)	0.1	(14)
	2010–2015	2.1	0.8	(40)	0.2	(10)	0.3	(12)	0.4	(19)	0.4	(18)
	2015–2021	2.0	0.3	(14)	0.2	(12)	0.3	(15)	0.5	(28)	0.6	(31)
	1970–2021	2.7	0.7	(25)	0.2	(9)	0.3	(12)	0.8	(29)	0.7	(26)
Asia25	1970–1975	4.8	1.4	(28)	0.3	(7)	0.1	(2)	2.7	(56)	0.3	(6)
	1975–1980	4.6	1.5	(33)	0.3	(7)	0.1	(2)	2.1	(47)	0.5	(11)
	1980–1985	5.1	1.5	(30)	0.6	(11)	0.2	(4)	2.0	(38)	0.9	(18)
	1985–1990	5.8	1.2	(21)	0.6	(10)	0.3	(5)	2.3	(40)	1.4	(25)
	1990–1995	5.3	0.7	(13)	0.8	(15)	0.2	(3)	2.3	(44)	1.3	(25)
	1995–2000	4.2	0.9	(20)	0.5	(12)	0.2	(6)	2.1	(50)	0.5	(12)
	2000–2005	5.3	0.8	(16)	0.7	(14)	0.2	(5)	2.2	(41)	1.3	(25)
	2005–2010	6.4	0.3	(5)	0.7	(11)	0.2	(3)	3.2	(50)	1.9	(30)
	2010–2015	5.2	0.2	(3)	0.6	(12)	0.3	(5)	3.1	(60)	1.0	(20)
	2015–2021	4.1	0.1	(3)	–0.1	(–1)	0.2	(6)	2.7	(66)	1.1	(26)
	1970–2021	5.1	0.8	(17)	0.5	(10)	0.2	(4)	2.5	(49)	1.0	(20)
South Asia	1970–1975	2.0	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	(43)	–0.4	(–11)
	1980–1985	4.9	1.5	(30)	0.7	(14)	0.0	(1)	1.6	(32)	1.1	(23)
	1985–1990	5.9	1.4	(23)	0.8	(14)	0.1	(1)	1.7	(29)	1.9	(32)
	1990–1995	5.1	1.2	(24)	0.5	(10)	0.1	(2)	1.8	(34)	1.6	(31)
	1995–2000	5.6	1.0	(17)	0.8	(14)	0.1	(2)	2.0	(35)	1.7	(31)
	2000–2005	6.1	1.2	(19)	0.6	(9)	0.2	(3)	2.2	(37)	2.0	(32)
	2005–2010	7.1	0.7	(10)	0.9	(13)	0.3	(4)	3.4	(47)	1.9	(26)
	2010–2015	6.0	0.7	(12)	0.7	(12)	0.2	(3)	2.8	(47)	1.5	(26)
	2015–2021	4.6	0.6	(13)	0.3	(7)	0.2	(5)	2.5	(55)	0.9	(20)
	1970–2021	5.1	1.1	(23)	0.6	(12)	0.1	(2)	2.1	(41)	1.1	(22)
ASEAN6	1970–1975	7.2	1.4	(19)	0.7	(9)	0.1	(1)	3.6	(51)	1.4	(19)
	1975–1980	7.4	1.7	(22)	0.5	(7)	0.1	(2)	3.8	(51)	1.4	(18)
	1980–1985	3.9	1.3	(33)	0.7	(18)	0.2	(5)	2.9	(75)	–1.2	(–30)
	1985–1990	7.5	1.1	(15)	1.0	(14)	0.2	(3)	3.0	(40)	2.1	(29)
	1990–1995	7.3	0.7	(9)	1.5	(21)	0.4	(5)	4.4	(60)	0.4	(5)
	1995–2000	1.9	0.8	(40)	1.1	(57)	0.2	(11)	2.9	(152)	–3.0	(–159)
	2000–2005	4.8	0.5	(11)	1.2	(24)	0.3	(6)	1.4	(29)	1.4	(30)
	2005–2010	5.0	0.9	(19)	0.6	(12)	0.3	(6)	2.2	(44)	0.9	(19)
	2010–2015	4.9	0.4	(8)	1.4	(29)	0.3	(7)	2.7	(54)	0.2	(3)
	2015–2021	3.0	0.1	(2)	0.6	(19)	0.2	(6)	2.5	(84)	–0.3	(–11)
	1970–2021	5.2	0.9	(16)	0.9	(17)	0.2	(4)	2.9	(56)	0.3	(6)

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2023.

Table 9.14 Role of TFP and Capital Deepening in Labor Productivity Growth, 1970–2021

		Labor Productivity	Labor Quality		Capital deepening				TFP	
					ICT		Non–ICT			
Bangladesh	1970–1975	−6.8	0.0	(0)	0.0	(0)	−1.2	(17)	−5.6	(83)
	1975–1980	0.4	0.8	(237)	0.1	(14)	−0.1	(−16)	−0.5	(−136)
	1980–1985	0.2	0.4	(222)	0.1	(30)	0.9	(462)	−1.2	(−614)
	1985–1990	2.0	0.4	(21)	0.1	(4)	1.1	(56)	0.4	(19)
	1990–1995	1.4	0.5	(37)	0.1	(5)	1.5	(110)	−0.7	(−52)
	1995–2000	3.4	0.1	(3)	0.2	(4)	3.1	(92)	0.0	(0)
	2000–2005	3.5	0.4	(11)	0.4	(12)	2.6	(73)	0.1	(4)
	2005–2010	5.0	0.3	(6)	0.6	(13)	3.1	(63)	0.9	(19)
	2010–2015	4.7	0.8	(17)	0.4	(9)	3.4	(73)	0.1	(2)
	2015–2021	4.7	0.3	(7)	0.3	(6)	4.4	(93)	−0.3	(−6)
	1970–2021	1.9	0.4	(21)	0.2	(11)	1.9	(102)	−0.7	(−35)
Brunei	1970–1975	0.3	0.3	(124)	0.0	(−17)	2.2	(865)	−2.3	(−872)
	1975–1980	6.3	0.2	(3)	0.1	(2)	−3.6	(−57)	9.5	(151)
	1980–1985	−6.0	0.4	(−7)	0.0	(0)	−5.2	(86)	−1.3	(21)
	1985–1990	−8.0	0.4	(−5)	0.0	(0)	−3.9	(49)	−4.4	(55)
	1990–1995	−0.4	0.2	(−51)	0.2	(−52)	1.3	(−317)	−2.1	(520)
	1995–2000	−1.0	0.0	(−4)	0.0	(−4)	−0.7	(69)	−0.4	(39)
	2000–2005	−1.9	0.2	(−9)	0.0	(−2)	−0.7	(39)	−1.3	(72)
	2005–2010	−1.6	0.2	(−12)	0.1	(−7)	−0.9	(56)	−1.0	(64)
	2010–2015	−0.8	0.0	(1)	0.1	(−13)	−0.1	(16)	−0.8	(95)
	2015–2021	−2.1	0.0	(0)	0.0	(−2)	−0.2	(11)	−2.0	(92)
	1970–2021	−1.5	0.2	(−12)	0.1	(−4)	−1.2	(76)	−0.6	(40)
China	1970–1975	1.4	0.4	(31)	0.0	(1)	1.8	(131)	−0.9	(−64)
	1975–1980	2.4	0.3	(11)	0.0	(1)	1.3	(55)	0.8	(33)
	1980–1985	4.6	0.5	(11)	0.0	(1)	1.1	(25)	2.9	(63)
	1985–1990	3.9	0.5	(12)	0.1	(2)	2.3	(58)	1.1	(28)
	1990–1995	8.8	1.0	(12)	0.1	(1)	3.0	(34)	4.7	(53)
	1995–2000	5.4	0.4	(8)	0.2	(4)	3.3	(61)	1.5	(27)
	2000–2005	6.4	0.8	(12)	0.7	(11)	3.8	(59)	1.2	(19)
	2005–2010	11.0	0.9	(8)	0.5	(4)	5.9	(54)	3.7	(34)
	2010–2015	7.8	0.7	(9)	0.6	(7)	5.3	(68)	1.3	(16)
	2015–2021	5.5	−0.4	(−7)	0.4	(7)	3.8	(68)	1.7	(31)
	1970–2021	5.7	0.5	(8)	0.3	(5)	3.2	(55)	1.8	(31)
Fiji	1970–1975	1.9	0.9	(50)	0.0	(2)	0.8	(40)	0.1	(8)
	1975–1980	1.0	1.3	(137)	0.0	(2)	1.5	(159)	−1.9	(−198)
	1980–1985	−1.7	0.8	(−46)	0.0	(−3)	0.4	(−24)	−2.9	(173)
	1985–1990	1.9	1.4	(73)	0.2	(12)	−0.5	(−28)	0.8	(43)
	1990–1995	−0.5	1.3	(−280)	0.1	(−12)	−0.4	(85)	−1.4	(307)
	1995–2000	1.2	0.7	(59)	−0.1	(−5)	0.8	(66)	−0.2	(−19)
	2000–2005	−0.4	0.6	(−168)	0.0	(−8)	−0.2	(49)	−0.9	(227)
	2005–2010	1.4	0.2	(13)	0.1	(8)	−0.2	(−15)	1.3	(94)
	2010–2015	1.8	0.1	(5)	0.1	(6)	−0.6	(−36)	2.2	(125)
	2015–2021	−2.5	0.2	(−8)	0.1	(−5)	0.9	(−38)	−3.7	(151)
	1970–2021	0.4	0.7	(209)	0.1	(20)	0.3	(73)	−0.7	(−201)
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	(−81)
	1980–1985	2.9	0.8	(27)	0.0	(1)	0.8	(26)	1.4	(46)
	1985–1990	3.9	0.9	(23)	0.1	(1)	1.0	(25)	2.0	(51)
	1990–1995	3.1	0.4	(14)	0.1	(2)	0.9	(30)	1.7	(53)
	1995–2000	4.1	1.0	(23)	0.1	(3)	1.2	(28)	1.9	(45)
	2000–2005	4.6	0.6	(13)	0.1	(3)	1.3	(28)	2.6	(57)
	2005–2010	6.9	1.2	(18)	0.3	(4)	2.8	(41)	2.6	(38)
	2010–2015	5.2	0.8	(15)	0.2	(4)	2.2	(43)	2.0	(39)
	2015–2021	3.7	0.3	(9)	0.2	(6)	1.9	(53)	1.2	(33)
	1970–2021	3.5	0.7	(19)	0.1	(3)	1.3	(37)	1.4	(41)
Iran	1970–1975	7.0	0.6	(8)	0.0	(0)	0.4	(6)	5.9	(85)
	1975–1980	−5.9	0.1	(−1)	0.0	(0)	−1.8	(31)	−4.2	(71)
	1980–1985	1.1	0.1	(12)	0.0	(3)	−1.2	(−116)	2.1	(201)
	1985–1990	−1.6	0.7	(−40)	0.0	(−1)	−1.0	(64)	−1.3	(77)
	1990–1995	0.9	0.5	(56)	0.0	(4)	−0.9	(−101)	1.3	(141)
	1995–2000	0.6	0.3	(54)	0.0	(7)	−2.2	(−364)	2.5	(403)
	2000–2005	3.4	0.4	(13)	0.2	(5)	−0.9	(−27)	3.7	(109)
	2005–2010	6.1	0.4	(6)	0.1	(2)	2.3	(37)	3.3	(55)
	2010–2015	−1.5	0.3	(−22)	0.1	(−5)	0.2	(−16)	−2.2	(143)
	2015–2021	0.5	0.1	(18)	0.0	(−4)	0.1	(22)	0.3	(65)
	1970–2021	1.0	0.3	(33)	0.0	(5)	−0.5	(−48)	1.1	(110)
Bhutan	1970–1975	0.0	0.1	(−266)	0.0	(−28)	0.9	(−1790)	−1.1	(2184)
	1975–1980	3.2	−0.2	(−6)	0.0	(1)	0.2	(6)	3.2	(99)
	1980–1985	3.8	0.7	(18)	0.1	(2)	1.1	(29)	2.0	(52)
	1985–1990	5.1	1.7	(33)	0.1	(1)	1.2	(25)	2.1	(41)
	1990–1995	4.3	1.5	(34)	0.2	(5)	2.8	(65)	−0.2	(−5)
	1995–2000	2.5	0.6	(23)	0.7	(28)	1.1	(43)	0.2	(6)
	2000–2005	1.7	0.7	(43)	−0.1	(−8)	3.0	(177)	−1.9	(−112)
	2005–2010	6.1	1.1	(18)	0.3	(5)	1.3	(22)	3.4	(55)
	2010–2015	6.9	0.9	(13)	0.2	(3)	4.8	(68)	1.1	(16)
	2015–2021	1.1	0.3	(29)	0.0	(−4)	2.0	(182)	−1.2	(−107)
	1970–2021	3.4	0.7	(21)	0.1	(4)	1.9	(54)	0.7	(21)
Cambodia	1970–1975	−7.3	0.3	(−4)	−0.6	(8)	1.1	(−15)	−8.0	(110)
	1975–1980	−6.6	0.3	(−5)	−0.1	(1)	0.6	(−10)	−7.5	(113)
	1980–1985	−1.2	0.2	(−13)	0.0	(2)	−1.8	(148)	0.4	(−36)
	1985–1990	4.2	0.2	(4)	0.0	(0)	−1.8	(−43)	5.9	(139)
	1990–1995	0.8	0.3	(39)	0.0	(1)	−1.6	(−197)	2.1	(257)
	1995–2000	3.0	0.7	(24)	0.0	(1)	0.2	(5)	2.1	(70)
	2000–2005	5.9	0.6	(10)	0.0	(0)	1.3	(22)	4.0	(68)
	2005–2010	2.1	0.4	(19)	0.0	(1)	3.0	(145)	−1.3	(−64)
	2010–2015	2.6	1.7	(66)	0.1	(2)	2.5	(96)	−1.7	(−64)
	2015–2021	5.2	0.2	(4)	0.0	(1)	2.0	(39)	2.9	(56)
	1970–2021	1.0	0.5	(51)	−0.1	(−6)	0.6	(61)	−0.1	(−6)
ROC	1970–1975	6.4	0.1	(2)	0.2	(3)	2.1	(32)	4.0	(62)
	1975–1980	8.1	1.1	(14)	0.2	(2)	2.1	(25)	4.7	(59)
	1980–1985	5.5	0.2	(4)	0.3	(5)	1.6	(29)	3.4	(62)
	1985–1990	7.8	0.8	(10)	0.2	(3)	1.5	(20)	5.2	(67)
	1990–1995	5.9	0.6	(11)	0.2	(4)	1.7	(29)	3.3	(56)
	1995–2000	5.5	0.6	(11)	0.6	(10)	1.8	(32)	2.6	(46)
	2000–2005	3.8	0.9	(22)	0.2	(6)	1.1	(28)	1.7	(44)
	2005–2010	3.7	0.9	(24)	0.0	(1)	0.8	(21)	2.0	(54)
	2010–2015	0.8	0.6	(78)	0.0	(2)	−0.3	(−39)	0.5	(59)
	2015–2021	3.7	0.4	(12)	0.1	(2)	1.1	(28)	2.1	(58)
	1970–2021	5.1	0.6	(12)	0.2	(4)	1.3	(26)	2.9	(58)
Hong Kong	1970–1975	2.9	0.1	(4)	0.1	(4)	1.1	(39)	1.5	(53)
	1975–1980	7.4	0.7	(10)	0.2	(3)	1.7	(23)	4.8	(64)
	1980–1985	3.6	0.6	(16)	0.3	(7)	2.3	(62)	0.5	(15)
	1985–1990	7.7	1.0	(14)	0.3	(4)	2.2	(29)	4.0	(53)
	1990–1995	4.8	0.9	(19)	0.3	(7)	2.1	(43)	1.5	(31)
	1995–2000	0.0	0.5	(−1102)	0.5	(−1213)	0.6	(−1448)	−1.6	(3864)
	2000–2005	3.1	0.3	(9)	0.3	(10)	0.6	(19)	1.9	(63)
	2005–2010	3.5	0.3	(7)	0.3	(9)	0.8	(24)	2.1	(60)
	2010–2015	2.3	0.6	(27)	0.3	(13)	0.3	(15)	1.0	(45)
	2015–2021	1.9	0.4	(20)	0.2	(9)	0.4	(18)	1.0	(53)
	1970–2021	3.7	0.5	(14)	0.3	(8)	1.2	(32)	1.7	(45)
Indonesia	1970–1975	4.3	0.8	(18)	0.0	(0)	1.5	(35)	2.0	(47)
	1975–1980	3.7	0.5	(15)	0.1	(2)	1.0	(28)	2.0	(55)
	1980–1985	0.6	0.5	(79)	0.1	(9)	−0.6	(−100)	0.6	(112)
	1985–1990	4.8	1.2	(25)	0.2	(3)	1.5	(31)	1.9	(40)
	1990–1995	6.2	2.4	(39)	0.2	(3)	2.7	(44)	0.9	(14)
	1995–2000	−2.4	1.0	(−41)	0.1	(−4)	1.6	(−69)	−5.0	(214)
	2000–2005	3.1	1.4	(46)	0.2	(5)	1.1	(36)	0.4	(13)
	2005–2010	2.3	0.6	(28)	0.1	(4)	0.9	(41)	0.6	(27)
	2010–2015	3.9	2.1	(55)	0.2	(4)	2.7	(69)	−1.1	(−28)
	2015–2021	2.6	0.8	(30)	0.1	(5)	2.6	(97)	−0.9	(−33)
	1970–2021	2.9	1.1	(39)	0.1	(4)	1.5	(53)	0.1	(5)
Japan	1970–1975	5.1	1.0	(20)	0.2	(5)	3.0	(59)	0.8	(16)
	1975–1980	3.6	0.8	(23)	0.2	(4)	1.2	(32)	1.5	(40)
	1980–1985	3.5	0.6	(18)	0.4	(10)	1.1	(32)	1.4	(40)
	1985–1990	4.2	0.6	(14)	0.5	(11)	1.4	(33)	1.7	(42)
	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)	0.8	(42)	0.4	(19)
	2000–2005	1.8	0.5	(27)	0.3	(15)	0.4	(21)	0.7	(38)
	2005–2010	0.7	0.4	(64)	0.2	(27)	0.4	(54)	−0.3	(−45)
	2010–2015	1.1	0.2	(17)	0.1	(11)	−0.1	(−10)	0.9	(82)
	2015–2021	0.0	0.2	(1274)	0.1	(476)	0.1	(402)	−0.4	(−2052)
	1970–2021	2.3	0.5	(22)	0.2	(11)	0.9	(40)	0.6	(27)

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		Labor Productivity	Labor Quality		Capital deepening				TFP	
					ICT		Non–ICT			
Korea	1970–1975	5.8	0.2	(4)	0.1	(2)	2.3	(39)	3.2	(55)
	1975–1980	4.7	0.6	(12)	0.3	(7)	4.4	(93)	−0.6	(−12)
	1980–1985	6.7	1.7	(26)	0.3	(5)	2.5	(36)	2.2	(33)
	1985–1990	6.7	1.4	(21)	0.5	(7)	2.6	(39)	2.2	(33)
	1990–1995	6.4	1.6	(25)	0.3	(5)	2.9	(46)	1.5	(24)
	1995–2000	5.6	0.7	(12)	0.6	(10)	2.4	(43)	1.9	(34)
	2000–2005	4.6	1.2	(27)	0.4	(9)	2.2	(47)	0.8	(17)
	2005–2010	4.7	1.0	(21)	0.2	(4)	2.2	(47)	1.3	(28)
	2010–2015	1.7	0.6	(33)	0.0	(2)	1.0	(55)	0.2	(10)
	2015–2021	4.2	0.4	(10)	0.2	(4)	2.2	(51)	1.5	(35)
	1970–2021	5.1	0.9	(18)	0.3	(6)	2.4	(48)	1.4	(28)
Malaysia	1970–1975	4.5	0.4	(9)	0.0	(1)	1.7	(39)	2.3	(52)
	1975–1980	5.1	0.8	(15)	0.1	(2)	2.6	(52)	1.6	(32)
	1980–1985	1.8	0.8	(47)	0.1	(5)	2.3	(130)	−1.5	(−82)
	1985–1990	3.2	0.7	(21)	0.2	(5)	0.4	(13)	2.0	(61)
	1990–1995	6.6	1.1	(17)	0.3	(5)	4.5	(67)	0.7	(11)
	1995–2000	0.3	0.6	(218)	0.4	(138)	0.8	(326)	−1.5	(−582)
	2000–2005	3.5	0.8	(24)	0.6	(19)	−0.4	(−12)	2.4	(69)
	2005–2010	2.0	0.5	(22)	0.4	(19)	0.1	(5)	1.1	(53)
	2010–2015	3.5	0.4	(12)	0.3	(8)	0.2	(5)	2.7	(75)
	2015–2021	2.2	0.6	(29)	0.2	(7)	1.3	(61)	0.1	(3)
	1970–2021	3.2	0.7	(21)	0.3	(8)	1.4	(42)	1.0	(30)
Myanmar	1970–1975	0.5	−0.1	(−29)	0.0	(2)	0.6	(126)	0.0	(1)
	1975–1980	4.9	0.6	(12)	0.1	(2)	3.2	(65)	1.0	(21)
	1980–1985	2.2	0.5	(25)	0.1	(4)	3.5	(163)	−2.0	(−91)
	1985–1990	−1.5	0.7	(−47)	0.0	(−2)	−0.1	(7)	−2.2	(142)
	1990–1995	2.1	0.3	(14)	0.1	(3)	1.4	(66)	0.4	(17)
	1995–2000	5.5	0.6	(10)	0.2	(3)	3.7	(67)	1.0	(19)
	2000–2005	3.7	0.7	(19)	0.1	(2)	4.3	(118)	−1.4	(−39)
	2005–2010	3.7	0.7	(20)	0.1	(3)	2.4	(66)	0.4	(11)
	2010–2015	4.9	0.7	(14)	0.2	(3)	5.3	(108)	−1.3	(−26)
	2015–2021	2.5	−0.1	(−3)	0.1	(5)	3.7	(150)	−1.3	(−52)
	1970–2021	2.8	0.5	(16)	0.1	(3)	2.8	(100)	−0.5	(−19)
Pakistan	1970–1975	1.2	0.7	(60)	0.0	(2)	0.5	(38)	0.0	(1)
	1975–1980	2.7	1.0	(36)	0.0	(0)	1.2	(45)	0.5	(19)
	1980–1985	3.7	0.1	(4)	0.0	(1)	1.5	(40)	2.1	(55)
	1985–1990	5.4	1.1	(19)	0.1	(1)	1.7	(32)	2.6	(47)
	1990–1995	4.9	0.8	(16)	0.0	(1)	2.2	(45)	1.9	(39)
	1995–2000	4.0	0.3	(7)	0.0	(0)	1.9	(48)	1.8	(44)
	2000–2005	1.8	0.5	(31)	0.1	(7)	0.9	(50)	0.2	(12)
	2005–2010	−0.4	0.1	(−32)	0.1	(−20)	0.5	(−125)	−1.2	(276)
	2010–2015	1.5	0.5	(34)	0.0	(2)	−0.1	(−6)	1.1	(70)
	2015–2021	2.1	0.5	(21)	0.1	(4)	0.5	(25)	1.1	(50)
	1970–2021	2.7	0.6	(21)	0.1	(2)	1.1	(40)	1.0	(37)
Singapore	1970–1975	4.0	0.5	(13)	0.2	(5)	2.7	(69)	0.5	(14)
	1975–1980	3.0	0.6	(22)	0.2	(6)	0.9	(31)	1.2	(41)
	1980–1985	3.3	1.3	(40)	0.6	(17)	2.6	(80)	−1.2	(−37)
	1985–1990	2.8	0.7	(24)	0.6	(22)	0.0	(1)	1.5	(54)
	1990–1995	3.9	1.7	(42)	0.5	(12)	0.8	(21)	1.0	(25)
	1995–2000	3.8	1.0	(26)	0.5	(13)	1.7	(46)	0.6	(16)
	2000–2005	3.8	1.0	(27)	0.5	(12)	1.0	(26)	1.3	(35)
	2005–2010	1.5	0.4	(26)	0.2	(12)	−1.1	(−72)	2.1	(133)
	2010–2015	2.1	0.6	(27)	0.7	(31)	0.6	(28)	0.3	(14)
	2015–2021	4.5	0.8	(18)	0.6	(14)	1.2	(26)	1.8	(41)
	1970–2021	3.3	0.9	(26)	0.4	(14)	1.1	(32)	0.9	(28)
Thailand	1970–1975	3.1	1.4	(46)	0.0	(2)	1.3	(42)	0.3	(11)
	1975–1980	0.9	1.1	(117)	0.1	(15)	−0.5	(−58)	0.2	(26)
	1980–1985	3.1	1.8	(59)	0.3	(9)	2.1	(66)	−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)	5.2	(83)	−1.4	(−22)
	1995–2000	1.2	1.9	(163)	0.1	(10)	2.3	(197)	−3.1	(−270)
	2000–2005	5.2	1.8	(35)	0.4	(7)	0.6	(11)	2.4	(46)
	2005–2010	2.4	0.8	(34)	0.6	(26)	0.6	(25)	0.4	(15)
	2010–2015	4.8	1.6	(33)	0.7	(14)	2.0	(42)	0.5	(11)
	2015–2021	3.0	0.3	(11)	0.1	(3)	2.1	(71)	0.4	(15)
	1970–2021	3.6	1.4	(39)	0.3	(9)	1.8	(49)	0.1	(3)

		Labor Productivity	Labor Quality		Capital deepening				TFP	
					ICT		Non–ICT			
Lao PDR	1970–1975	1.6	0.1	(8)	0.0	(−1)	0.1	(7)	1.4	(86)
	1975–1980	1.4	0.1	(11)	0.0	(1)	0.7	(49)	0.5	(40)
	1980–1985	3.2	0.2	(6)	0.1	(2)	1.2	(38)	1.7	(55)
	1985–1990	−1.2	0.1	(−11)	0.0	(−3)	0.1	(−8)	−1.5	(122)
	1990–1995	0.5	0.1	(28)	0.1	(27)	0.8	(158)	−0.6	(−113)
	1995–2000	6.7	0.5	(7)	0.1	(1)	2.8	(42)	3.3	(49)
	2000–2005	0.9	0.4	(48)	0.1	(10)	0.8	(90)	−0.4	(−49)
	2005–2010	3.7	0.8	(21)	0.1	(3)	0.9	(25)	1.9	(51)
	2010–2015	3.3	0.6	(18)	0.1	(2)	3.1	(96)	−0.5	(−16)
	2015–2021	0.5	0.0	(2)	0.0	(0)	2.8	(561)	−2.3	(−463)
	1970–2021	2.0	0.3	(15)	0.1	(3)	1.4	(67)	0.3	(15)
Mongolia	1970–1975	5.1	2.4	(48)	0.1	(1)	2.1	(42)	0.5	(9)
	1975–1980	3.1	0.7	(22)	0.1	(4)	3.1	(99)	−0.8	(−24)
	1980–1985	4.0	0.4	(10)	0.1	(3)	3.3	(84)	0.1	(2)
	1985–1990	−0.7	0.3	(−39)	0.0	(−4)	−0.2	(23)	−0.8	(120)
	1990–1995	−1.2	−1.2	(102)	0.0	(−4)	0.2	(−18)	−0.2	(20)
	1995–2000	4.0	0.1	(3)	0.1	(3)	0.0	(0)	3.7	(94)
	2000–2005	4.0	1.0	(25)	0.3	(6)	−0.4	(−9)	3.1	(78)
	2005–2010	6.0	0.3	(5)	0.4	(6)	7.5	(124)	−2.2	(−36)
	2010–2015	6.2	1.0	(17)	0.0	(0)	3.8	(62)	1.3	(22)
	2015–2021	2.3	0.7	(29)	0.2	(9)	1.9	(82)	−0.5	(−20)
	1970–2021	3.3	0.6	(18)	0.1	(4)	2.1	(66)	0.4	(13)
Nepal	1970–1975	−2.1	0.3	(−14)	0.1	(−2)	−0.3	(13)	−2.2	(104)
	1975–1980	−0.4	0.3	(−86)	0.0	(−11)	0.3	(−87)	−1.1	(283)
	1980–1985	1.0	2.6	(271)	0.0	(4)	1.2	(126)	−2.9	(−301)
	1985–1990	4.9	2.4	(49)	0.0	(1)	1.6	(31)	0.9	(19)
	1990–1995	2.6	2.2	(86)	0.0	(1)	1.0	(39)	−0.7	(−26)
	1995–2000	2.5	2.3	(95)	0.0	(2)	1.0	(43)	−1.0	(−39)
	2000–2005	2.4	1.5	(62)	0.0	(2)	1.1	(47)	−0.3	(−11)
	2005–2010	3.4	0.9	(25)	0.0	(0)	1.4	(42)	1.2	(33)
	2010–2015	2.0	−0.1	(−3)	0.0	(0)	1.0	(50)	1.1	(53)
	2015–2021	1.8	0.0	(0)	0.0	(1)	1.6	(91)	0.1	(7)
	1970–2021	1.8	1.2	(68)	0.0	(2)	1.0	(56)	−0.5	(−26)
Philippines	1970–1975	2.0	0.2	(9)	0.1	(4)	1.1	(56)	0.6	(32)
	1975–1980	2.8	0.7	(27)	0.1	(2)	3.1	(111)	−1.1	(−40)
	1980–1985	−3.6	0.4	(−11)	0.2	(−5)	1.6	(−44)	−5.8	(161)
	1985–1990	3.3	0.7	(21)	0.0	(1)	−0.3	(−9)	2.8	(87)
	1990–1995	0.8	0.1	(15)	0.1	(9)	0.9	(108)	−0.3	(−32)
	1995–2000	2.8	1.0	(35)	0.3	(11)	1.4	(51)	0.1	(3)
	2000–2005	2.0	0.2	(8)	0.2	(8)	−0.1	(−4)	1.7	(88)
	2005–2010	2.7	0.5	(19)	0.1	(2)	0.9	(35)	1.1	(43)
	2010–2015	3.7	0.4	(12)	0.1	(3)	2.7	(72)	0.5	(13)
	2015–2021	3.8	0.4	(12)	0.2	(4)	3.7	(97)	−0.5	(−13)
	1970–2021	2.0	0.5	(23)	0.1	(6)	1.5	(75)	−0.1	(−4)
Sri Lanka	1970–1975	1.7	0.3	(18)	0.0	(1)	1.1	(60)	0.4	(21)
	1975–1980	3.0	0.2	(7)	0.0	(1)	1.7	(56)	1.1	(36)
	1980–1985	4.4	0.9	(20)	0.1	(2)	2.7	(62)	0.7	(17)
	1985–1990	0.5	0.2	(37)	0.0	(−8)	−0.7	(−128)	1.1	(199)
	1990–1995	4.8	0.8	(18)	0.0	(1)	0.4	(8)	3.5	(74)
	1995–2000	1.0	0.1	(12)	0.1	(5)	−0.4	(−41)	1.3	(124)
	2000–2005	4.6	0.9	(20)	0.3	(6)	1.6	(34)	1.8	(39)
	2005–2010	5.5	−0.2	(−4)	0.2	(4)	2.7	(50)	2.8	(51)
	2010–2015	6.3	0.2	(4)	0.2	(3)	4.9	(78)	1.0	(16)
	2015–2021	1.1	0.3	(27)	0.4	(33)	3.1	(272)	−2.6	(−232)
	1970–2021	3.3	0.4	(12)	0.1	(4)	1.7	(53)	1.0	(32)
Turkiye	1970–1975	1.3	0.2	(17)	0.1	(8)	2.7	(208)	−1.7	(−133)
	1975–1980	0.9	0.4	(39)	0.0	(4)	3.1	(333)	−2.6	(−276)
	1980–1985	2.9	0.1	(4)	0.1	(3)	1.0	(34)	1.7	(58)
	1985–1990	0.6	0.4	(66)	0.1	(23)	0.1	(23)	−0.1	(−11)
	1990–1995	0.9	0.4	(41)	0.1	(8)	1.8	(210)	−1.4	(−159)
	1995–2000	4.7	0.6	(12)	0.3	(7)	3.3	(70)	0.5	(12)
	2000–2005	2.8	1.0	(35)	0.1	(3)	1.3	(47)	0.4	(15)
	2005–2010	2.0	0.5	(25)	0.2	(10)	2.7	(134)	−1.4	(−68)
	2010–2015	4.2	0.7	(18)	0.2	(5)	1.7	(40)	1.6	(37)
	2015–2021	4.7	0.7	(15)	0.1	(3)	2.3	(49)	1.6	(33)
	1970–2021	2.5	0.5	(20)	0.1	(5)	2.0	(79)	−0.1	(−4)

		Labor Productivity	Labor Quality		Capital deepening				TFP	
					ICT		Non–ICT			
Vietnam	1970–1975	−1.3	0.4	(−32)	0.0	(1)	−1.1	(85)	−0.6	(46)
	1975–1980	2.3	0.7	(32)	0.0	(1)	2.0	(88)	−0.5	(−21)
	1980–1985	−0.3	0.3	(−105)	0.0	(−5)	−0.1	(45)	−0.5	(165)
	1985–1990	0.1	0.1	(73)	0.0	(4)	3.4	(2898)	−3.4	(−2875)
	1990–1995	6.0	0.1	(2)	0.0	(0)	2.7	(44)	3.2	(54)
	1995–2000	5.1	0.1	(3)	0.0	(1)	4.2	(82)	0.8	(15)
	2000–2005	6.9	1.1	(16)	0.1	(1)	5.3	(77)	0.4	(6)
	2005–2010	3.8	0.7	(20)	0.1	(2)	5.2	(139)	−2.3	(−60)
	2010–2015	4.7	0.3	(7)	0.2	(4)	2.8	(60)	1.4	(29)
	2015–2021	6.9	0.9	(13)	0.2	(3)	3.6	(52)	2.3	(33)
	1970–2021	3.5	0.5	(14)	0.1	(2)	2.8	(81)	0.1	(3)
APO21	1970–1975	2.5	0.5	(21)	0.1	(4)	1.2	(50)	0.6	(25)
	1975–1980	1.7	0.8	(45)	0.1	(5)	0.5	(28)	0.4	(22)
	1980–1985	2.4	0.9	(38)	0.2	(8)	0.4	(17)	0.9	(37)
	1985–1990	3.5	1.2	(35)	0.2	(7)	0.5	(15)	1.5	(43)
	1990–1995	2.5	1.1	(43)	0.1	(6)	0.8	(30)	0.5	(21)
	1995–2000	1.7	1.1	(62)	0.2	(12)	0.3	(20)	0.1	(6)
	2000–2005	2.6	1.3	(52)	0.1	(4)	−0.1	(−6)	1.3	(49)
	2005–2010	2.8	1.4	(49)	0.1	(3)	0.5	(17)	0.9	(31)
	2010–2015	2.9	1.6	(53)	0.1	(3)	0.5	(15)	0.9	(29)
	2015–2021	2.5	0.7	(27)	0.1	(3)	1.2	(46)	0.6	(23)
	1970–2021	2.5	1.0	(42)	0.1	(5)	0.6	(23)	0.8	(30)
East Asia	1970–1975	2.3	0.7	(31)	0.1	(6)	1.5	(68)	−0.1	(−5)
	1975–1980	2.6	0.6	(22)	0.1	(4)	0.7	(29)	1.2	(46)
	1980–1985	2.5	0.9	(35)	0.2	(9)	0.2	(9)	1.2	(47)
	1985–1990	3.6	0.9	(24)	0.3	(8)	0.9	(26)	1.5	(42)
	1990–1995	4.2	1.8	(44)	0.1	(3)	0.8	(19)	1.4	(33)
	1995–2000	2.6	0.8	(29)	0.2	(9)	0.8	(31)	0.8	(31)
	2000–2005	3.4	1.5	(46)	0.2	(6)	0.7	(20)	1.0	(28)
	2005–2010	7.0	1.8	(26)	0.2	(2)	2.4	(35)	2.5	(37)
	2010–2015	5.8	1.4	(24)	0.3	(5)	2.8	(49)	1.3	(22)
	2015–2021	4.3	−0.6	(−14)	0.3	(7)	3.2	(73)	1.5	(34)
	1970–2021	3.8	0.9	(25)	0.2	(5)	1.5	(38)	1.2	(32)
ASEAN	1970–1975	2.8	1.3	(44)	0.0	(1)	0.6	(20)	1.0	(36)
	1975–1980	3.2	1.0	(32)	0.1	(2)	0.7	(23)	1.4	(43)
	1980–1985	0.5	1.3	(246)	0.1	(26)	0.0	(8)	−1.0	(−179)
	1985–1990	4.2	1.7	(42)	0.2	(4)	0.3	(7)	2.0	(48)
	1990–1995	5.4	2.5	(46)	0.2	(5)	1.8	(33)	0.9	(17)
	1995–2000	0.3	2.0	(566)	0.1	(31)	0.6	(170)	−2.3	(−666)
	2000–2005	3.8	2.7	(72)	0.2	(5)	−0.7	(−18)	1.6	(41)
	2005–2010	2.6	1.7	(65)	0.2	(7)	0.1	(3)	0.7	(25)
	2010–2015	4.0	2.8	(69)	0.2	(6)	0.6	(14)	0.5	(11)
	2015–2021	3.5	1.3	(38)	0.1	(4)	2.0	(56)	0.1	(2)
	1970–2021	3.0	1.8	(60)	0.1	(5)	0.6	(20)	0.5	(15)
CLMV	1970–1975	−1.2	0.7	(−58)	−0.1	(7)	−0.8	(65)	−1.0	(85)
	1975–1980	1.9	1.3	(72)	0.0	(0)	1.0	(52)	−0.5	(−25)
	1980–1985	0.3	0.8	(318)	0.0	(13)	−0.2	(−89)	−0.4	(−142)
	1985–1990	0.2	0.5	(240)	0.0	(7)	2.2	(1050)	−2.5	(−1197)
	1990–1995	4.6	0.3	(6)	0.0	(1)	1.9	(42)	2.4	(51)
	1995–2000	5.1	0.5	(10)	0.1	(1)	3.5	(68)	1.0	(21)
	2000–2005	5.7	2.2	(39)	0.1	(1)	3.2	(55)	0.3	(5)
	2005–2010	4.0	1.8	(45)	0.1	(2)	3.7	(93)	−1.6	(−41)
	2010–2015	4.3	1.1	(26)	0.1	(3)	2.3	(53)	0.7	(17)
	2015–2021	6.3	1.4	(22)	0.1	(2)	3.0	(48)	1.7	(28)
	1970–2021	3.2	1.1	(34)	0.0	(2)	2.0	(63)	0.1	(2)

		Labor Productivity	Labor Quality		Capital deepening				TFP	
					ICT		Non–ICT			
US	1970–1975	1.6	0.1	(5)	0.1	(6)	0.9	(57)	0.5	(32)
	1975–1980	1.1	0.0	(1)	0.2	(17)	0.1	(9)	0.8	(73)
	1980–1985	1.7	0.2	(11)	0.3	(17)	0.2	(11)	1.0	(61)
	1985–1990	1.4	0.2	(15)	0.3	(21)	0.3	(18)	0.6	(46)
	1990–1995	1.6	0.3	(20)	0.2	(15)	0.2	(13)	0.9	(52)
	1995–2000	2.5	0.4	(17)	0.6	(24)	0.4	(15)	1.1	(44)
	2000–2005	2.2	0.4	(17)	0.4	(17)	0.7	(30)	0.8	(36)
	2005–2010	1.6	0.3	(21)	0.3	(21)	0.8	(49)	0.1	(9)
	2010–2015	0.6	0.2	(36)	0.2	(33)	−0.2	(−31)	0.4	(61)
	2015–2021	1.5	0.2	(16)	0.3	(19)	0.4	(24)	0.6	(41)
	1970–2021	1.6	0.2	(15)	0.3	(18)	0.4	(23)	0.7	(43)
Asia25	1970–1975	2.2	0.7	(30)	0.1	(4)	1.2	(53)	0.3	(13)
	1975–1980	1.8	0.6	(35)	0.1	(4)	0.6	(33)	0.5	(28)
	1980–1985	2.3	1.0	(45)	0.2	(7)	0.2	(9)	0.9	(39)
	1985–1990	3.5	1.1	(30)	0.2	(6)	0.8	(22)	1.4	(42)
	1990–1995	3.9	1.5	(39)	0.1	(3)	0.9	(24)	1.3	(34)
	1995–2000	2.5	1.0	(41)	0.2	(7)	0.8	(31)	0.5	(20)
	2000–2005	3.5	1.6	(44)	0.2	(4)	0.5	(15)	1.3	(37)
	2005–2010	5.7	1.5	(26)	0.2	(3)	2.1	(37)	1.9	(34)
	2010–2015	4.8	1.3	(27)	0.2	(5)	2.3	(48)	1.0	(21)
	2015–2021	3.8	−0.1	(−3)	0.2	(6)	2.6	(69)	1.1	(28)
	1970–2021	3.4	1.0	(29)	0.2	(5)	1.2	(36)	1.0	(30)
South Asia	1970–1975	−0.3	0.5	(−150)	0.0	(−4)	0.2	(−76)	−1.0	(330)
	1975–1980	0.9	0.8	(87)	0.0	(2)	0.5	(52)	−0.4	(−41)
	1980–1985	2.8	1.0	(36)	0.0	(1)	0.6	(23)	1.1	(40)
	1985–1990	3.9	1.2	(32)	0.1	(1)	0.7	(18)	1.9	(49)
	1990–1995	3.3	0.8	(24)	0.1	(2)	0.8	(25)	1.6	(49)
	1995–2000	4.0	1.3	(33)	0.1	(3)	0.9	(22)	1.7	(43)
	2000–2005	4.1	1.0	(25)	0.1	(3)	0.9	(23)	2.0	(49)
	2005–2010	5.8	1.7	(30)	0.2	(4)	2.0	(34)	1.9	(32)
	2010–2015	4.7	1.3	(27)	0.2	(4)	1.7	(36)	1.5	(33)
	2015–2021	3.5	0.6	(17)	0.2	(6)	1.8	(51)	0.9	(26)
	1970–2021	3.3	1.0	(31)	0.1	(3)	1.0	(32)	1.1	(34)
ASEAN6	1970–1975	3.6	1.7	(47)	0.0	(1)	0.5	(13)	1.4	(39)
	1975–1980	3.0	1.4	(46)	0.1	(2)	0.2	(6)	1.4	(46)
	1980–1985	0.5	1.8	(349)	0.1	(28)	−0.3	(−53)	−1.2	(−224)
	1985–1990	4.6	2.8	(60)	0.2	(3)	−0.5	(−11)	2.1	(47)
	1990–1995	5.6	3.8	(69)	0.2	(4)	1.1	(20)	0.4	(7)
	1995–2000	0.0	2.7	(−5768)	0.1	(−218)	0.1	(−250)	−3.0	(6335)
	2000–2005	3.5	3.0	(86)	0.2	(6)	−1.2	(−34)	1.4	(42)
	2005–2010	2.4	1.6	(67)	0.2	(9)	−0.3	(−14)	0.9	(38)
	2010–2015	4.0	3.7	(93)	0.2	(6)	−0.1	(−2)	0.2	(4)
	2015–2021	2.8	1.4	(49)	0.1	(5)	1.6	(59)	−0.3	(−12)
	1970–2021	3.0	2.4	(79)	0.2	(5)	0.1	(5)	0.3	(11)

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2023.

Table 9.15 Industry Value-added Share, 1980–2021

——Shares of industry GDP at current prices by Industry

	1980				1990				2000				2010				2021			
	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	21.1	53.5	25.1
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	12.1	22.1	53.3	12.6
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	19.7	6.0	45.2	29.1
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	18.2	37.0	43.5
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	24.6	19.5	35.9	20.0
China	26.1	32.6	31.8	9.6	24.4	28.2	38.1	9.2	13.7	29.9	44.1	12.2	9.2	30.6	46.4	13.8	7.2	26.3	55.3	11.2
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	1.5	35.0	58.6	4.9
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	21.9	15.3	57.8	5.0
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	93.6	5.3
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	18.0	13.5	57.7	10.8
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	13.8	20.1	44.6	21.5
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	7.5	20.9	44.2	27.3
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	19.5	72.1	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	27.9	62.5	7.7
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	0.5	8.5	67.4	23.7
Lao PDR	65.9	3.7	23.0	7.4	61.2	5.1	24.3	9.4	52.5	10.7	24.6	12.2	31.4	9.8	40.4	18.4	23.6	9.2	34.5	32.7
Malaysia	22.7	19.0	42.0	16.3	15.5	22.9	45.2	16.4	8.6	29.2	46.5	15.7	10.2	23.7	48.9	17.2	9.7	23.7	52.1	14.4
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	14.6	7.9	44.1	33.3
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	22.6	8.2	29.1	40.1
Nepal	50.7	5.1	39.4	4.8	45.8	5.9	41.9	6.4	35.2	8.9	47.4	8.5	33.2	6.2	51.5	9.2	25.8	5.6	60.4	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	2.1	8.8	48.9	40.2
Pakistan	31.2	14.5	45.6	8.7	26.3	14.1	50.9	8.7	26.8	9.6	55.0	8.5	23.6	13.5	54.6	8.2	24.2	12.8	55.6	7.4
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	10.1	17.6	61.0	11.2
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	8.3	42.6	48.8
Saudi Arabia	1.0	4.0	27.5	67.5	5.7	8.4	44.9	40.9	5.0	9.4	40.8	44.8	2.6	10.9	38.9	47.6	2.9	14.4	49.5	33.2
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	22.0	74.2	3.8
Sri Lanka	20.3	21.3	47.9	10.5	17.4	19.9	53.6	9.0	11.6	20.3	59.9	8.2	10.1	20.5	59.0	10.4	9.3	19.1	58.9	12.7
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	27.2	56.3	7.8
Turkiye	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	6.2	24.8	59.0	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	10.1	52.6	36.4
Vietnam	51.4	12.5	32.5	3.5	38.7	7.9	43.3	10.1	21.9	17.3	44.6	16.2	17.3	19.2	45.9	17.6	13.8	27.0	45.6	13.7
(region)																				
APO21	15.3	22.3	50.3	12.2	11.8	23.1	53.7	11.3	10.1	20.7	58.4	10.7	9.9	19.8	58.4	11.9	10.4	19.6	58.7	11.3
Asia25	16.9	23.7	47.4	12.0	14.1	23.9	50.9	11.0	11.2	23.1	54.6	11.1	9.7	24.0	53.6	12.8	9.0	22.6	57.1	11.3
Asia31	15.1	21.5	45.3	18.0	13.4	22.8	50.4	13.4	10.7	22.2	53.7	13.3	9.2	23.2	52.8	14.8	8.7	22.1	56.8	12.4
East Asia	10.0	28.7	50.4	10.9	9.4	27.1	52.7	10.8	7.3	26.1	56.3	10.3	6.4	27.8	54.6	11.2	5.7	25.4	58.8	10.2
South Asia	34.5	16.9	40.6	8.1	28.6	16.3	45.4	9.6	23.6	14.4	51.8	10.2	18.5	15.1	54.5	11.9	18.0	14.1	57.2	10.6
ASEAN	22.3	17.5	43.2	16.9	16.3	20.3	51.3	12.1	12.6	23.4	51.3	12.7	12.8	23.2	47.6	16.4	11.4	22.0	51.0	15.5
ASEAN6	18.8	18.3	44.4	18.6	13.6	21.5	52.4	12.4	10.3	24.5	52.6	12.6	11.6	24.4	48.6	15.5	10.6	21.7	52.5	15.2
CLMV	50.8	11.2	34.3	3.8	43.9	7.8	40.2	8.2	30.1	15.3	40.8	13.8	20.1	16.5	41.4	22.0	15.8	23.9	42.8	17.6
GCC	0.8	4.1	28.3	66.8	4.3	8.3	44.6	42.8	3.7	9.4	41.9	45.0	1.7	9.7	40.4	48.1	2.0	12.5	50.6	34.9
IPEF	6.8	21.8	60.3	11.1	5.6	20.0	64.6	9.8	4.7	17.9	68.5	8.9	5.3	16.2	68.7	9.7	6.1	14.8	69.3	9.7
RCEP	12.7	25.4	49.2	12.8	10.9	24.8	52.8	11.5	8.6	25.1	55.1	11.2	7.7	26.4	53.0	12.9	6.9	24.1	57.3	11.8
(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	0.9	10.7	81.3	7.1
Australia	5.8	18.4	57.3	18.4	3.4	13.6	66.5	16.4	3.8	12.0	70.3	13.9	2.5	7.9	69.2	20.5	3.4	5.8	66.8	24.0
New Zealand	10.1	25.1	54.9	9.8	6.4	19.2	65.0	9.4	8.3	16.6	66.4	8.7	7.1	11.8	69.9	11.2	6.4	11.2	71.5	11.0

Unit: Percentage.

Sources: Official national accounts in each country, including adjustments in APO–PDB.

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 9.16 Industry Origins of Economic Growth, 2010–2021

——Contributions to economic growth by industry

	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	2.6	(0.0)	1.0	(0.2)	2.2	(0.3)	3.9	(0.1)	2.5	(0.2)	0.3	(0.0)	2.7	(0.2)	2.2	(0.5)	4.2	(0.8)	2.3
Bangladesh	4.0	(0.6)	8.9	(0.2)	10.4	(2.1)	8.4	(0.1)	9.4	(0.8)	7.8	(1.2)	6.6	(0.6)	6.3	(0.8)	5.2	(0.8)	7.2
Bhutan	3.0	(0.5)	1.7	(0.1)	1.1	(0.1)	1.9	(0.3)	2.2	(0.5)	9.2	(0.8)	7.6	(0.8)	3.6	(0.3)	4.5	(0.6)	4.0
Brunei	3.6	(0.0)	−2.5	(−1.2)	3.5	(0.5)	3.4	(0.0)	1.7	(0.0)	1.2	(0.0)	1.1	(0.0)	2.0	(0.2)	1.3	(0.2)	−0.2
Cambodia	1.3	(0.4)	18.3	(0.3)	7.5	(1.3)	6.0	(0.0)	13.1	(1.4)	3.0	(0.5)	6.1	(0.5)	7.2	(0.6)	4.7	(0.5)	5.4
China	4.1	(0.3)	1.0	(0.0)	7.0	(2.0)	7.6	(0.2)	6.4	(0.4)	7.2	(0.8)	9.0	(0.6)	5.8	(1.0)	8.1	(1.3)	6.7
ROC	−0.7	(−0.0)	−1.6	(−0.0)	5.5	(1.7)	1.9	(0.0)	1.5	(0.0)	2.4	(0.5)	2.7	(0.2)	3.2	(0.6)	1.0	(0.2)	3.2
Fiji	2.9	(0.4)	−7.2	(−0.1)	0.8	(0.1)	5.6	(0.1)	−1.1	(−0.0)	−2.9	(−0.4)	−2.4	(−0.2)	1.5	(0.3)	1.7	(0.2)	0.4
Hong Kong	−1.8	(−0.0)	−1.8	(−0.0)	−0.1	(−0.0)	−1.3	(−0.0)	2.8	(0.1)	0.6	(0.2)	0.9	(0.1)	2.5	(1.0)	2.3	(0.4)	1.8
India	3.7	(0.6)	1.6	(0.0)	6.2	(0.9)	5.5	(0.1)	4.3	(0.3)	5.3	(1.0)	5.5	(0.4)	7.4	(1.3)	5.3	(0.8)	5.4
Indonesia	3.5	(0.5)	1.2	(0.1)	3.7	(0.8)	4.2	(0.1)	5.1	(0.5)	4.1	(0.7)	6.7	(0.6)	4.5	(0.4)	4.8	(0.5)	4.1
Iran	2.2	(0.2)	−3.0	(−0.8)	0.3	(0.1)	4.5	(0.2)	−0.6	(−0.0)	−0.2	(−0.0)	4.3	(0.4)	3.7	(0.6)	3.8	(0.5)	1.0
Japan	−2.4	(−0.0)	−0.9	(−0.0)	0.5	(0.1)	0.3	(0.0)	1.1	(0.1)	−0.9	(−0.1)	0.8	(0.1)	0.1	(0.0)	1.2	(0.4)	0.5
Korea	0.5	(0.0)	−3.2	(−0.0)	2.7	(0.8)	1.8	(0.0)	1.1	(0.1)	2.2	(0.2)	2.8	(0.2)	3.4	(0.8)	2.8	(0.5)	2.7
Kuwait	0.4	(0.0)	0.1	(0.4)	−0.2	(−0.0)	5.1	(0.1)	−4.4	(−0.1)	−1.1	(−0.1)	−0.8	(−0.1)	0.3	(0.0)	3.3	(0.6)	0.9
Lao PDR	2.8	(0.7)	2.5	(0.4)	8.8	(0.7)	18.1	(1.1)	9.1	(0.6)	3.6	(0.7)	7.6	(0.3)	8.4	(0.6)	4.8	(0.5)	5.7
Malaysia	1.3	(0.1)	−0.4	(−0.0)	4.4	(1.0)	3.7	(0.1)	3.8	(0.2)	4.5	(0.8)	5.7	(0.5)	3.9	(0.4)	4.9	(0.6)	3.8
Mongolia	7.3	(1.0)	5.1	(0.9)	5.0	(0.4)	5.7	(0.1)	6.2	(0.3)	5.7	(0.9)	4.6	(0.4)	5.9	(0.8)	2.7	(0.4)	5.2
Myanmar	−2.1	(−0.4)	−5.7	(−0.8)	2.0	(0.0)	2.4	(0.0)	1.6	(0.0)	−1.5	(−0.2)	−0.9	(−0.1)	19.0	(0.0)	3.2	(0.1)	−1.4
Nepal	3.0	(0.8)	5.5	(0.0)	3.7	(0.2)	6.4	(0.1)	5.1	(0.3)	3.5	(0.6)	5.9	(0.5)	5.7	(0.9)	5.2	(0.8)	4.3
Oman	9.8	(0.2)	1.4	(0.5)	1.0	(0.1)	11.3	(0.2)	9.3	(0.7)	6.1	(0.5)	6.4	(0.3)	4.7	(0.4)	3.7	(0.6)	3.5
Pakistan	2.5	(0.6)	1.3	(0.0)	3.8	(0.5)	5.7	(0.1)	2.8	(0.1)	3.5	(0.7)	3.6	(0.4)	3.7	(0.3)	5.3	(0.9)	3.6
Philippines	1.5	(0.2)	0.7	(0.0)	4.3	(0.9)	4.9	(0.2)	5.8	(0.4)	4.4	(0.9)	5.0	(0.4)	6.5	(1.3)	4.4	(0.5)	4.6
Qatar	9.8	(0.0)	0.6	(0.5)	3.4	(0.3)	7.2	(0.0)	9.2	(0.7)	3.2	(0.2)	3.0	(0.1)	6.5	(0.9)	4.5	(0.4)	3.1
Saudi Arabia	3.4	(0.1)	1.2	(0.6)	3.9	(0.4)	1.7	(0.0)	2.3	(0.1)	4.0	(0.4)	4.0	(0.2)	3.9	(0.4)	3.3	(0.6)	2.8
Singapore	3.0	(0.0)	0.0	( )	4.1	(0.8)	1.2	(0.0)	−1.0	(−0.0)	3.4	(0.7)	4.0	(0.5)	4.2	(1.3)	2.1	(0.2)	3.6
Sri Lanka	2.3	(0.2)	6.1	(0.1)	3.1	(0.6)	2.1	(0.0)	6.7	(0.6)	3.7	(0.6)	4.9	(0.7)	7.1	(0.8)	3.7	(0.7)	4.3
Thailand	0.9	(0.1)	−1.2	(−0.0)	1.1	(0.3)	2.3	(0.1)	2.6	(0.1)	2.7	(0.5)	2.9	(0.2)	5.3	(0.6)	2.0	(0.3)	2.1
Turkiye	2.5	(0.2)	4.8	(0.1)	6.6	(1.3)	6.3	(0.2)	4.5	(0.4)	7.0	(1.1)	5.9	(0.7)	4.6	(0.7)	5.7	(1.0)	5.7
UAE	4.7	(0.0)	2.0	(0.7)	4.4	(0.4)	5.0	(0.2)	−0.2	(−0.0)	4.9	(0.7)	1.4	(0.1)	4.0	(0.6)	4.8	(0.5)	3.2
Vietnam	3.0	(0.5)	−2.0	(−0.0)	8.6	(2.0)	8.6	(0.3)	6.1	(0.4)	6.0	(0.8)	7.3	(0.7)	5.4	(0.7)	6.5	(0.7)	6.0
(region)																			
APO21	3.0	(0.3)	−0.1	(−0.0)	3.9	(0.7)	4.0	(0.1)	3.7	(0.2)	3.6	(0.6)	4.3	(0.4)	4.3	(0.7)	3.2	(0.6)	3.6
Asia25	3.4	(0.3)	0.2	(0.0)	5.5	(1.3)	5.6	(0.1)	4.9	(0.3)	4.7	(0.7)	6.1	(0.5)	5.0	(0.8)	5.1	(0.9)	4.9
Asia31	3.4	(0.3)	0.7	(0.0)	5.4	(1.2)	5.5	(0.1)	4.7	(0.3)	4.7	(0.6)	6.0	(0.4)	5.0	(0.8)	5.0	(0.9)	4.8
East Asia	3.7	(0.2)	1.0	(0.0)	5.7	(1.5)	5.9	(0.1)	5.1	(0.3)	4.7	(0.6)	6.7	(0.5)	4.5	(0.8)	5.2	(1.1)	5.1
South Asia	3.5	(0.6)	2.2	(0.0)	6.2	(0.9)	5.6	(0.1)	4.8	(0.3)	5.2	(1.0)	5.3	(0.4)	7.1	(1.1)	5.3	(0.8)	5.3
ASEAN	2.4	(0.3)	0.2	(0.0)	3.9	(0.9)	4.6	(0.1)	4.8	(0.3)	3.9	(0.7)	5.5	(0.5)	5.0	(0.6)	4.1	(0.5)	3.8
ASEAN6	2.5	(0.3)	0.6	(0.0)	3.2	(0.7)	3.5	(0.1)	4.6	(0.3)	3.8	(0.7)	5.4	(0.4)	4.9	(0.6)	3.8	(0.5)	3.6
CLMV	1.9	(0.4)	−2.4	(−0.1)	8.2	(1.6)	8.9	(0.3)	5.9	(0.4)	4.8	(0.6)	6.5	(0.6)	5.6	(0.6)	5.9	(0.6)	4.9
GCC	3.8	(0.1)	1.2	(0.6)	3.7	(0.4)	4.0	(0.1)	2.4	(0.1)	4.1	(0.4)	2.9	(0.2)	3.8	(0.5)	3.7	(0.6)	2.8
IPEF	2.9	(0.2)	1.7	(0.1)	2.6	(0.4)	2.4	(0.0)	2.8	(0.1)	2.8	(0.4)	4.3	(0.3)	3.3	(0.8)	1.8	(0.4)	2.8
RCEP	3.3	(0.2)	0.9	(0.0)	5.4	(1.3)	5.6	(0.1)	5.0	(0.3)	4.6	(0.6)	6.4	(0.5)	4.6	(0.8)	5.1	(1.0)	4.9
(reference)																			
US	−0.1	(−0.0)	1.8	(0.1)	0.9	(0.1)	0.9	(0.0)	1.5	(0.1)	1.9	(0.2)	4.7	(0.4)	2.7	(0.9)	0.9	(0.2)	2.0
Australia	2.1	(0.1)	4.5	(0.4)	3.2	(0.0)	0.6	(0.0)	1.5	(0.1)	2.2	(0.3)	2.1	(0.2)	2.5	(0.7)	3.2	(0.8)	2.5
New Zealand	2.9	(0.2)	−4.6	(−0.1)	2.7	(0.2)	1.5	(0.0)	5.7	(0.4)	3.9	(0.5)	3.1	(0.2)	3.9	(1.2)	2.7	(0.6)	3.2

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2023.

Table 9.17 Industry Origins of Labor Productivity Growth, 2010–2021

——Contributions to labor productivity by industry

	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	1.0	(0.0)	−0.2	(0.2)	1.5	(0.3)	0.5	(0.1)	0.8	(−0.2)	−0.9	(−0.2)	0.5	(0.0)	0.1	(0.4)	2.4	(0.1)	0.7
Bangladesh	5.2	(0.9)	9.4	(0.1)	7.3	(1.7)	7.5	(0.1)	5.4	(0.5)	5.0	(0.8)	3.5	(0.4)	3.7	(0.7)	2.3	(0.5)	5.7
Brunei	−7.6	(−0.6)	−1.2	(−1.3)	−3.4	(−0.3)	5.4	(0.0)	0.0	(−0.8)	−2.4	(−0.9)	−1.6	(−0.1)	−0.1	(−0.0)	3.5	(0.8)	−3.1
Cambodia	5.3	(1.7)	26.2	(0.3)	5.6	(1.1)	−0.1	(−0.0)	4.4	(1.0)	−4.7	(−1.2)	0.3	(0.3)	0.3	(0.5)	−4.2	(−1.0)	2.8
China	9.0	(1.6)	6.7	(0.1)	6.7	(1.9)	6.7	(0.2)	6.7	(0.5)	5.0	(0.5)	5.0	(0.4)	5.0	(1.0)	5.0	(0.6)	6.8
ROC	−0.3	(−0.0)	−1.6	(−0.0)	5.0	(1.6)	1.1	(0.0)	0.3	(−0.1)	2.3	(0.4)	1.2	(0.1)	2.2	(0.5)	−0.7	(−0.2)	2.4
Fiji	2.3	(0.4)	−3.0	(−0.0)	5.7	(0.7)	7.5	(0.2)	−4.6	(−0.3)	−3.9	(−0.6)	−3.5	(−0.3)	−1.4	(0.2)	1.7	(0.2)	0.5
Hong Kong	−2.5	(−0.0)	0.0	( )	3.2	(0.1)	−1.0	(−0.0)	1.0	(0.0)	3.3	(0.9)	0.9	(0.1)	−0.1	(0.5)	0.4	(−0.1)	1.4
India	4.6	(0.9)	7.0	(0.1)	5.0	(0.7)	−4.0	(0.1)	1.0	(−0.1)	2.9	(0.7)	3.7	(0.3)	5.5	(1.3)	3.2	(0.6)	4.5
Indonesia	6.2	(1.0)	0.5	(0.1)	1.5	(0.5)	3.0	(0.0)	2.1	(0.3)	0.6	(−0.1)	6.0	(0.5)	−7.4	(0.1)	0.7	(−0.3)	2.2
Iran	2.7	(0.3)	−8.1	(−0.8)	−1.3	(−0.2)	−0.9	(0.2)	−2.5	(−0.3)	−1.7	(−0.3)	2.7	(0.2)	0.7	(0.4)	2.0	(0.1)	−0.4
Japan	−1.7	(−0.0)	0.4	(0.0)	0.3	(0.1)	0.3	(0.0)	1.7	(0.1)	−0.1	(−0.0)	−0.1	(−0.0)	−1.0	(−0.0)	−0.1	(−0.1)	0.1
Korea	2.6	(0.1)	2.1	(0.0)	2.1	(0.7)	2.8	(0.0)	−0.4	(−0.0)	2.3	(0.3)	0.7	(0.0)	1.7	(0.6)	0.6	(0.0)	1.6
Kuwait	1.4	(0.0)	−1.5	(0.5)	−1.0	(−0.0)	2.4	(0.1)	−5.9	(−0.3)	−0.4	(−0.0)	0.0	(0.0)	−0.6	(−0.1)	−0.5	(−1.6)	−1.4
Malaysia	2.2	(0.1)	−3.6	(−0.0)	2.2	(0.6)	2.0	(0.1)	3.6	(0.1)	0.5	(−0.2)	3.4	(0.4)	−0.4	(−0.0)	4.0	(0.5)	1.6
Mongolia	9.8	(1.4)	0.6	(0.7)	2.5	(0.2)	3.3	(0.1)	1.5	(0.0)	5.0	(0.8)	6.5	(0.5)	0.4	(0.7)	0.7	(−0.1)	4.2
Nepal	1.7	(0.1)	3.3	(0.0)	0.6	(0.0)	3.1	(0.1)	0.6	(0.2)	−0.7	(0.2)	4.0	(0.5)	0.8	(0.8)	2.7	(0.7)	2.6
Oman	7.2	(−0.2)	−10.5	(0.3)	−6.8	(−0.7)	−13.8	(0.1)	8.4	(0.1)	−3.1	(−1.2)	−10.9	(−0.3)	−1.2	(−0.0)	3.4	(0.2)	−1.7
Pakistan	2.2	(0.5)	−11.5	(−0.0)	0.8	(0.1)	5.8	(0.1)	−2.2	(−0.3)	1.6	(0.4)	0.1	(0.2)	5.3	(0.3)	1.6	(0.4)	1.6
Philippines	4.8	(0.7)	2.2	(0.0)	4.4	(0.9)	6.2	(0.2)	−0.7	(−0.1)	3.0	(0.5)	3.6	(0.2)	2.0	(1.0)	1.2	(−0.1)	3.3
Qatar	4.9	(0.0)	9.2	(0.7)	3.1	(0.2)	−2.7	(−0.1)	6.8	(−0.3)	−2.3	(−0.5)	−8.4	(−0.9)	6.8	(0.9)	−2.3	(−1.4)	−1.5
Saudi Arabia	8.3	(0.1)	2.1	(0.7)	2.3	(0.3)	2.9	(0.0)	6.1	(0.3)	4.9	(0.5)	5.0	(0.2)	11.4	(0.5)	2.0	(0.0)	2.7
Singapore	−6.4	(−0.0)	0.0	( )	5.7	(1.1)	16.6	(0.0)	−1.5	(−0.0)	2.9	(0.6)	1.1	(0.2)	2.6	(1.2)	−0.4	(−0.6)	2.4
Sri Lanka	6.0	(0.7)	10.0	(0.2)	3.4	(0.6)	−1.2	(−0.0)	3.4	(0.4)	2.9	(0.4)	4.2	(0.6)	7.8	(0.8)	2.5	(0.4)	4.2
Thailand	3.9	(0.7)	−5.6	(−0.0)	0.2	(0.1)	−0.9	(−0.0)	3.6	(0.1)	2.6	(0.5)	0.1	(0.1)	1.2	(0.5)	1.2	(0.2)	2.3
Turkiye	2.6	(0.2)	1.1	(0.0)	3.9	(0.8)	−1.0	(0.1)	2.3	(0.3)	4.5	(0.7)	2.9	(0.6)	0.1	(0.3)	0.4	(0.0)	2.9
UAE	−8.4	(−0.3)	1.5	(0.7)	3.9	(0.3)	6.9	(0.2)	−1.1	(−0.1)	1.1	(−0.2)	−1.7	(−0.2)	5.2	(0.7)	5.9	(0.8)	1.9
Vietnam	5.3	(2.0)	1.5	(0.0)	3.3	(1.1)	5.7	(0.3)	2.1	(0.1)	2.8	(0.2)	4.6	(0.6)	−2.4	(0.6)	4.7	(0.5)	5.3
(region)																			
APO21	4.3	(0.6)	1.8	(0.0)	2.1	(0.5)	−0.9	(0.1)	0.6	(−0.1)	1.4	(0.2)	2.4	(0.3)	1.2	(0.6)	0.8	(0.2)	2.5
Asia25	5.9	(1.0)	4.3	(0.0)	4.5	(1.1)	2.6	(0.1)	3.1	(0.2)	2.5	(0.4)	3.4	(0.3)	2.5	(0.8)	2.3	(0.4)	4.3
Asia31	5.9	(1.0)	4.7	(0.1)	4.4	(1.1)	2.5	(0.1)	3.0	(0.1)	2.5	(0.3)	3.3	(0.3)	2.6	(0.8)	2.3	(0.4)	4.2
East Asia	8.5	(1.4)	6.6	(0.1)	5.4	(1.5)	5.1	(0.1)	5.4	(0.3)	3.1	(0.3)	3.2	(0.3)	3.3	(0.8)	2.4	(0.3)	5.1
South Asia	4.4	(0.9)	6.4	(0.1)	4.6	(0.7)	−1.9	(0.1)	1.3	(−0.1)	2.8	(0.7)	3.1	(0.3)	5.4	(1.1)	2.9	(0.5)	4.3
ASEAN	4.9	(1.0)	0.1	(0.0)	1.5	(0.5)	2.9	(0.1)	1.7	(0.1)	1.1	(0.1)	3.8	(0.4)	−0.6	(0.5)	1.1	(0.0)	2.7
ASEAN6	5.3	(0.8)	−0.1	(−0.0)	1.6	(0.5)	2.4	(0.1)	1.9	(0.1)	1.3	(0.1)	4.0	(0.4)	−1.9	(0.4)	0.6	(−0.1)	2.3
CLMV	4.0	(1.5)	0.2	(0.0)	4.2	(1.1)	6.1	(0.3)	2.0	(0.1)	1.0	(0.0)	3.5	(0.5)	6.7	(0.6)	3.4	(0.4)	4.3
GCC	2.4	(0.0)	1.5	(0.7)	1.6	(0.2)	3.6	(0.0)	2.8	(0.1)	2.4	(0.1)	−0.2	(−0.0)	5.9	(0.6)	2.1	(−0.1)	1.6
IPEF	4.3	(0.5)	4.3	(0.1)	1.2	(0.2)	−2.7	(−0.0)	−0.1	(−0.1)	0.9	(0.1)	2.6	(0.2)	0.9	(0.7)	0.2	(0.1)	1.8
RCEP	7.4	(1.3)	5.2	(0.1)	4.6	(1.2)	4.6	(0.1)	4.6	(0.3)	2.5	(0.3)	3.4	(0.3)	1.8	(0.7)	2.3	(0.3)	4.6
(reference)																			
US	1.2	(0.0)	4.3	(0.1)	0.9	(0.1)	1.4	(0.0)	−0.5	(−0.1)	1.7	(0.2)	2.5	(0.3)	1.1	(0.6)	0.4	(0.0)	1.2
Australia	−0.6	(0.1)	2.6	(0.3)	0.5	(0.0)	0.2	(0.0)	−0.1	(−0.0)	1.5	(0.1)	0.3	(0.0)	0.4	(0.4)	0.9	(−0.1)	0.9
New Zealand	2.5	(0.1)	−3.0	(−0.0)	1.3	(0.1)	−3.4	(−0.0)	0.3	(−0.1)	2.6	(0.2)	1.8	(0.2)	0.3	(0.6)	0.2	(−0.2)	0.8

Unit: Percentage (average annual growth rate) and percentage points (contributions written in parentheses).
Source: APO Productivity Database 2023.

Table 9.18 Real Income and Terms of Trade, 2000–2021

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

2000–2005	Real income	Real GDP	Trading gain	Net primary income from abroad
Mongolia	10.7	6.4	4.5	−0.2
Iran	9.5	7.0	2.7	−0.3
China	9.3	8.3	0.9	0.1
Cambodia	8.9	9.2	−0.2	−0.1
Myanmar	8.3	5.6	2.8	−0.1
Vietnam	8.0	7.5	0.5	−0.1
Malaysia	7.5	5.5	1.2	0.8
India	6.7	6.9	−0.3	0.1
Bangladesh	6.3	6.2	−0.1	0.2
Bhutan	6.0	6.3	0.0	−0.3
Sri Lanka	5.6	4.8	0.6	0.1
Thailand	4.7	5.2	0.0	−0.5
Turkiye	4.7	5.0	0.3	−0.6
Korea	4.5	5.1	−0.7	0.0
Lao PDR	4.4	3.1	1.0	0.3
Pakistan	4.2	4.4	−0.7	0.4
Philippines	4.0	4.7	−0.8	0.1
Singapore	3.9	5.1	0.0	−1.2
Indonesia	3.9	4.5	−1.0	0.4
Hong Kong	3.0	4.1	−1.0	−0.1
ROC	2.7	4.1	−1.6	0.2
Nepal	2.5	2.5	0.0	0.0
Fiji	1.4	2.0	0.0	−0.6
Japan	1.0	1.2	−0.3	0.2
Bahrain	9.9	8.4	1.5	0.0
Kuwait	12.0	12.8	0.3	−1.2
Oman	8.2	3.7	4.3	0.2
Qatar	12.0	9.1	5.2	−2.3
Saudi Arabia	9.2	4.0	5.3	−0.1
UAE	6.5	4.9	1.6	−0.1
Brunei	5.9	0.7	5.1	0.0
(reference)				
Australia	4.3	3.3	1.2	−0.2
France	1.6	1.7	0.0	0.0
Germany	1.0	0.6	0.1	0.3
Italy	1.0	0.9	0.0	0.1
New Zealand	4.3	3.9	0.6	−0.2
UK	3.0	2.4	0.4	0.2
US	2.5	2.5	0.0	0.0
EU15	1.9	1.7	0.1	0.1

2005–2010	Real income	Real GDP	Trading gain	Net primary income from abroad
Myanmar	12.0	4.7	7.3	0.0
China	10.9	10.7	0.2	0.1
Bhutan	9.2	10.0	0.1	−0.8
Cambodia	8.9	6.2	2.7	0.0
India	8.3	8.1	0.3	−0.1
Vietnam	7.9	7.3	0.9	−0.3
Singapore	7.5	7.3	−1.0	1.3
Bangladesh	7.3	7.2	−0.5	0.6
Sri Lanka	6.7	6.5	0.2	0.0
Lao PDR	6.6	6.2	1.2	−0.8
Mongolia	5.8	6.3	0.9	−1.4
Malaysia	5.7	4.9	0.6	0.3
Nepal	5.5	4.3	1.1	0.1
Philippines	5.2	4.9	0.1	0.3
Indonesia	5.2	5.5	−0.7	0.4
Iran	5.1	5.3	−0.3	0.2
Korea	3.9	4.4	−0.6	0.2
Thailand	3.9	3.9	0.0	0.1
Hong Kong	3.3	3.8	−0.8	0.3
Turkiye	3.3	3.7	−0.4	−0.1
Pakistan	2.5	3.2	−1.0	0.3
ROC	1.9	4.2	−2.3	0.1
Fiji	0.5	0.7	0.0	−0.2
Japan	−0.4	0.0	−0.4	0.1
Bahrain	10.2	7.7	3.8	−1.4
Kuwait	3.4	1.4	2.5	−0.5
Oman	6.6	3.5	3.6	−0.5
Qatar	14.8	13.3	1.0	0.6
Saudi Arabia	5.4	2.5	2.6	0.2
UAE	3.1	2.9	0.5	−0.3
Brunei	0.8	−0.1	1.1	−0.1
(reference)				
Australia	4.2	2.8	1.4	0.0
France	1.0	0.8	0.0	0.1
Germany	1.3	1.1	−0.1	0.2
Italy	−0.5	−0.3	−0.1	−0.1
New Zealand	2.2	1.5	0.4	0.3
UK	0.2	0.5	0.0	−0.2
US	1.1	1.0	0.0	0.2
EU15	0.7	0.7	−0.1	0.0
EU27	0.8	0.9	−0.1	−0.1

2010–2015	Real income	Real GDP	Trading gain	Net primary income from abroad
Mongolia	10.8	10.1	0.8	−0.1
Lao PDR	8.0	5.0	2.6	0.4
Myanmar	7.7	6.1	1.0	0.5
China	7.1	6.9	0.2	0.0
Sri Lanka	6.9	6.6	0.6	−0.3
Bangladesh	6.8	7.3	−0.1	−0.3
Turkiye	6.4	6.7	−0.3	0.0
Malaysia	6.3	6.3	−0.1	0.1
Cambodia	6.1	4.7	1.7	−0.3
India	6.1	6.4	−0.3	0.0
Bhutan	5.7	6.5	−0.5	−0.3
Philippines	5.5	5.8	−0.3	0.0
Vietnam	5.1	4.9	0.6	−0.4
Indonesia	4.9	5.3	−0.3	−0.1
Pakistan	3.6	3.4	−0.2	0.4
Thailand	3.6	3.2	0.6	−0.2
Nepal	3.6	2.9	0.5	0.2
ROC	3.4	2.9	0.6	−0.1
Fiji	3.1	3.7	0.0	−0.6
Korea	3.0	2.7	0.3	0.0
Hong Kong	2.9	2.9	0.1	−0.1
Singapore	2.4	4.6	−0.9	−1.3
Japan	1.2	1.1	−0.1	0.2
Iran	−3.5	−0.6	−3.0	0.0
Bahrain	3.1	3.7	−1.3	0.8
Kuwait	−1.3	3.6	−5.4	0.5
Oman	2.8	4.4	−2.1	0.5
Qatar	5.3	6.4	−2.8	1.7
Saudi Arabia	2.4	5.4	−3.2	0.2
UAE	5.4	6.1	−0.8	0.1
Brunei	0.4	0.4	−1.1	1.1
(reference)				
Australia	1.6	2.7	−1.4	0.3
France	1.1	1.0	0.2	0.0
Germany	1.9	1.8	0.1	0.1
Italy	−0.7	−0.7	0.1	−0.1
New Zealand	3.7	3.2	0.2	0.3
UK	1.6	1.7	0.3	−0.4
US	2.2	2.1	0.2	0.0
EU15	1.0	0.9	0.1	−0.1
EU27	1.3	1.1	0.1	0.1

2015–2021	Real income	Real GDP	Trading gain	Net primary income from abroad
Bangladesh	6.3	6.3	0.1	0.0
Vietnam	5.8	6.3	−0.5	0.0
Turkiye	5.5	6.2	−0.8	0.0
Mongolia	5.4	2.7	4.3	−1.6
Cambodia	5.3	7.9	−2.8	0.2
Pakistan	5.1	4.1	0.6	0.4
China	5.0	5.4	−0.3	−0.1
India	4.6	4.8	0.0	−0.1
Nepal	4.4	4.4	0.2	−0.1
Indonesia	3.4	3.4	−0.1	0.1
ROC	3.1	3.5	−0.3	−0.1
Malaysia	2.9	2.7	0.2	0.0
Iran	2.9	1.6	1.4	−0.1
Singapore	2.5	3.3	1.0	−1.8
Bhutan	2.4	2.2	0.0	0.2
Hong Kong	2.2	1.1	0.2	0.8
Korea	2.1	2.5	−0.5	0.1
Philippines	1.7	3.6	−0.7	−1.2
Lao PDR	1.7	2.5	−0.6	−0.3
Sri Lanka	1.6	1.8	−0.2	0.0
Thailand	1.2	1.4	−0.5	0.3
Japan	0.1	0.1	−0.1	0.1
Fiji	−2.0	−2.1	0.0	0.0
Myanmar	−10.3	−2.9	−7.7	0.3
Bahrain	4.4	4.4	0.2	−0.1
Kuwait	3.5	−0.6	3.7	0.3
Oman	1.7	2.0	0.4	−0.7
Qatar	2.4	0.4	1.9	0.1
Saudi Arabia	2.2	0.9	1.3	0.0
UAE	1.8	0.3	1.6	−0.1
Brunei	0.3	−0.5	1.5	−0.7
(reference)				
Australia	3.6	2.1	1.7	−0.2
France	1.1	1.0	0.0	0.1
Germany	1.3	1.1	0.0	0.2
Italy	0.6	0.2	0.1	0.3
New Zealand	3.7	3.2	0.3	0.3
UK	0.9	0.7	0.0	0.3
US	2.1	2.0	0.2	−0.1
EU15	1.3	1.1	0.0	0.3
EU27	1.3	1.4	0.0	−0.1

2020–2021	Real income	Real GDP	Trading gain	Net primary income from abroad
Turkiye	10.7	14.2	−3.2	−0.2
Singapore	8.9	7.4	4.8	−3.3
India	8.9	12.9	−3.3	−0.7
Hong Kong	8.8	6.8	1.0	1.0
Iran	8.2	3.7	5.3	−0.8
Pakistan	7.5	5.8	0.5	1.2
Mongolia	7.2	2.6	11.9	−7.3
China	7.1	8.6	−1.4	−0.1
Bangladesh	6.8	5.6	0.1	1.1
ROC	6.1	6.5	0.3	−0.7
Malaysia	5.5	4.9	1.3	−0.7
Nepal	4.6	8.0	−2.7	−0.6
Indonesia	4.1	3.4	0.7	0.0
Korea	3.6	4.0	−0.6	0.2
Bhutan	2.6	2.8	−0.2	0.0
Japan	2.1	2.2	−1.3	1.2
Cambodia	0.4	12.6	−10.7	−1.5
Lao PDR	0.4	3.3	−2.8	−0.1
Philippines	0.3	6.4	−2.3	−3.8
Vietnam	0.3	5.5	−4.3	−0.9
Sri Lanka	−1.3	0.1	−1.8	0.4
Thailand	−4.1	−0.2	−2.5	−1.4
Fiji	−5.5	−6.2	0.2	0.5
Myanmar	−19.2	−15.4	−5.5	1.7
Bahrain	21.1	15.2	5.2	0.7
Kuwait	21.5	2.1	19.1	0.3
Oman	16.3	11.8	4.5	0.1
Qatar	22.7	1.9	20.2	0.7
Saudi Arabia	12.9	2.4	10.5	0.0
UAE	11.3	3.9	7.0	0.3
Brunei	5.4	−11.6	19.3	−2.3
(reference)				
Australia	3.9	3.4	3.3	−2.7
France	8.1	6.9	−0.2	1.4
Germany	2.6	3.0	−1.0	0.6
Italy	5.4	6.5	−1.1	0.0
New Zealand	5.4	5.4	−0.1	0.1
UK	8.4	6.9	−0.3	1.8
US	5.8	5.7	0.3	−0.2
EU15	6.5	5.7	−0.6	1.3
EU27	4.4	5.4	−0.7	−0.2

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

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Appendix Country Profiles

Bangladesh

Key Indicators

GDP in 2021	1,086	Billions of US dollars (as of 2021)
(exchange rate based)	415	Billions of US dollars (as of 2021)
Per capita GDP in 2021	6.4	Thousands of US dollars (as of 2021)
(exchange rate based)	2.5	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	15.2	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	6.5	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	13.1	US dollars (as of 2021)
Energy productivity levels in 2020	32.9	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	93.4	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	68,270	Thousands persons
Employment rate in 2021	40.4	%
Female employment share in 2021	30.1	%
Average schooling years of workers in 2021	6.3	Years
Investment share in 2021	31.0	%
ICT investment share in GFCF in 2021	5.4	%
Agriculture share in GDP in 2021	12.1	%
Manufacturing share in GDP in 2021	22.1	%
Agriculture share in employment in 2021	37.1	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	–0.7	3.8	4.2	6.7	6.7	6.3	5.9	3.3	5.6	6.8	6.8	7.0	6.9
Labor input growth	3.5	3.5	2.4	3.3	3.6	2.6	1.9	1.9	1.9	3.1	3.4	3.4	3.3
Labor quality growth	1.0	0.8	0.6	0.8	1.6	1.0	0.4	0.4	0.5	1.3	1.7	1.7	1.7
Hours worked growth	2.5	2.7	1.8	2.5	2.0	1.5	1.4	1.5	1.4	1.8	1.7	1.7	1.7
College labor input growth	11.5	11.5	7.2	2.7	7.0	4.0	2.9	3.0	3.0	5.3	4.9	4.8	4.8
Non-college labor input growth	3.2	2.9	1.8	3.3	3.0	2.3	1.6	1.7	1.6	2.6	3.1	3.0	3.0
ICT capital input growth	8.3	16.5	15.2	27.7	13.0	10.4	6.2	3.2	5.7	14.6	13.4	10.7	11.0
Non-ICT capital input growth	1.6	4.7	6.2	7.5	8.2	8.2	8.6	8.1	7.4	7.5	8.3	8.4	8.4
Per-worker labor productivity growth	–3.2	1.7	1.9	4.1	5.3	4.9	4.6	2.0	4.3	4.9	5.1	5.3	5.3
Per-hour labor productivity growth	–3.2	1.1	2.4	4.2	4.7	4.7	4.5	1.8	4.2	5.0	5.1	5.3	5.3
Capital productivity growth	–1.6	–4.8	–6.3	–8.1	–8.4	–8.2	–8.4	–7.8	–7.3	–1.1	–1.7	–1.5	–1.6
TFP growth	–3.0	–0.4	–0.3	0.5	–0.1	–0.3	–0.6	–2.8	0.0	0.3	–0.2	0.0	0.0

Production

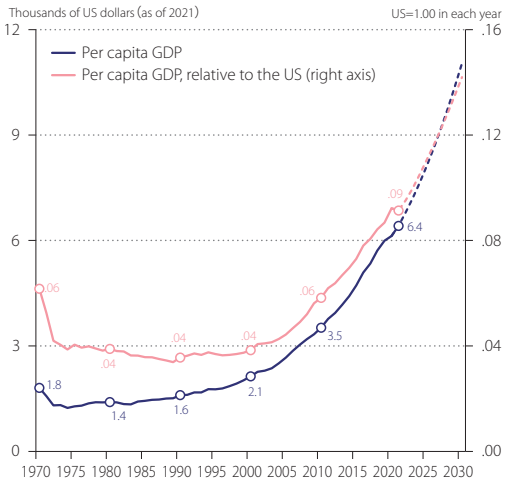

Figure 1 Per Capita GDP

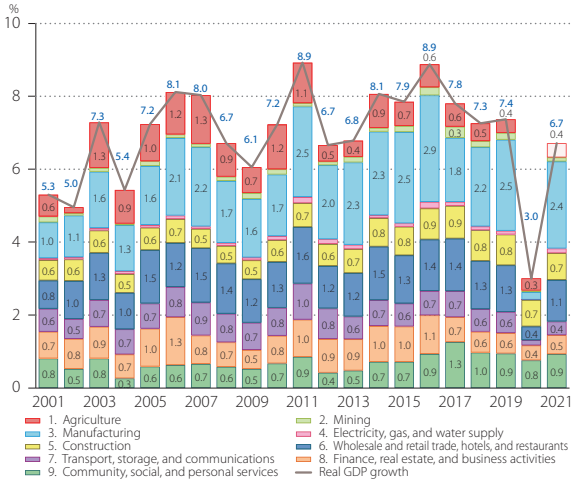

Figure 2 Industry Origins of Economic Growth

Labor

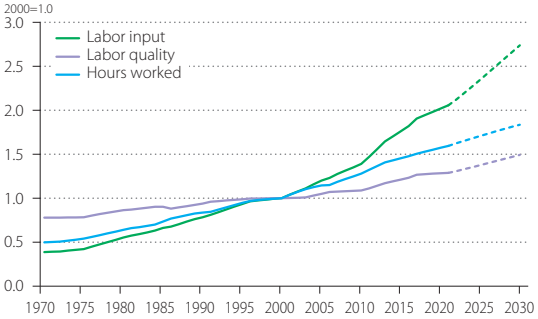

Figure 3 Labor Inputs

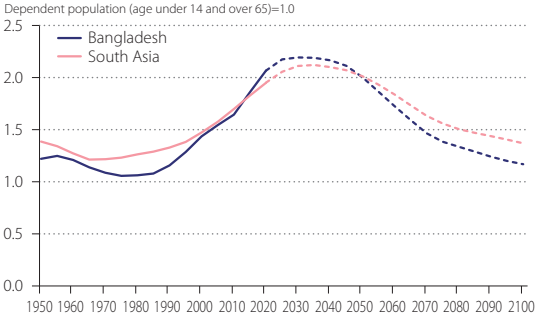

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

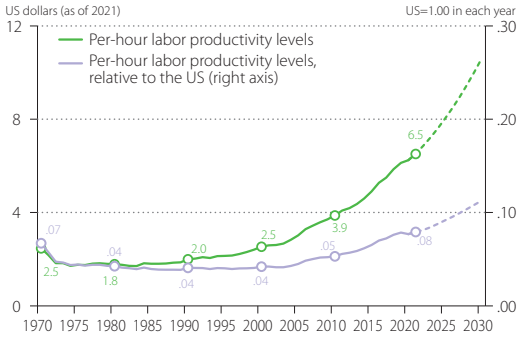

Figure 6 Per-Hour Labor Productivity Level

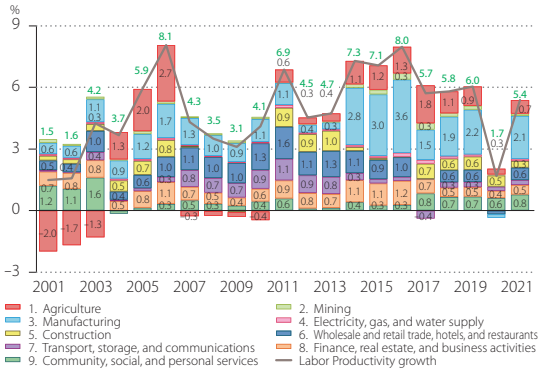

Figure 7 Industry Origins of Labor Productivity Growth

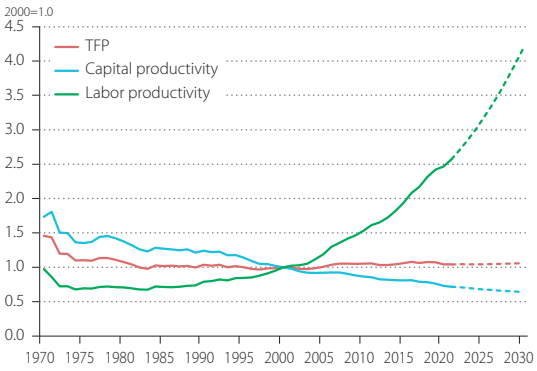

Figure 8 Productivity Indicators

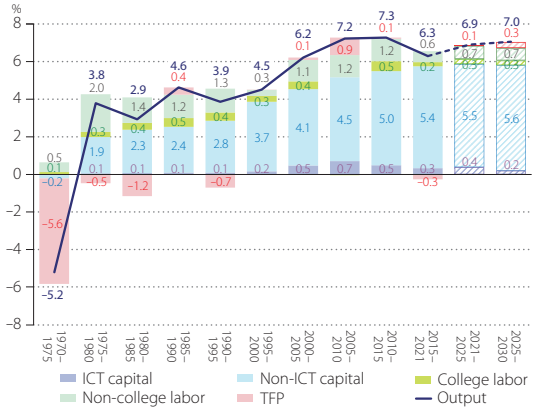

Figure 9 Decomposition of Economic Growth

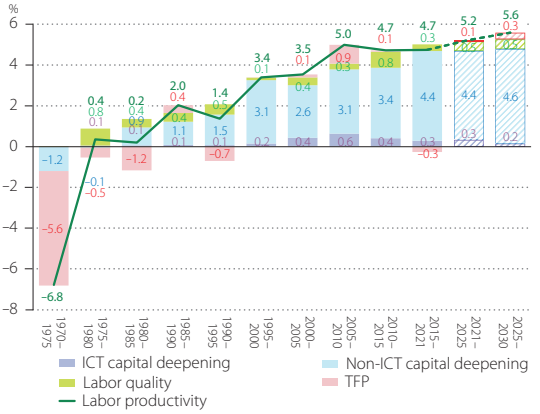

Figure 10 Decomposition of Labor Productivity Growth

Cambodia

Key Indicators

GDP in 2021	100	Billions of US dollars (as of 2021)
(exchange rate based)	27	Billions of US dollars (as of 2021)
Per capita GDP in 2021	6.3	Thousands of US dollars (as of 2021)
(exchange rate based)	1.7	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	8.8	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	3.6	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	6.1	US dollars (as of 2021)
Energy productivity levels in 2020	11.0	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	169.8	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	10,142	Thousands persons
Employment rate in 2021	63.7	%
Female employment share in 2021	50.6	%
Average schooling years of workers in 2021	5.3	Years
Investment share in 2021	26.7	%
ICT investment share in GFCF in 2021	1.1	%
Agriculture share in GDP in 2021	24.6	%
Manufacturing share in GDP in 2021	19.5	%
Agriculture share in employment in 2021	31.3	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	–6.6	3.9	6.1	7.6	6.6	8.1	6.5	5.2	12.5	6.3	6.3	6.3	6.3
Labor input growth	1.3	2.9	5.4	4.6	4.2	3.1	1.6	–2.2	5.1	2.7	2.3	2.2	2.2
Labor quality growth	0.9	0.5	1.2	1.0	1.7	0.4	–0.9	–0.6	0.4	2.4	2.3	2.2	2.2
Hours worked growth	0.5	2.5	4.2	3.7	2.4	2.7	2.5	–1.6	4.8	0.4	0.0	0.0	0.0
College labor input growth	6.9	4.6	6.1	14.1	7.7	7.6	4.8	–0.1	3.7	2.9	2.3	2.5	2.4
Non-college labor input growth	1.2	2.9	5.4	4.2	3.9	2.7	1.3	–2.4	5.2	2.7	2.4	2.2	2.2
ICT capital input growth	–26.2	–6.7	21.7	16.6	18.8	10.0	8.0	1.1	0.6	11.2	13.8	15.4	15.1
Non-ICT capital input growth	1.8	–0.3	3.1	7.7	7.5	7.7	7.7	7.8	7.6	8.3	8.3	8.4	8.4
Per-worker labor productivity growth	–6.0	0.6	2.2	4.4	4.2	5.7	3.3	4.7	10.3	5.8	5.8	5.9	5.8
Per-hour labor productivity growth	–7.0	1.5	1.9	4.0	4.1	5.4	4.0	6.7	7.7	5.9	6.2	6.3	6.3
Capital productivity growth	–0.1	0.0	–3.0	–7.7	–7.5	–7.6	–7.6	–7.6	–7.4	–2.0	–2.1	–2.2	–2.2
TFP growth	–7.8	3.2	2.1	1.3	0.8	2.9	2.3	3.3	5.0	1.3	1.4	1.5	1.5

Production

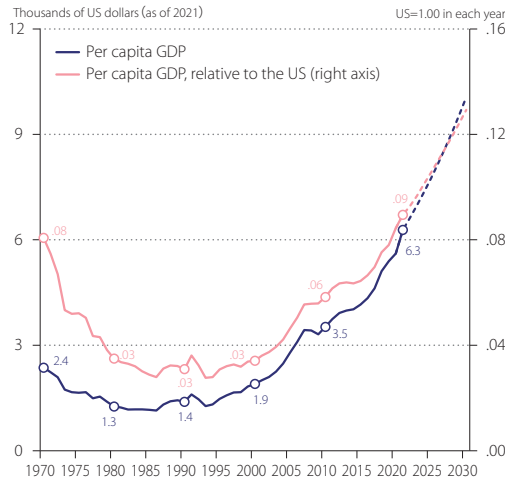

Figure 1 Per Capita GDP

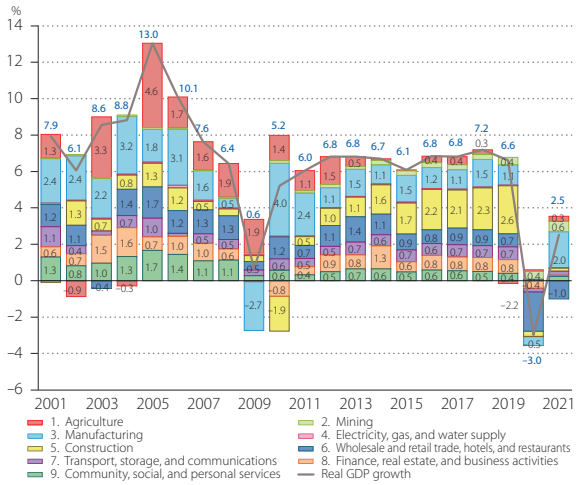

Figure 2 Industry Origins of Economic Growth

Labor

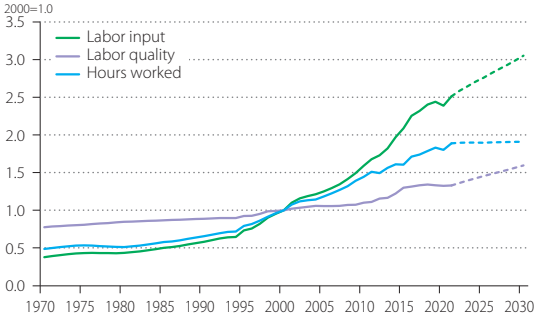

Figure 3 Labor Inputs

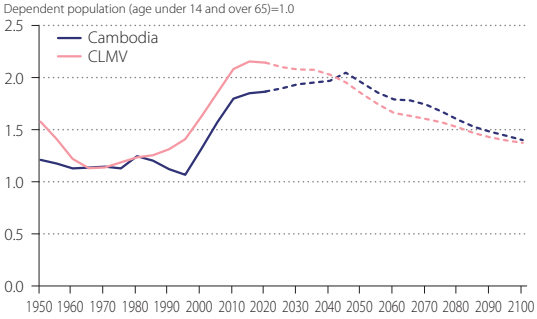

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

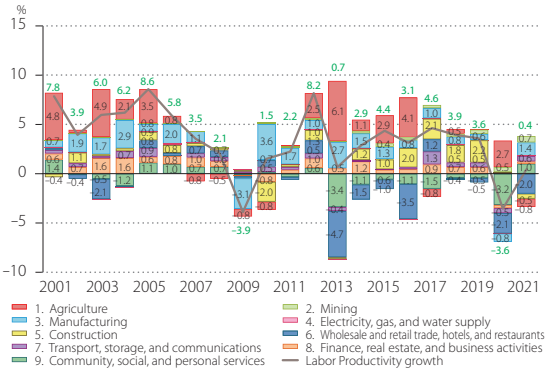

Figure 7 Industry Origins of Labor Productivity Growth

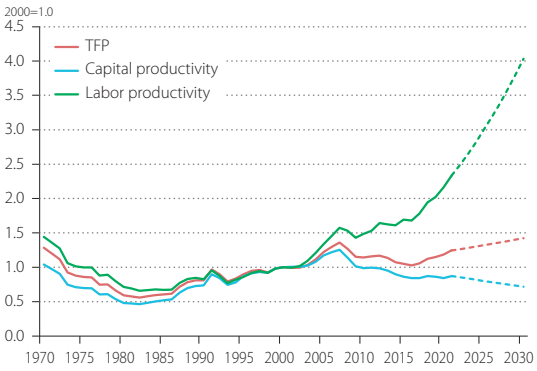

Figure 8 Productivity Indicators

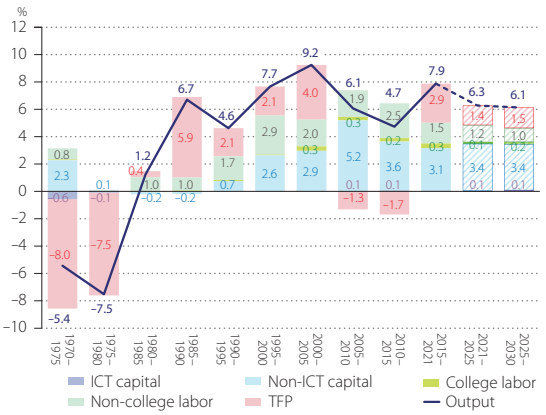

Figure 9 Decomposition of Economic Growth

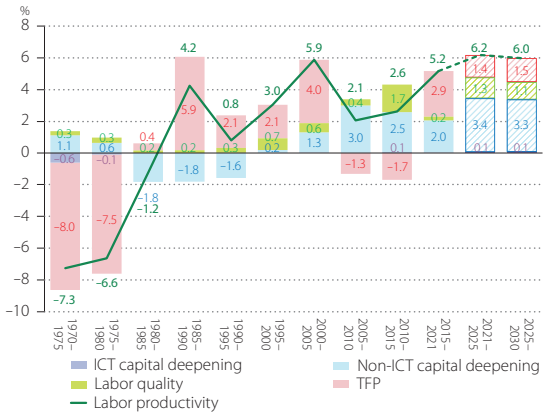

Figure 10 Decomposition of Labor Productivity Growth

ROC

Key Indicators

GDP in 2021	1,475	Billions of US dollars (as of 2021)
(exchange rate based)	776	Billions of US dollars (as of 2021)
Per capita GDP in 2021	63.1	Thousands of US dollars (as of 2021)
(exchange rate based)	33.2	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	122.6	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	59.1	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	103.5	US dollars (as of 2021)
Energy productivity levels in 2020	19.1	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	188.9	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	11,737	Thousands persons
Employment rate in 2021	50.2	%
Female employment share in 2021	43.1	%
Average schooling years of workers in 2021	13.4	Years
Investment share in 2021	27.0	%
ICT investment share in GFCF in 2021	8.4	%
Agriculture share in GDP in 2021	1.5	%
Manufacturing share in GDP in 2021	35.0	%
Agriculture share in employment in 2021	4.7	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	10.5	8.6	6.8	4.1	3.2	3.5	3.2	3.1	6.4	2.3	−2.5	3.3	1.3
Labor input growth	4.4	2.9	2.2	2.1	1.9	0.7	0.9	0.7	0.8	−0.5	−1.1	−1.2	−1.2
Labor quality growth	1.1	0.9	1.1	1.7	1.1	0.9	0.3	1.4	1.4	0.3	0.8	0.8	0.8
Hours worked growth	3.3	2.0	1.1	0.3	0.8	−0.2	0.6	−0.7	−0.6	−0.8	−1.9	−2.0	−2.0
College labor input growth	12.9	12.4	11.5	8.3	5.1	3.5	2.7	6.0	3.4	1.3	0.6	0.5	0.5
Non-college labor input growth	3.5	1.4	0.1	−0.5	−0.4	−1.6	−0.5	−3.8	−1.6	−2.3	−2.9	−3.0	−3.0
ICT capital input growth	18.6	19.6	20.5	4.6	3.2	3.4	2.8	4.2	5.0	12.3	6.9	3.9	4.9
Non-ICT capital input growth	8.0	5.8	5.4	2.4	1.7	1.9	1.7	2.1	2.7	2.0	1.6	1.2	1.4
Per-worker labor productivity growth	7.3	6.3	5.5	3.2	2.4	3.1	2.7	3.1	6.9	3.8	−0.9	5.0	3.0
Per-hour labor productivity growth	7.2	6.6	5.7	3.8	2.4	3.7	2.7	3.9	7.0	3.1	−0.6	5.3	3.3
Capital productivity growth	−8.2	−6.1	−6.0	−2.5	−1.7	−1.9	−1.7	−2.1	−2.8	−0.1	−4.3	1.9	−0.2
TFP growth	4.3	4.3	2.9	1.9	1.4	2.1	1.9	1.7	4.5	1.3	−2.9	3.2	1.1

Production

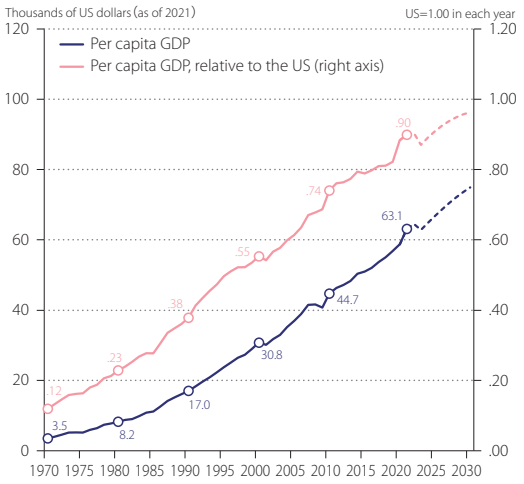

Figure 1 Per Capita GDP

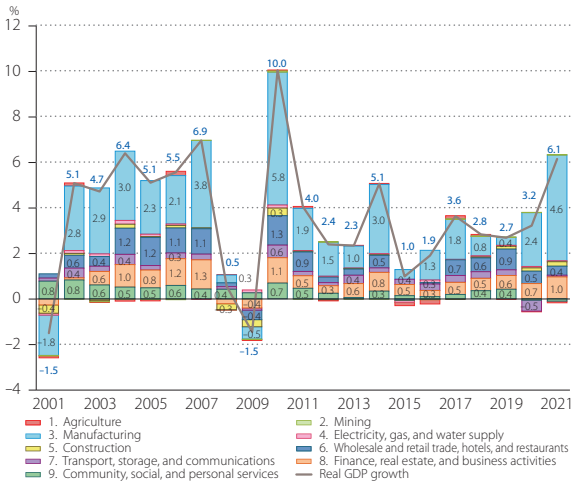

Figure 2 Industry Origins of Economic Growth

Labor

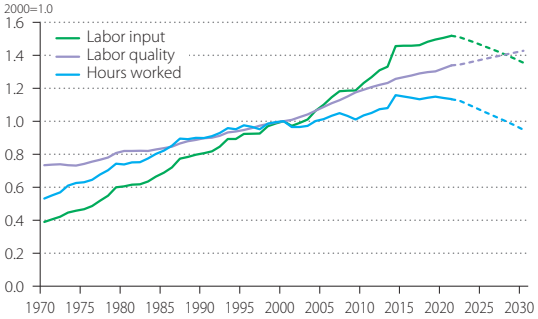

Figure 3 Labor Inputs

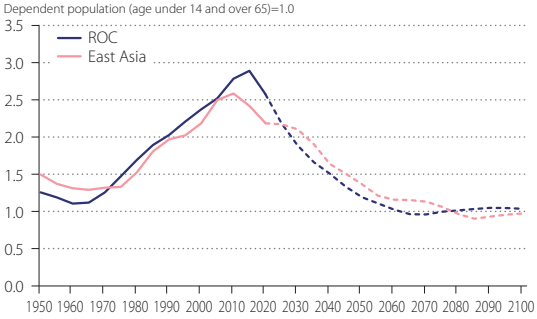

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

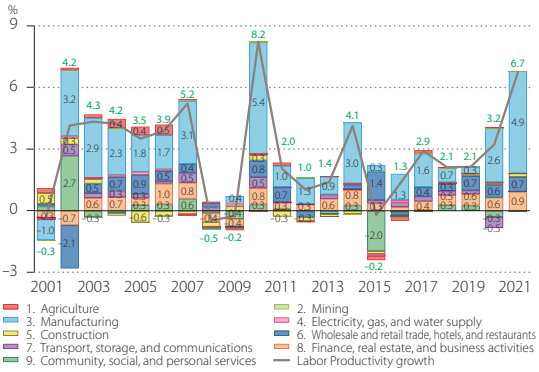

Figure 7 Industry Origins of Labor Productivity Growth

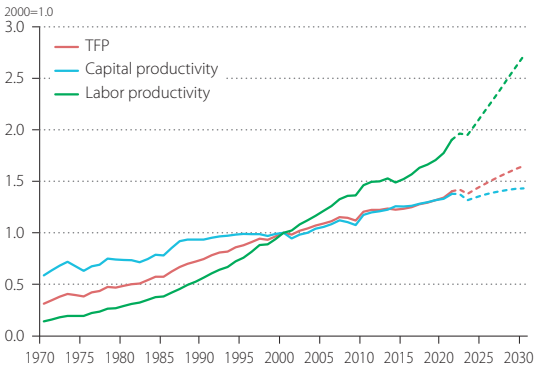

Figure 8 Productivity Indicators

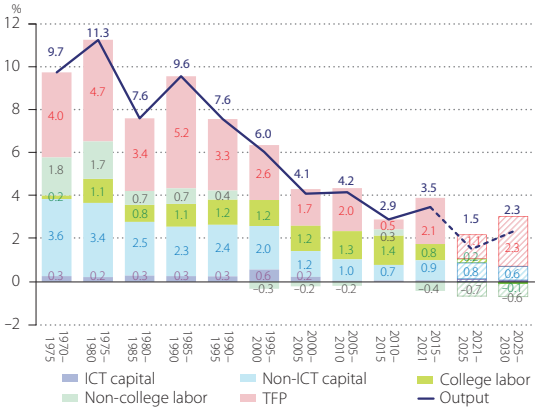

Figure 9 Decomposition of Economic Growth

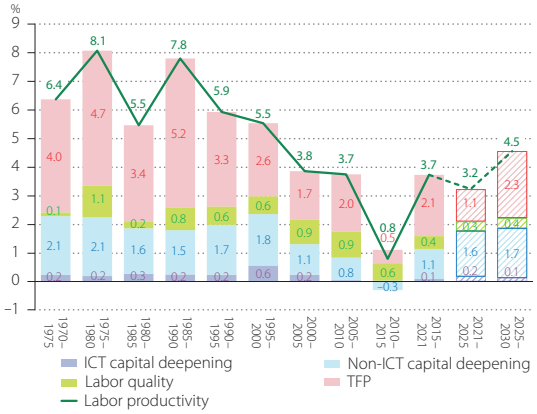

Figure 10 Decomposition of Labor Productivity Growth

Fiji

Key Indicators

GDP in 2021	11	Billions of US dollars (as of 2021)
(exchange rate based)	4	Billions of US dollars (as of 2021)
Per capita GDP in 2021	11.7	Thousands of US dollars (as of 2021)
(exchange rate based)	4.8	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	24.7	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	13.1	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	43.7	US dollars (as of 2021)
Energy productivity levels in 2020	n.a.	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	n.a.	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	336	Thousands persons
Employment rate in 2021	37.3	%
Female employment share in 2021	31.8	%
Average schooling years of workers in 2021	12.3	Years
Investment share in 2021	19.6	%
ICT investment share in GFCF in 2021	11.8	%
Agriculture share in GDP in 2021	21.9	%
Manufacturing share in GDP in 2021	15.3	%
Agriculture share in employment in 2021	10.1	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	4.7	2.2	2.3	1.3	0.5	−2.2	−0.6	−18.6	−5.2	7.7	5.4	5.8	5.8
Labor input growth	5.6	4.3	4.1	1.7	1.4	0.7	1.3	1.2	−5.8	3.5	1.6	1.6	1.6
Labor quality growth	2.4	2.2	2.1	0.9	0.3	0.5	0.0	0.0	0.3	0.2	0.4	0.4	0.4
Hours worked growth	3.2	2.1	2.0	0.8	1.0	0.3	1.3	1.2	−6.1	3.3	1.2	1.2	1.2
College labor input growth	6.0	7.4	5.3	3.8	0.7	0.2	1.1	1.1	−5.7	3.8	2.2	2.1	2.1
Non-college labor input growth	5.5	3.2	3.5	0.5	1.8	1.0	1.4	1.3	−5.8	3.3	1.4	1.4	1.4
ICT capital input growth	7.6	17.0	2.9	4.1	5.6	5.1	8.1	1.7	−2.4	4.4	6.0	5.6	5.7
Non-ICT capital input growth	5.4	2.0	2.6	0.5	1.5	2.1	3.3	2.4	0.8	0.6	1.0	1.2	1.3
Per-worker labor productivity growth	1.3	−0.5	0.8	−0.1	0.4	−2.2	−1.0	−15.2	−6.7	6.8	4.4	4.8	4.8
Per-hour labor productivity growth	1.4	0.1	0.4	0.5	−0.5	−2.5	−1.8	−19.8	0.8	4.4	4.1	4.5	4.6
Capital productivity growth	−5.4	−2.2	−2.5	−0.6	−1.6	−2.2	−3.5	−2.5	−0.7	6.9	4.1	4.3	4.3
TFP growth	−0.9	−1.1	−0.8	0.2	−1.0	−3.7	−3.1	−20.5	−3.0	5.7	3.9	4.3	4.3

Production

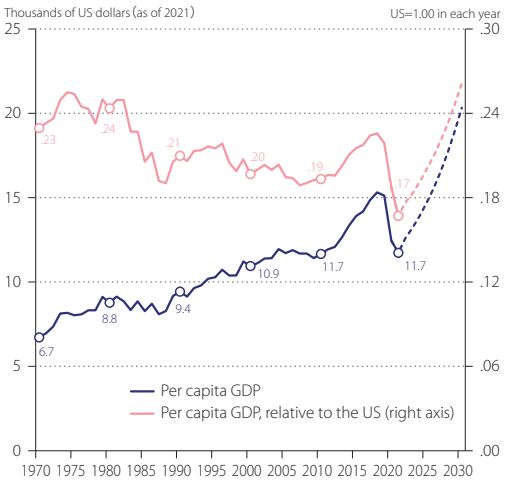

Figure 1 Per Capita GDP

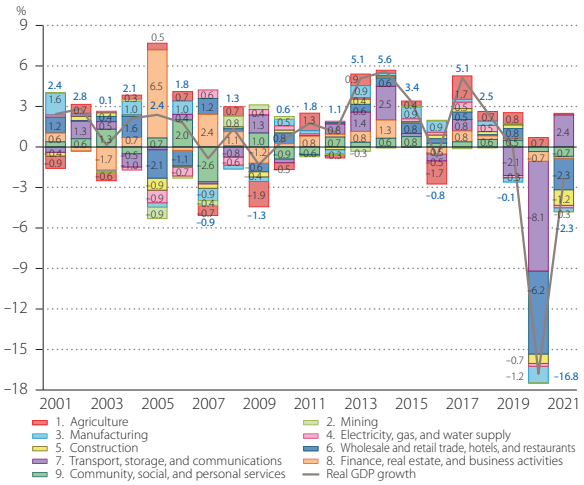

Figure 2 Industry Origins of Economic Growth

Labor

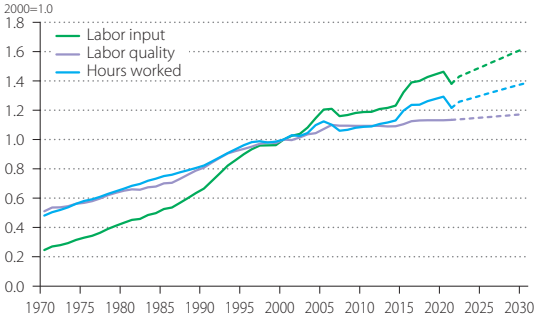

Figure 3 Labor Inputs

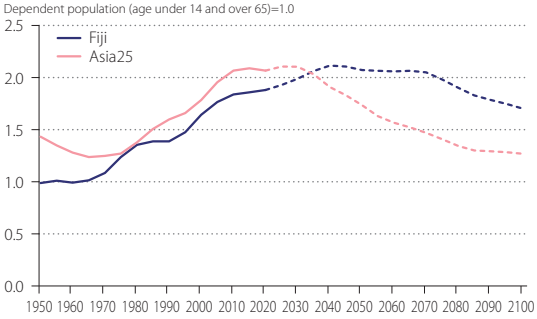

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

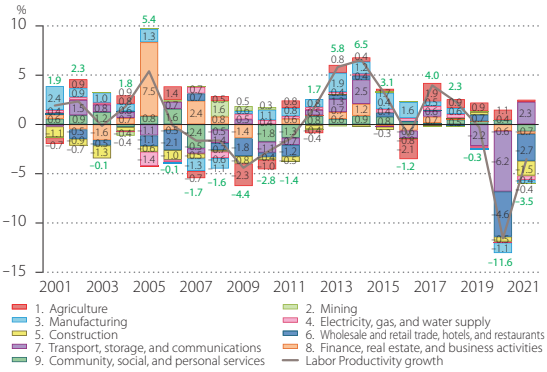

Figure 7 Industry Origins of Labor Productivity Growth

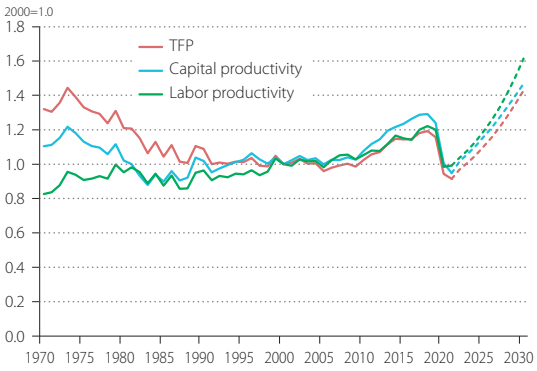

Figure 8 Productivity Indicators

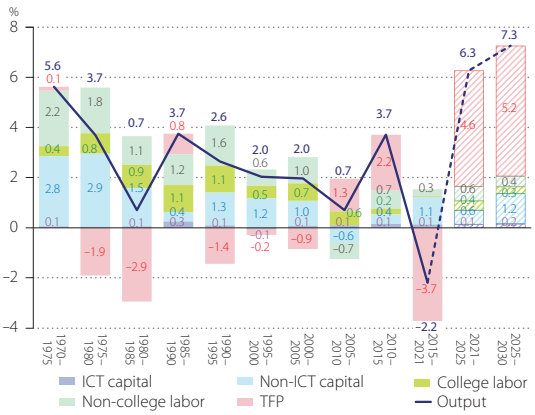

Figure 9 Decomposition of Economic Growth

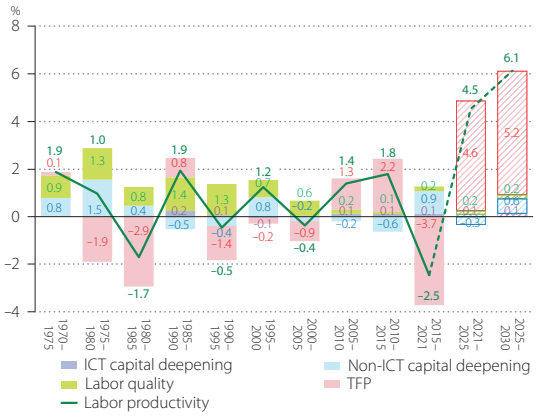

Figure 10 Decomposition of Labor Productivity Growth

Hong Kong

Key Indicators

GDP in 2021	498	Billions of US dollars (as of 2021)
(exchange rate based)	369	Billions of US dollars (as of 2021)
Per capita GDP in 2021	67.2	Thousands of US dollars (as of 2021)
(exchange rate based)	49.8	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	132.3	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	60.6	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	160.2	US dollars (as of 2021)
Energy productivity levels in 2020	56.3	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	77.4	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	3,607	Thousands persons
Employment rate in 2021	48.7	%
Female employment share in 2021	50.8	%
Average schooling years of workers in 2021	12.5	Years
Investment share in 2021	17.6	%
ICT investment share in GFCF in 2021	14.2	%
Agriculture share in GDP in 2021	0.1	%
Manufacturing share in GDP in 2021	1.0	%
Agriculture share in employment in 2021	0.2	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	8.9	6.7	4.3	4.0	2.0	1.3	−1.7	−6.5	7.2	−3.6	2.7	2.0	2.2
Labor input growth	4.5	2.6	3.3	1.2	0.8	0.0	−0.2	−5.6	2.1	−2.8	−1.4	−1.5	−1.5
Labor quality growth	0.8	1.6	1.3	0.5	0.9	0.7	0.2	1.6	−0.1	0.4	0.5	0.5	0.5
Hours worked growth	3.7	1.0	2.0	0.7	−0.1	−0.7	−0.4	−7.2	2.3	−3.2	−1.9	−2.0	−2.0
College labor input growth	9.7	11.4	10.8	6.0	4.3	2.5	2.6	−1.2	1.4	−1.8	−0.1	−0.3	−0.2
Non-college labor input growth	4.1	1.5	1.5	−1.0	−1.6	−1.9	−2.3	−9.0	2.7	−3.7	−2.6	−2.6	−2.6
ICT capital input growth	17.1	19.2	18.4	9.0	7.0	4.8	4.8	2.4	3.6	11.7	9.2	10.1	9.9
Non-ICT capital input growth	6.9	5.8	4.8	2.3	0.7	0.2	−0.4	−1.1	0.4	−0.1	−0.3	−0.3	−0.3
Per-worker labor productivity growth	5.0	4.8	2.6	3.2	1.6	1.9	−1.1	−1.2	7.3	−2.1	4.2	3.6	3.7
Per-hour labor productivity growth	5.2	5.7	2.4	3.3	2.1	2.0	−1.3	0.7	4.9	−0.4	4.6	4.0	4.1
Capital productivity growth	−7.0	−6.2	−5.5	−2.7	−1.2	−0.5	0.0	0.8	−0.6	−4.3	2.3	1.5	1.8
TFP growth	3.2	2.3	−0.1	2.0	1.0	1.0	−1.5	−3.1	5.7	−2.4	3.3	2.6	2.8

Production

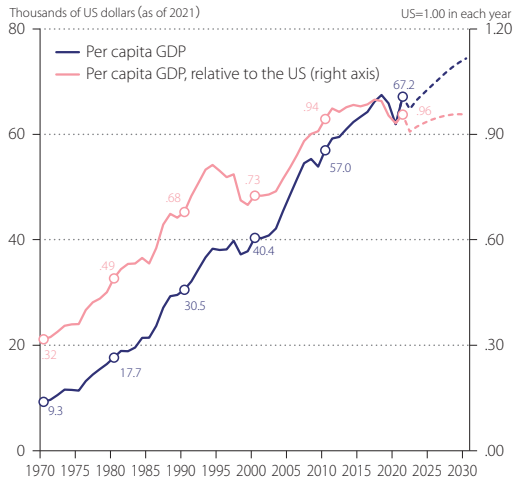

Figure 1 Per Capita GDP

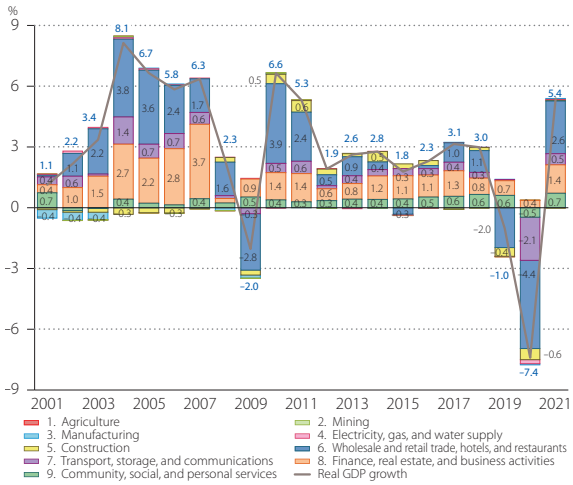

Figure 2 Industry Origins of Economic Growth

Labor

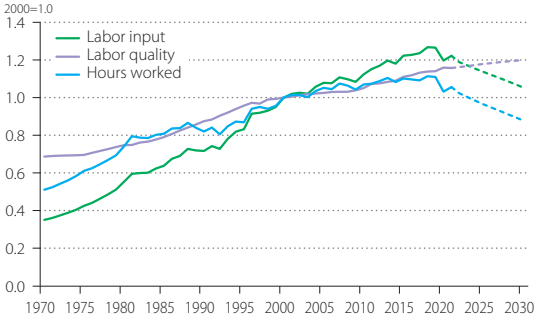

Figure 3 Labor Inputs

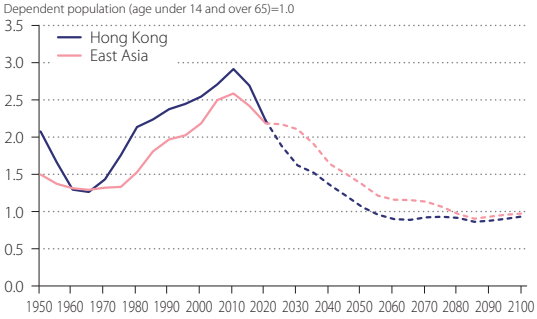

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

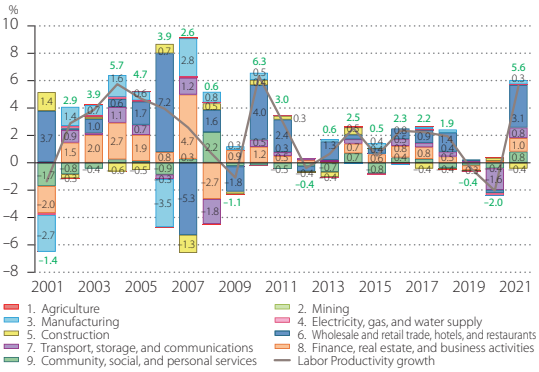

Figure 7 Industry Origins of Labor Productivity Growth

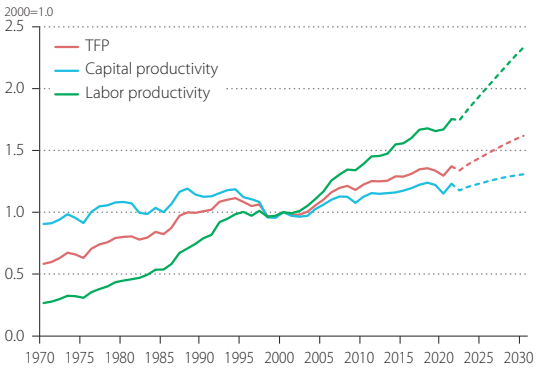

Figure 8 Productivity Indicators

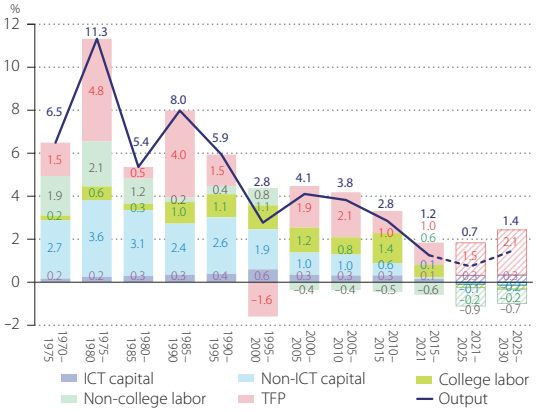

Figure 9 Decomposition of Economic Growth

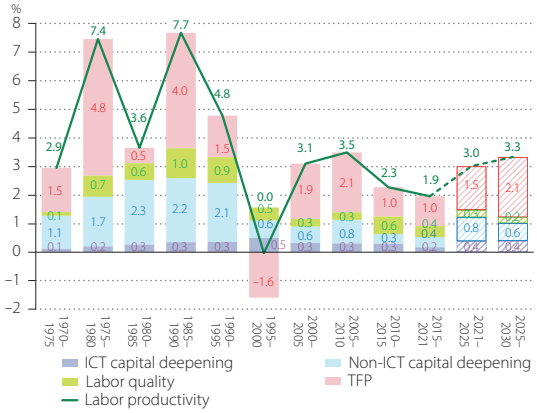

Figure 10 Decomposition of Labor Productivity Growth

India

Key Indicators

GDP in 2021	10,589	Billions of US dollars (as of 2021)
(exchange rate based)	3,166	Billions of US dollars (as of 2021)
Per capita GDP in 2021	7.5	Thousands of US dollars (as of 2021)
(exchange rate based)	2.2	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	17.6	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	8.3	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	23.0	US dollars (as of 2021)
Energy productivity levels in 2020	14.3	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	243.0	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	532,613	Thousands persons
Employment rate in 2021	37.8	%
Female employment share in 2021	25.8	%
Average schooling years of workers in 2021	6.3	Years
Investment share in 2021	30.1	%
ICT investment share in GFCF in 2021	6.6	%
Agriculture share in GDP in 2021	18.0	%
Manufacturing share in GDP in 2021	13.5	%
Agriculture share in employment in 2021	44.6	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	3.0	4.9	4.9	7.5	5.5	4.8	1.5	–5.9	13.0	6.5	5.9	6.4	6.4
Labor input growth	3.0	3.1	2.7	3.0	1.8	1.4	1.5	1.4	1.2	2.4	2.9	2.9	2.8
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	1.8
Hours worked growth	2.4	2.0	1.7	1.5	1.0	0.9	1.0	0.9	0.7	0.9	1.0	1.1	1.1
College labor input growth	12.0	8.2	5.8	6.3	2.6	2.3	2.5	2.3	2.1	3.2	3.7	3.7	3.7
Non-college labor input growth	2.2	2.3	1.9	1.7	1.5	1.0	1.0	1.0	0.8	2.0	2.4	2.5	2.4
ICT capital input growth	11.6	17.8	17.1	16.5	13.3	13.1	14.9	11.6	9.9	16.7	15.7	13.9	14.2
Non-ICT capital input growth	4.4	5.4	5.1	6.7	6.4	6.0	6.3	4.9	4.5	3.8	4.4	4.6	4.6
Per-worker labor productivity growth	0.5	3.5	3.7	5.8	4.4	3.8	2.9	–7.2	8.7	5.6	4.9	5.3	5.3
Per-hour labor productivity growth	0.5	3.4	3.6	5.7	4.4	3.7	2.9	–7.2	8.6	5.6	4.9	5.3	5.3
Capital productivity growth	–4.5	–5.5	–5.3	–6.9	–6.6	–6.2	–6.6	–5.3	–4.7	2.1	1.0	1.4	1.3
TFP growth	–0.4	1.7	1.8	2.6	1.6	1.2	0.3	–9.1	6.8	3.4	2.3	2.7	2.7

Production

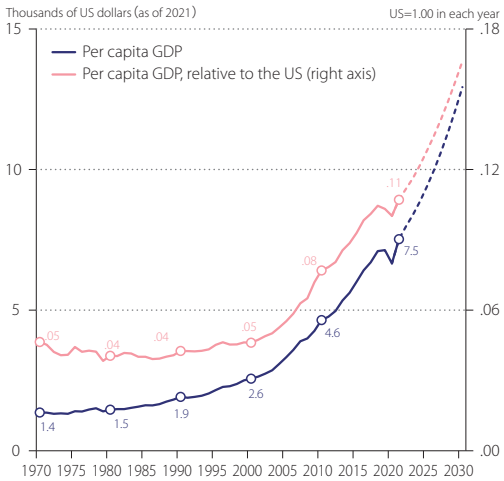

Figure 1 Per Capita GDP

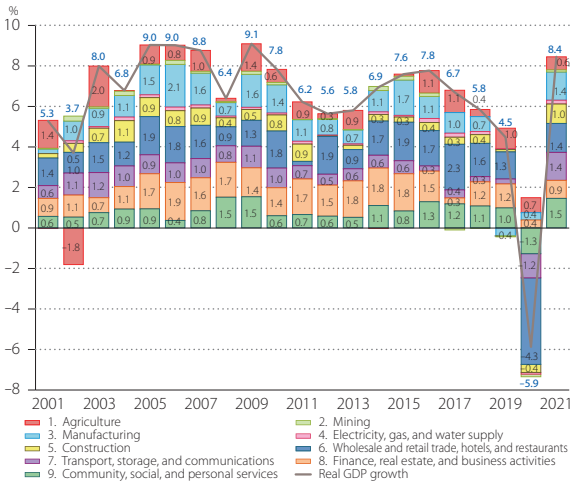

Figure 2 Industry Origins of Economic Growth

Labor

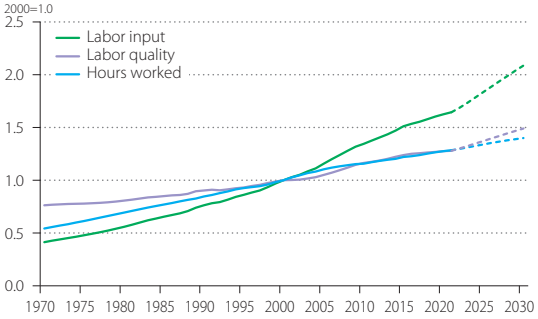

Figure 3 Labor Inputs

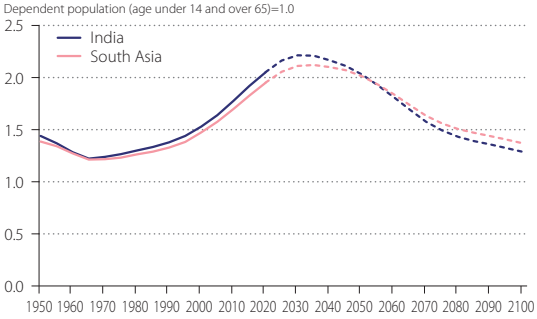

Figure 4 Demographic Dividend

Productivity

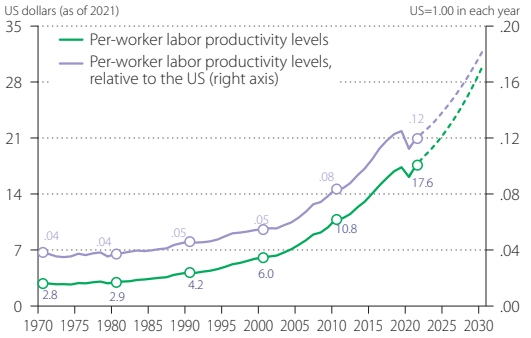

Figure 5 Per-Worker Labor Productivity Level

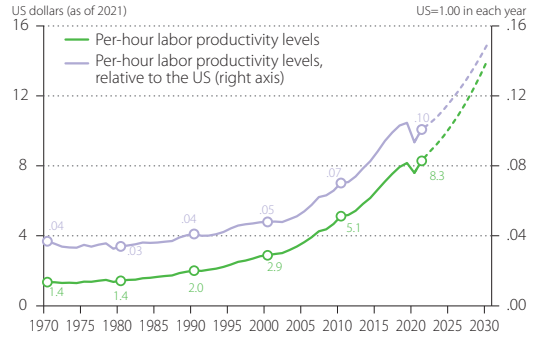

Figure 6 Per-Hour Labor Productivity Level

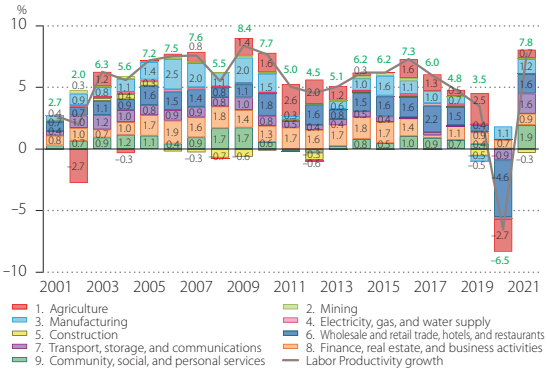

Figure 7 Industry Origins of Labor Productivity Growth

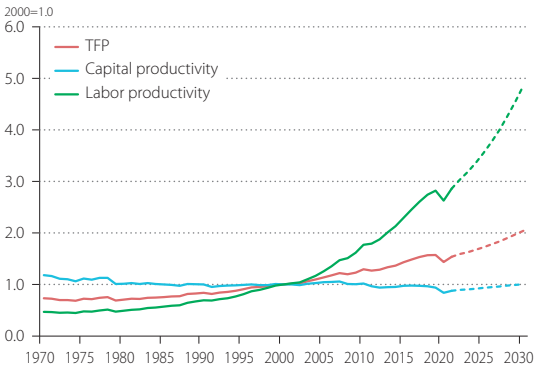

Figure 8 Productivity Indicators

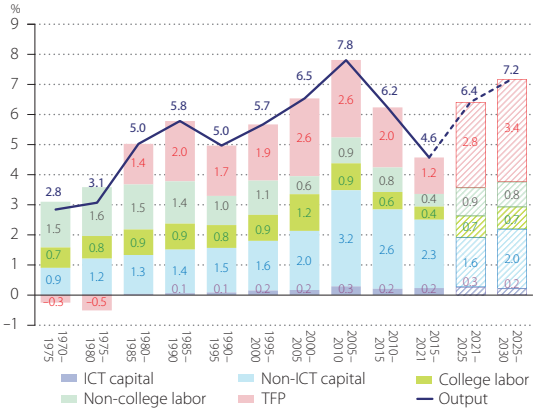

Figure 9 Decomposition of Economic Growth

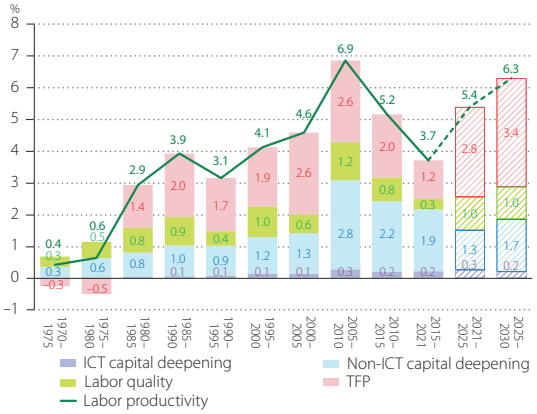

Figure 10 Decomposition of Labor Productivity Growth

Indonesia

Key Indicators

GDP in 2021	3,577	Billions of US dollars (as of 2021)
(exchange rate based)	1,193	Billions of US dollars (as of 2021)
Per capita GDP in 2021	13.4	Thousands of US dollars (as of 2021)
(exchange rate based)	4.5	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	26.3	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	13.8	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	57.1	US dollars (as of 2021)
Energy productivity levels in 2020	21.9	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	160.1	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	130,518	Thousands persons
Employment rate in 2021	49.0	%
Female employment share in 2021	39.8	%
Average schooling years of workers in 2021	9.3	Years
Investment share in 2021	31.8	%
ICT investment share in GFCF in 2021	3.6	%
Agriculture share in GDP in 2021	13.8	%
Manufacturing share in GDP in 2021	20.1	%
Agriculture share in employment in 2021	26.9	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–21	2015–21	2018–19	2019–20	2020–21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	8.0	6.1	4.1	5.0	4.2	3.4	4.7	−2.3	3.4	5.0	4.9	5.9	5.5
Labor input growth	5.9	5.8	6.4	5.0	4.6	2.5	8.4	4.0	−8.7	11.5	3.6	3.6	3.5
Labor quality growth	1.9	2.4	4.3	2.8	3.6	1.8	3.0	3.7	−2.3	6.3	3.2	3.0	3.0
Hours worked growth	4.0	3.4	2.1	2.2	1.0	0.7	5.4	0.3	−6.5	5.2	0.5	0.5	0.5
College labor input growth	23.0	11.5	21.2	11.9	9.4	4.2	13.0	7.5	−16.1	15.6	3.8	3.7	3.7
Non-college labor input growth	5.6	5.6	5.2	3.8	2.9	1.8	6.5	2.6	−5.8	9.8	3.6	3.5	3.5
ICT capital input growth	23.3	21.1	13.4	13.3	13.9	11.7	11.3	8.0	7.0	12.7	11.8	10.0	10.4
Non-ICT capital input growth	6.0	4.1	5.8	3.9	5.6	5.5	5.5	5.4	4.6	3.3	3.6	3.6	3.7
Per-worker labor productivity growth	4.2	2.8	2.4	3.1	2.5	1.7	0.7	−1.8	3.9	4.5	4.3	5.2	4.9
Per-hour labor productivity growth	4.0	2.7	1.9	2.7	3.2	2.6	−0.7	−2.6	9.8	−0.1	4.4	5.4	5.1
Capital productivity growth	−6.0	−4.2	−5.9	−4.0	−5.7	−5.6	−5.6	−5.5	−4.7	1.5	1.1	2.1	1.7
TFP growth	2.0	1.3	−2.1	0.5	−1.0	−0.9	−2.2	−7.1	4.8	−2.1	1.2	2.2	1.8

Production

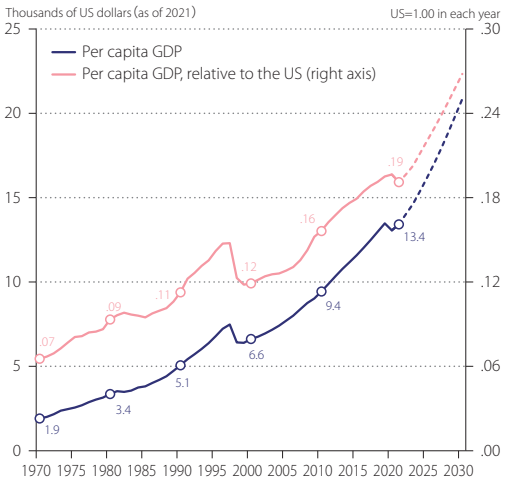

Figure 1 Per Capita GDP

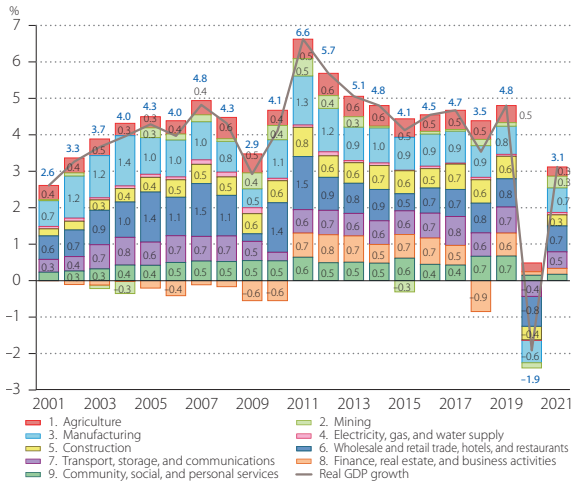

Figure 2 Industry Origins of Economic Growth

Labor

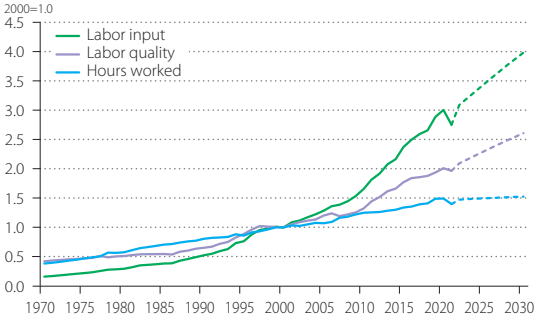

Figure 3 Labor Inputs

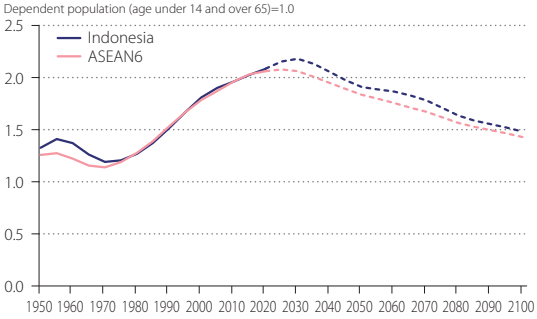

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

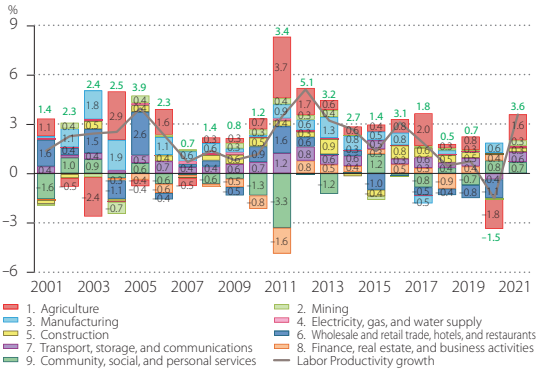

Figure 7 Industry Origins of Labor Productivity Growth

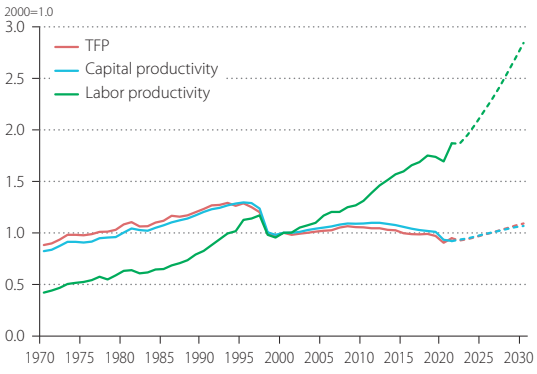

Figure 8 Productivity Indicators

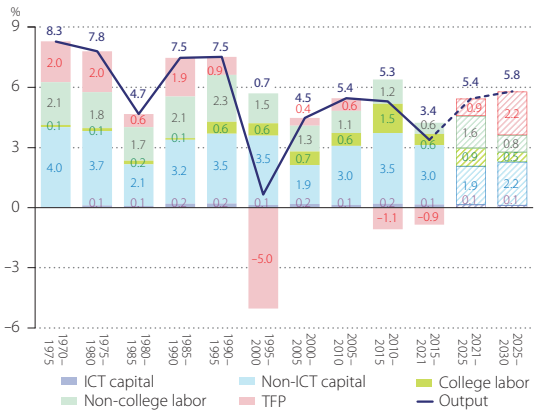

Figure 9 Decomposition of Economic Growth

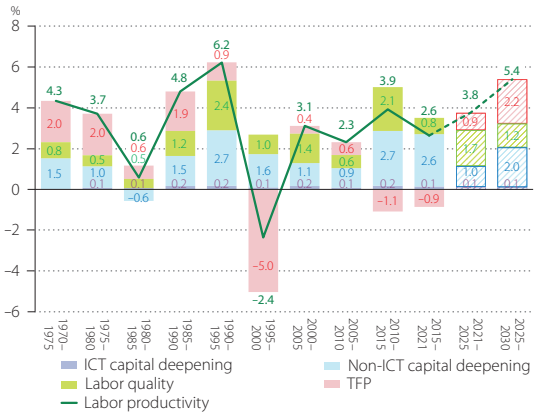

Figure 10 Decomposition of Labor Productivity Growth

Iran

Key Indicators

GDP in 2021	1,431	Billions of US dollars (as of 2021)
(exchange rate based)	2,002	Billions of US dollars (as of 2021)
Per capita GDP in 2021	16.5	Thousands of US dollars (as of 2021)
(exchange rate based)	23.1	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	58.0	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	25.2	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	94.1	US dollars (as of 2021)
Energy productivity levels in 2020	6.9	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	421.5	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	24,102	Thousands persons
Employment rate in 2021	27.8	%
Female employment share in 2021	13.0	%
Average schooling years of workers in 2021	9.7	Years
Investment share in 2021	30.2	%
ICT investment share in GFCF in 2021	3.5	%
Agriculture share in GDP in 2021	7.5	%
Manufacturing share in GDP in 2021	20.9	%
Agriculture share in employment in 2021	15.5	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–21	2015–21	2018–19	2019–20	2020–21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	3.0	2.3	3.7	6.1	0.7	1.6	−8.0	2.5	3.7	2.6	2.3	2.4	2.4
Labor input growth	3.6	3.7	4.6	3.3	2.0	1.4	2.9	0.4	1.1	1.9	1.9	1.8	1.8
Labor quality growth	1.2	1.1	1.7	1.9	0.9	0.3	0.8	1.0	0.2	0.4	1.3	1.3	1.3
Hours worked growth	2.5	2.6	2.9	1.4	1.1	1.1	2.1	−0.6	0.9	1.6	0.5	0.5	0.5
College labor input growth	4.7	7.3	10.1	6.5	2.9	1.2	2.0	−1.2	0.4	3.6	2.6	2.5	2.5
Non-college labor input growth	3.4	2.9	2.6	1.1	1.1	1.7	3.9	2.2	2.0	0.0	1.0	1.0	1.0
ICT capital input growth	6.2	10.9	9.2	18.7	3.6	−0.8	−2.6	−3.8	−2.9	2.4	1.8	2.8	2.7
Non-ICT capital input growth	1.4	0.7	0.8	2.2	1.3	1.3	1.2	0.7	1.2	0.7	0.5	0.5	0.5
Per-worker labor productivity growth	0.5	−0.2	0.6	4.2	−0.7	0.1	−10.0	3.6	3.0	2.1	1.5	1.7	1.7
Per-hour labor productivity growth	0.5	−0.3	0.8	4.7	−0.4	0.5	−10.1	3.1	2.8	1.0	1.8	1.9	1.9
Capital productivity growth	−1.4	−0.7	−0.9	−2.3	−1.4	−1.2	−1.2	−0.6	−1.1	1.9	1.8	1.9	1.8
TFP growth	0.9	0.4	1.9	3.5	−0.8	0.3	−9.6	2.0	2.6	1.5	1.4	1.5	1.5

Production

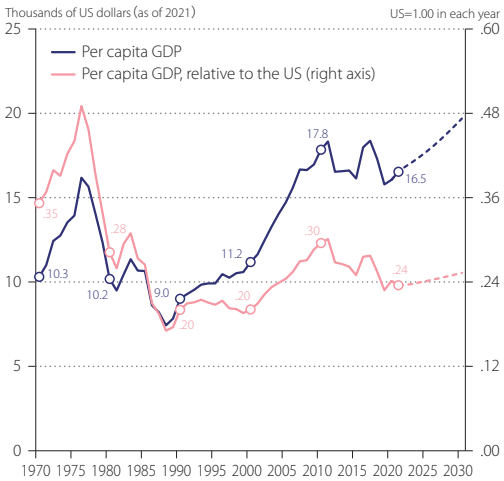

Figure 1 Per Capita GDP

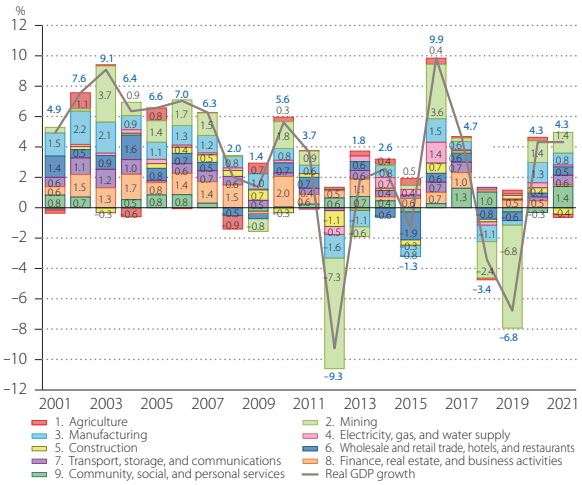

Figure 2 Industry Origins of Economic Growth

Labor

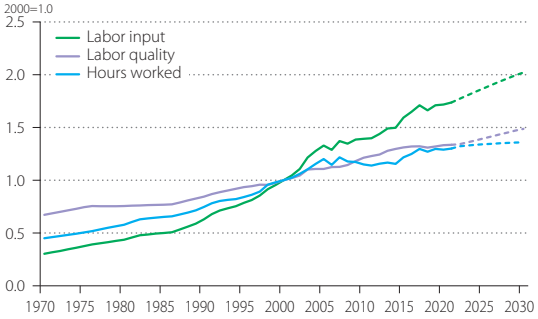

Figure 3 Labor Inputs

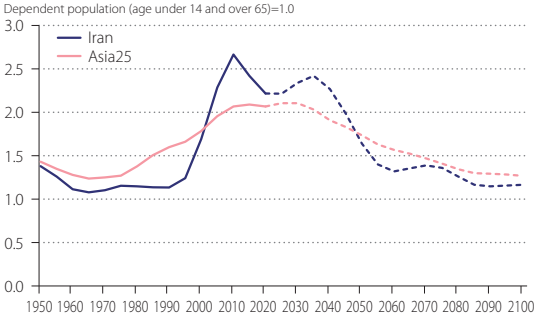

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

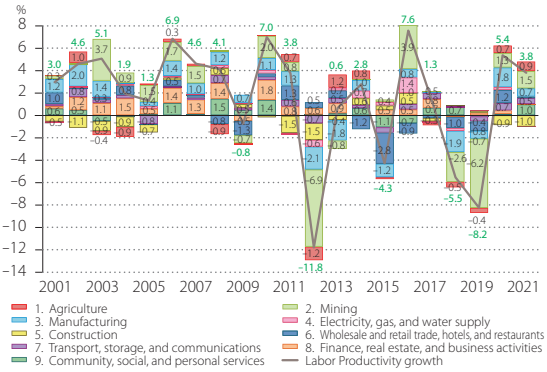

Figure 7 Industry Origins of Labor Productivity Growth

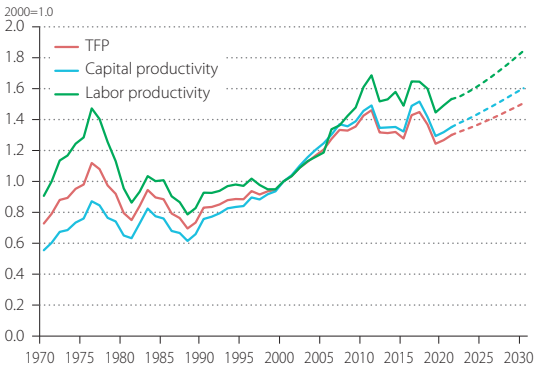

Figure 8 Productivity Indicators

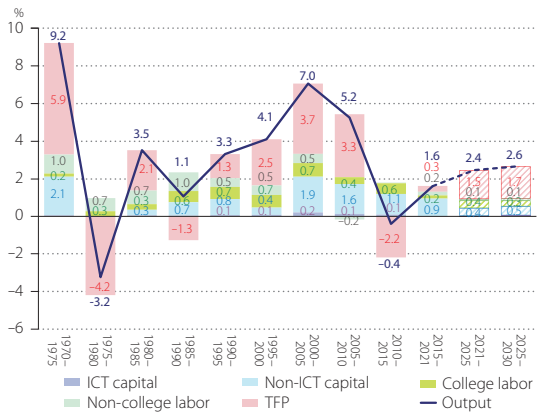

Figure 9 Decomposition of Economic Growth

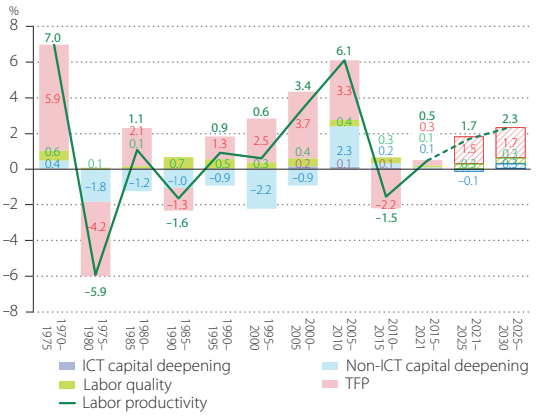

Figure 10 Decomposition of Labor Productivity Growth

Japan

Key Indicators

GDP in 2021	5,712	Billions of US dollars (as of 2021)
(exchange rate based)	5,006	Billions of US dollars (as of 2021)
Per capita GDP in 2021	45.5	Thousands of US dollars (as of 2021)
(exchange rate based)	39.9	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	81.9	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	48.0	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	153.0	US dollars (as of 2021)
Energy productivity levels in 2020	20.1	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	187.1	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	65,928	Thousands persons
Employment rate in 2021	52.5	%
Female employment share in 2021	44.4	%
Average schooling years of workers in 2021	13.4	Years
Investment share in 2021	25.6	%
ICT investment share in GFCF in 2021	13.1	%
Agriculture share in GDP in 2021	1.0	%
Manufacturing share in GDP in 2021	19.5	%
Agriculture share in employment in 2021	3.6	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	5.0	4.5	1.2	0.6	0.5	0.1	−0.4	−4.4	2.2	1.0	1.8	0.6	1.0
Labor input growth	1.8	1.8	0.0	0.2	0.4	0.5	−2.2	0.4	0.4	−0.8	−1.2	−1.3	−1.3
Labor quality growth	1.6	1.1	0.7	0.8	0.4	0.4	0.0	1.2	0.4	0.1	0.5	0.5	0.5
Hours worked growth	0.2	0.7	−0.7	−0.6	0.0	0.0	−2.1	−0.7	0.0	−0.9	−1.8	−1.8	−1.8
College labor input growth	7.7	6.1	3.6	3.1	2.4	2.7	−2.8	4.1	4.5	0.2	0.8	0.7	0.7
Non-college labor input growth	0.7	0.5	−1.4	−1.4	−1.0	−1.1	−1.7	−2.2	−2.5	−1.6	−2.8	−2.9	−2.9
ICT capital input growth	12.0	17.8	8.9	4.8	2.7	2.4	2.7	2.7	1.7	7.1	5.5	4.9	4.8
Non-ICT capital input growth	5.4	3.9	1.9	0.3	0.0	0.3	0.4	0.2	−0.2	−0.1	−0.1	0.0	0.0
Per-worker labor productivity growth	3.9	3.6	0.9	0.7	0.1	−0.5	−0.8	−3.7	2.5	2.6	3.4	2.2	2.5
Per-hour labor productivity growth	4.4	3.8	1.9	1.2	0.5	0.0	1.7	−3.6	2.1	1.9	3.5	2.4	2.7
Capital productivity growth	−5.7	−4.6	−2.4	−0.7	−0.2	−0.4	−0.6	−0.4	0.0	0.5	1.4	0.1	0.6
TFP growth	1.1	1.6	0.1	0.2	0.2	−0.4	0.5	−4.8	1.9	1.3	2.3	1.1	1.5

Production

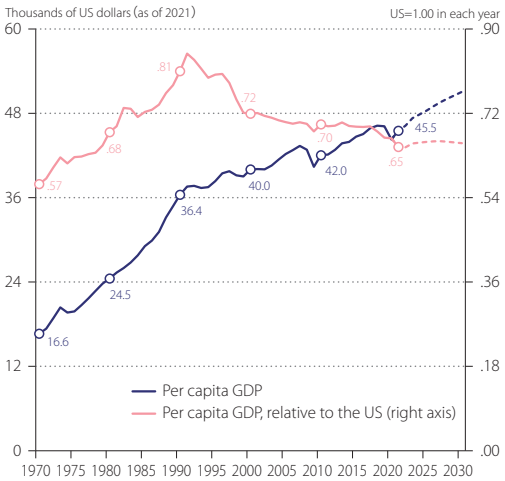

Figure 1 Per Capita GDP

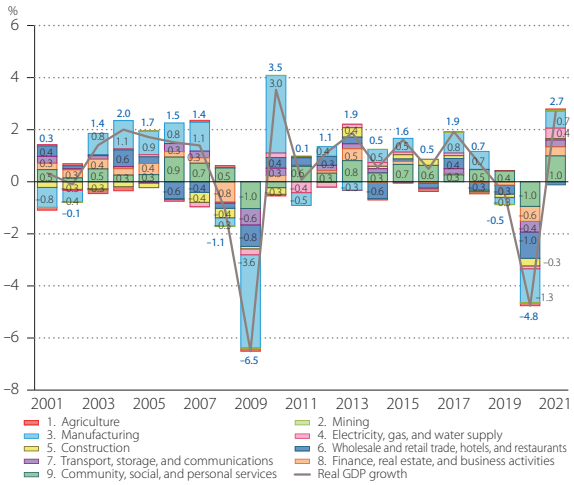

Figure 2 Industry Origins of Economic Growth

Labor

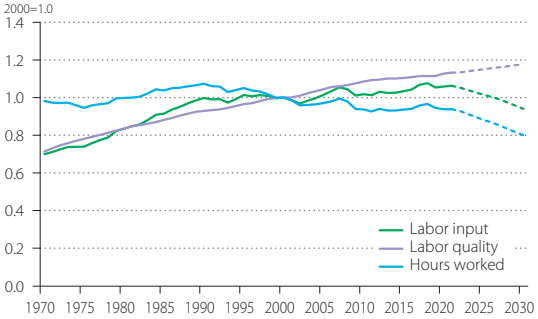

Figure 3 Labor Inputs

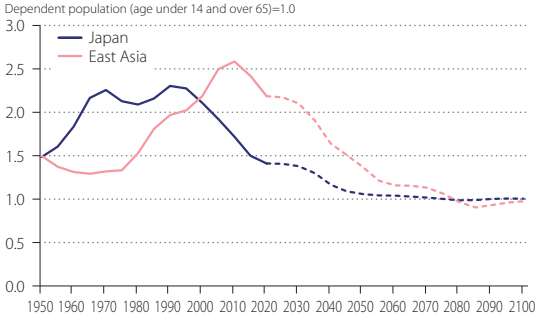

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

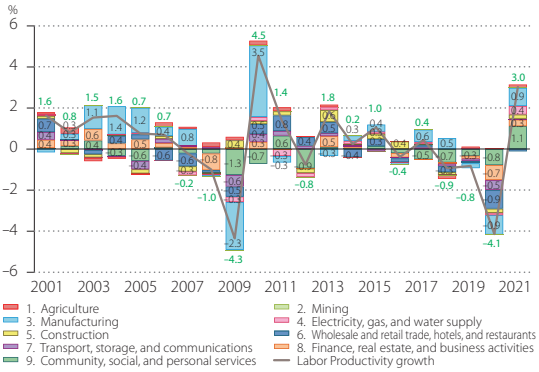

Figure 7 Industry Origins of Labor Productivity Growth

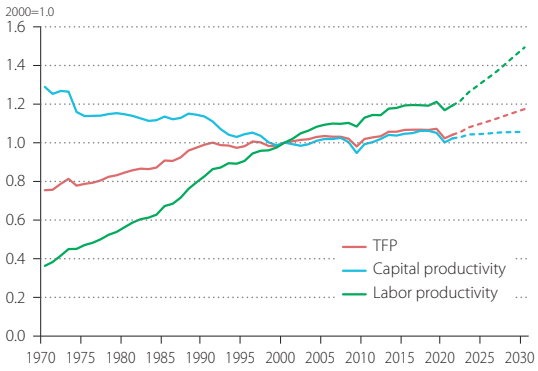

Figure 8 Productivity Indicators

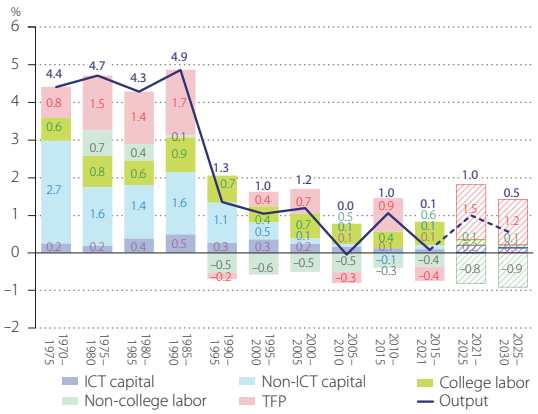

Figure 9 Decomposition of Economic Growth

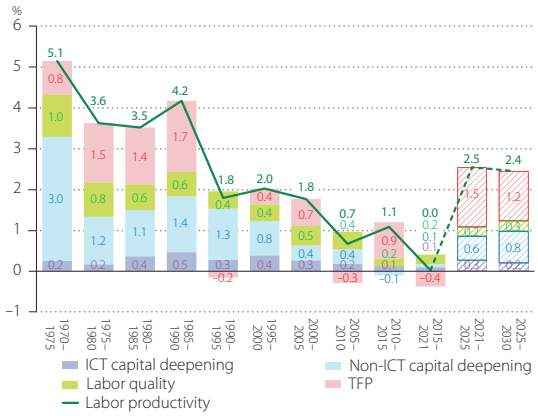

Figure 10 Decomposition of Labor Productivity Growth

App.

Korea

Key Indicators

GDP in 2021	2,544	Billions of US dollars (as of 2021)
(exchange rate based)	1,811	Billions of US dollars (as of 2021)
Per capita GDP in 2021	49.2	Thousands of US dollars (as of 2021)
(exchange rate based)	35.0	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	83.3	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	43.7	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	173.2	US dollars (as of 2021)
Energy productivity levels in 2020	12.8	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	245.4	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	27,873	Thousands persons
Employment rate in 2021	53.9	%
Female employment share in 2021	42.1	%
Average schooling years of workers in 2021	13.4	Years
Investment share in 2021	32.1	%
ICT investment share in GFCF in 2021	9.2	%
Agriculture share in GDP in 2021	2.0	%
Manufacturing share in GDP in 2021	27.9	%
Agriculture share in employment in 2021	5.3	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	9.1	9.9	6.9	4.8	2.6	2.5	2.6	−0.8	4.0	2.5	1.0	2.0	1.7
Labor input growth	4.1	5.7	3.1	2.2	0.5	−1.0	0.0	−4.5	0.4	5.6	−0.6	−0.6	−0.6
Labor quality growth	0.9	3.1	2.1	2.2	0.9	0.8	0.5	0.7	0.4	−0.3	0.9	0.9	0.9
Hours worked growth	3.3	2.7	0.9	0.1	−0.4	−1.8	−0.5	−5.2	0.0	5.9	−1.5	−1.5	−1.5
College labor input growth	3.6	10.9	7.2	5.6	2.4	0.9	2.0	−2.3	1.6	5.9	0.7	0.7	0.7
Non-college labor input growth	4.3	4.1	1.0	−0.9	−2.4	−4.2	−3.5	−8.6	−2.1	4.9	−3.3	−3.4	−3.5
ICT capital input growth	23.3	22.5	18.3	6.8	3.3	4.2	4.7	5.7	4.8	10.9	6.3	4.8	5.1
Non-ICT capital input growth	9.7	8.2	7.0	4.9	3.2	3.1	3.0	2.6	2.8	2.3	1.9	1.7	1.7
Per-worker labor productivity growth	5.3	6.7	5.4	3.5	1.6	1.8	1.3	0.0	2.8	3.9	2.5	3.5	3.2
Per-hour labor productivity growth	5.3	6.7	6.0	4.6	3.1	4.2	2.9	4.3	4.2	−3.3	2.5	3.6	3.2
Capital productivity growth	−9.8	−8.7	−7.6	−5.0	−3.2	−3.1	−3.1	−2.9	−2.8	−0.3	−1.1	0.2	−0.2
TFP growth	1.3	2.2	1.7	1.0	0.9	1.5	0.9	0.2	2.6	−1.7	0.3	1.5	1.1

Production

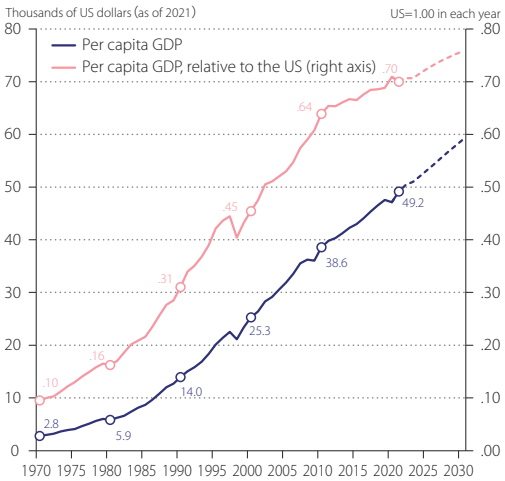

Figure 1 Per Capita GDP

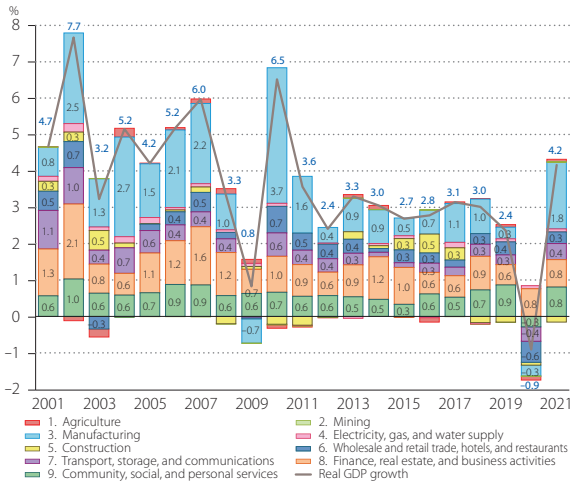

Figure 2 Industry Origins of Economic Growth

Labor

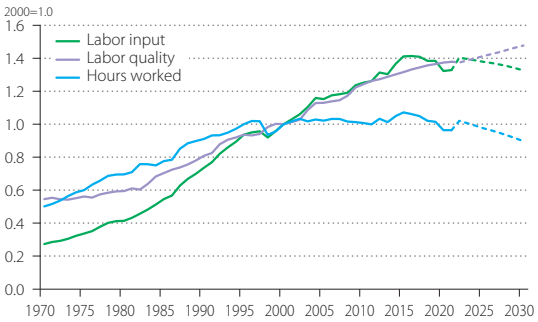

Figure 3 Labor Inputs

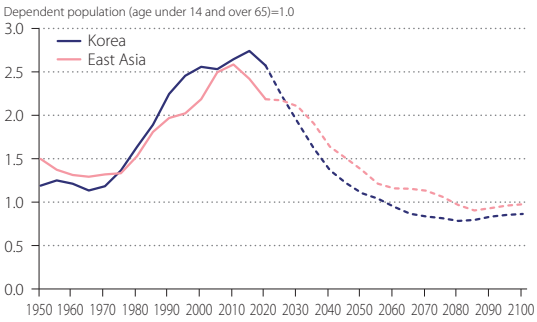

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

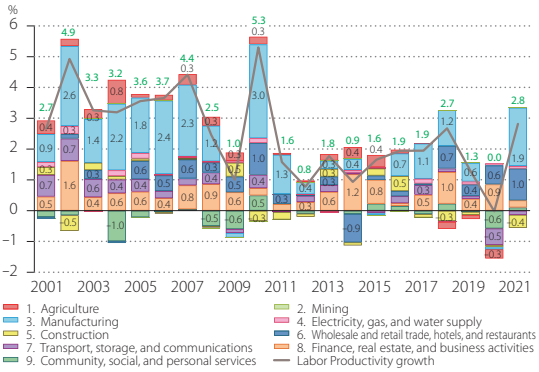

Figure 7 Industry Origins of Labor Productivity Growth

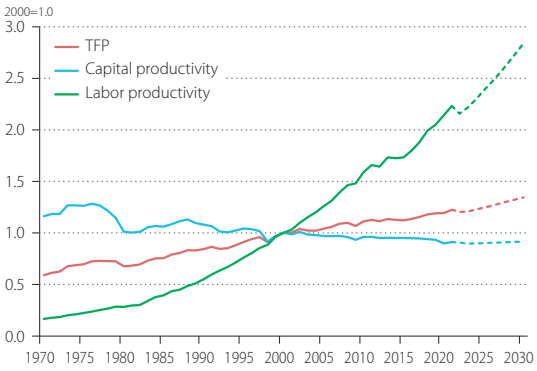

Figure 8 Productivity Indicators

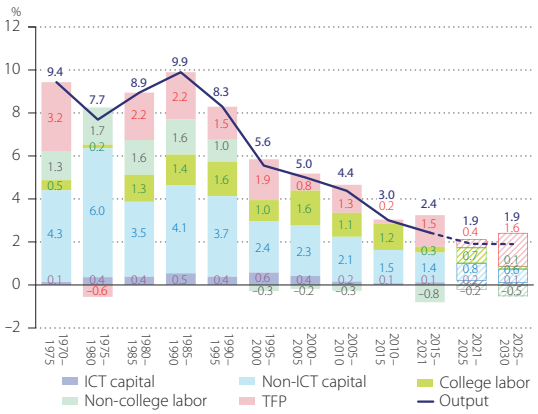

Figure 9 Decomposition of Economic Growth

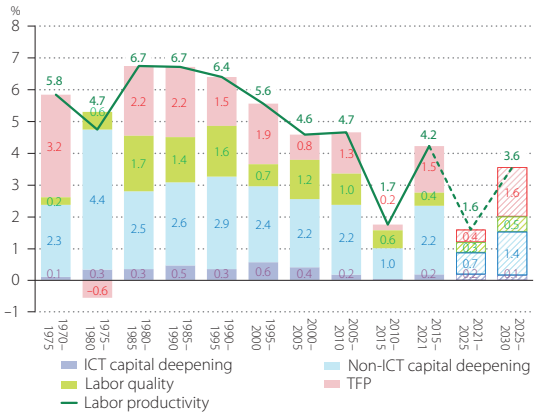

Figure 10 Decomposition of Labor Productivity Growth

Lao PDR

Key Indicators

GDP in 2021	59	Billions of US dollars (as of 2021)
(exchange rate based)	19	Billions of US dollars (as of 2021)
Per capita GDP in 2021	7.9	Thousands of US dollars (as of 2021)
(exchange rate based)	2.6	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	13.6	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	5.6	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	17.6	US dollars (as of 2021)
Energy productivity levels in 2020	n.a.	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	n.a.	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	3,846	Thousands persons
Employment rate in 2021	51.8	%
Female employment share in 2021	47.9	%
Average schooling years of workers in 2021	5.9	Years
Investment share in 2021	42.4	%
ICT investment share in GFCF in 2021	1.9	%
Agriculture share in GDP in 2021	23.6	%
Manufacturing share in GDP in 2021	9.2	%
Agriculture share in employment in 2021	66.9	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	2.6	3.5	6.6	4.6	3.6	2.5	2.6	–4.4	3.3	4.9	2.5	3.0	3.0
Labor input growth	1.3	2.8	3.7	3.9	2.7	2.1	2.3	2.3	2.2	1.4	1.3	1.3	1.3
Labor quality growth	0.3	0.3	0.7	1.5	0.8	0.0	0.1	0.1	0.1	1.2	1.2	1.2	1.2
Hours worked growth	1.1	2.5	3.0	2.4	1.9	2.0	2.2	2.2	2.1	0.2	0.2	0.1	0.1
College labor input growth	8.8	7.4	8.6	8.7	1.4	0.9	2.3	2.2	2.2	4.5	4.4	4.3	4.3
Non-college labor input growth	1.2	2.6	3.2	3.0	3.0	2.3	2.4	2.3	2.3	0.6	0.6	0.5	0.5
ICT capital input growth	0.7	17.9	13.0	9.9	3.8	1.8	11.3	–3.2	–3.8	–4.0	–3.7	–3.2	–3.2
Non-ICT capital input growth	1.9	3.8	6.4	3.8	6.6	6.5	6.8	6.3	5.1	4.4	4.3	4.2	4.2
Per-worker labor productivity growth	1.5	1.0	3.6	2.3	1.7	0.5	0.4	–6.5	1.1	4.4	2.2	2.7	2.7
Per-hour labor productivity growth	1.5	1.0	3.6	2.3	1.8	0.5	0.4	–6.5	1.1	4.6	2.4	2.9	2.9
Capital productivity growth	–1.9	–3.8	–6.4	–3.9	–6.5	–6.3	–6.9	–6.1	–4.9	0.6	–1.6	–1.1	–1.1
TFP growth	1.0	0.1	1.4	0.7	–1.5	–2.3	–2.6	–9.1	–0.7	1.6	–0.6	–0.1	–0.1

Production

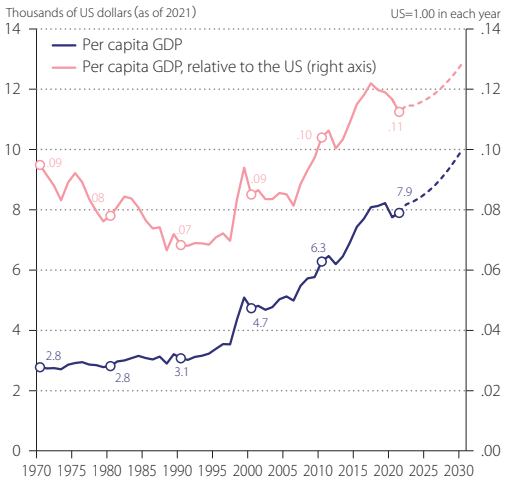

Figure 1 Per Capita GDP

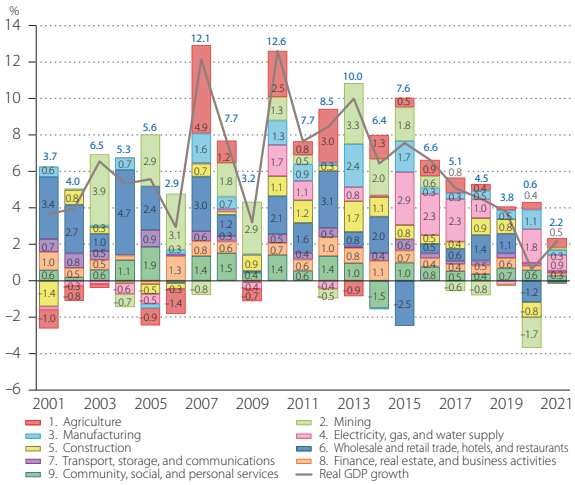

Figure 2 Industry Origins of Economic Growth

Labor

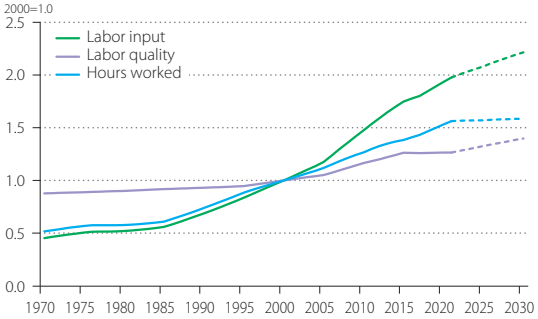

Figure 3 Labor Inputs

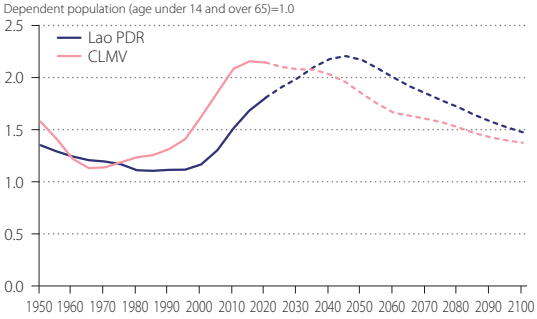

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

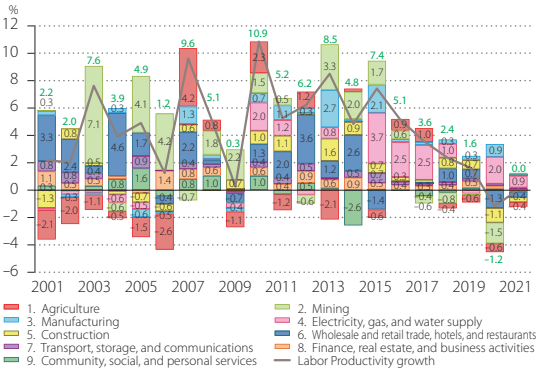

Figure 7 Industry Origins of Labor Productivity Growth

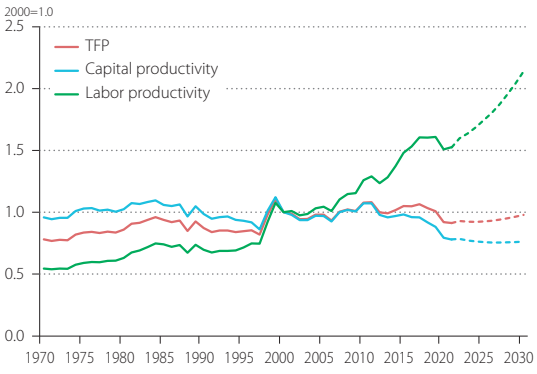

Figure 8 Productivity Indicators

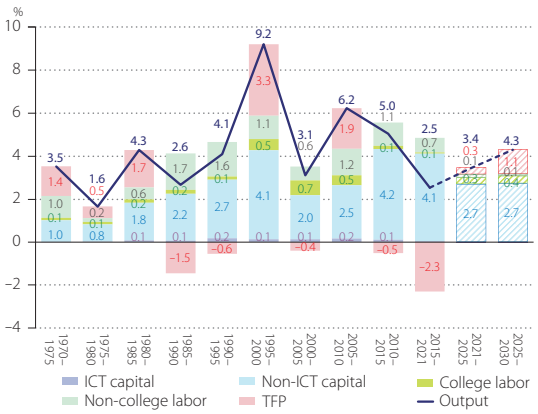

Figure 9 Decomposition of Economic Growth

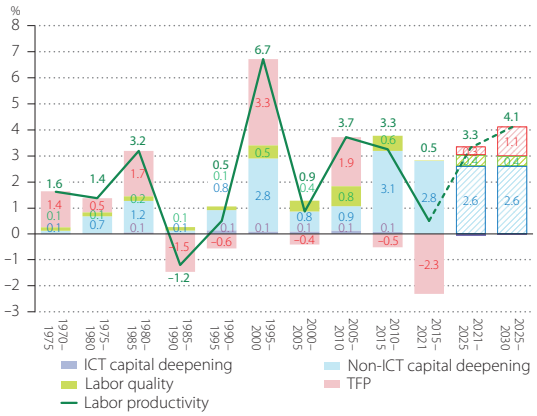

Figure 10 Decomposition of Labor Productivity Growth

Malaysia

Key Indicators

GDP in 2021	985	Billions of US dollars (as of 2021)
(exchange rate based)	373	Billions of US dollars (as of 2021)
Per capita GDP in 2021	30.2	Thousands of US dollars (as of 2021)
(exchange rate based)	11.4	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	60.9	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	28.8	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	75.8	US dollars (as of 2021)
Energy productivity levels in 2020	14.9	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	254.2	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	15,542	Thousands persons
Employment rate in 2021	47.6	%
Female employment share in 2021	38.4	%
Average schooling years of workers in 2021	11.7	Years
Investment share in 2021	22.3	%
ICT investment share in GFCF in 2021	16.0	%
Agriculture share in GDP in 2021	9.7	%
Manufacturing share in GDP in 2021	23.7	%
Agriculture share in employment in 2021	9.7	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	8.0	5.7	6.7	5.2	4.4	2.7	3.0	–4.9	4.9	8.0	5.4	3.9	4.4
Labor input growth	4.7	5.3	5.7	4.4	3.0	2.2	4.7	0.0	2.8	3.9	2.5	2.4	2.4
Labor quality growth	1.5	2.0	2.4	1.9	1.3	1.5	2.2	5.0	1.2	0.5	1.5	1.5	1.5
Hours worked growth	3.2	3.3	3.3	2.4	1.7	0.7	2.5	–5.0	1.6	3.4	1.0	0.9	0.9
College labor input growth	8.5	11.5	8.7	7.8	4.9	4.0	6.1	3.8	5.7	5.4	3.7	3.5	3.6
Non-college labor input growth	4.3	4.0	4.5	2.2	1.2	0.4	3.4	–3.8	–0.3	2.2	1.1	1.1	1.1
ICT capital input growth	17.4	20.9	21.9	15.9	7.0	4.7	4.6	1.8	1.9	8.4	11.5	9.9	9.9
Non-ICT capital input growth	6.8	5.6	7.5	2.2	3.2	3.1	3.0	2.4	1.6	0.1	0.9	1.1	1.0
Per-worker labor productivity growth	4.8	2.4	3.5	2.6	2.2	1.6	1.4	–4.6	4.3	6.7	4.2	2.7	3.3
Per-hour labor productivity growth	4.7	2.4	3.4	2.7	2.7	2.1	0.5	0.2	3.3	4.6	4.5	3.0	3.5
Capital productivity growth	–6.8	–5.7	–7.9	–2.9	–3.4	–3.2	–3.1	–2.4	–1.6	7.3	3.9	2.2	2.8
TFP growth	2.0	0.2	–0.4	1.7	1.2	0.1	–0.7	–6.4	3.5	6.0	3.5	1.9	2.5

Production

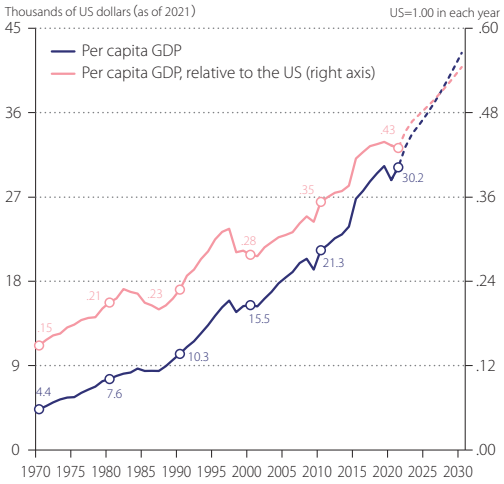

Figure 1 Per Capita GDP

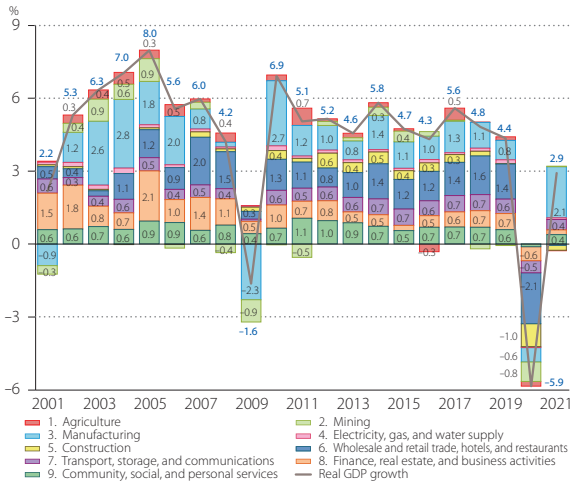

Figure 2 Industry Origins of Economic Growth

Labor

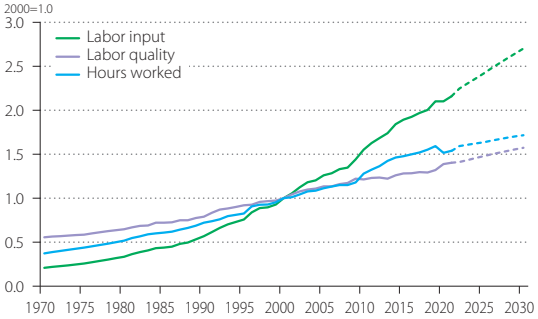

Figure 3 Labor Inputs

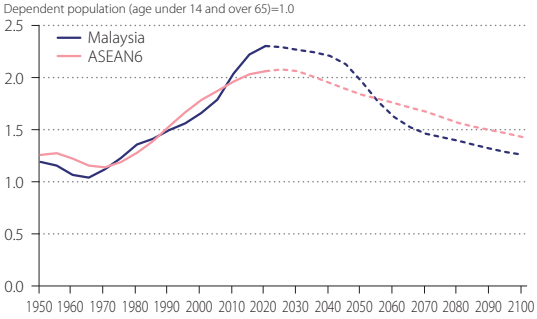

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

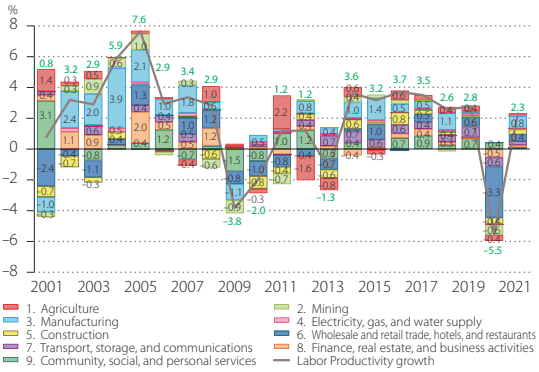

Figure 7 Industry Origins of Labor Productivity Growth

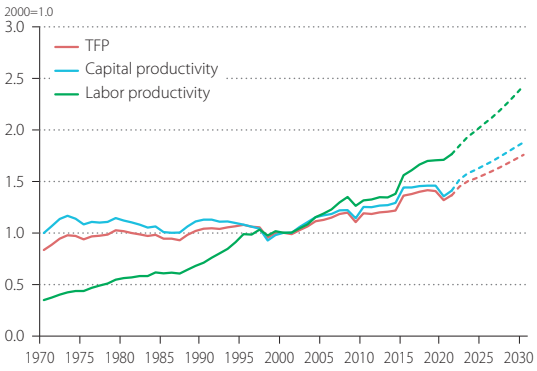

Figure 8 Productivity Indicators

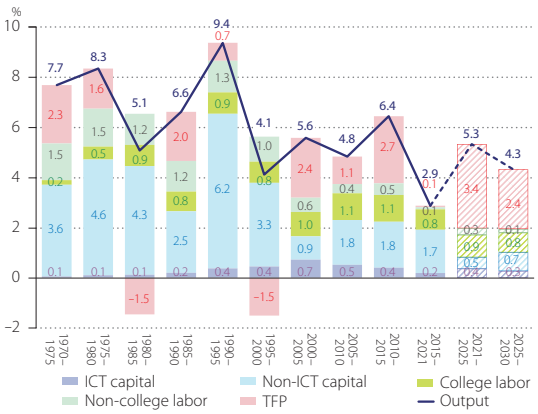

Figure 9 Decomposition of Economic Growth

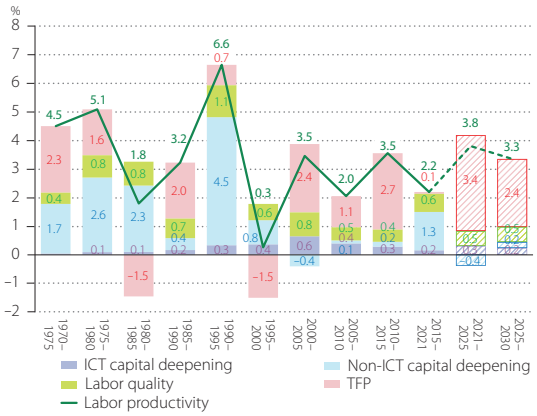

Figure 10 Decomposition of Labor Productivity Growth

Mongolia

Key Indicators

GDP in 2021	43	Billions of US dollars (as of 2021)
(exchange rate based)	16	Billions of US dollars (as of 2021)
Per capita GDP in 2021	12.6	Thousands of US dollars (as of 2021)
(exchange rate based)	4.6	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	34.9	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	18.3	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	59.3	US dollars (as of 2021)
Energy productivity levels in 2020	9.2	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	534.8	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	1,126	Thousands persons
Employment rate in 2021	32.9	%
Female employment share in 2021	47.3	%
Average schooling years of workers in 2021	12.1	Years
Investment share in 2021	35.8	%
ICT investment share in GFCF in 2021	5.4	%
Agriculture share in GDP in 2021	14.6	%
Manufacturing share in GDP in 2021	7.9	%
Agriculture share in employment in 2021	26.0	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–21	2015–21	2018–19	2019–20	2020–21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	5.9	5.2	0.9	6.3	6.0	2.8	5.3	−4.5	1.6	4.5	7.6	4.5	5.7
Labor input growth	6.1	4.7	−2.3	4.5	4.7	2.6	8.6	−3.2	−5.7	3.8	3.3	3.2	3.3
Labor quality growth	4.3	1.1	−1.8	3.2	2.8	2.1	9.1	−2.0	1.6	−0.9	1.7	1.6	1.6
Hours worked growth	1.8	3.6	−0.5	1.3	1.9	0.4	−0.5	−1.2	−7.2	4.8	1.6	1.6	1.6
College labor input growth	20.8	14.8	1.8	11.8	8.9	2.3	10.5	−16.4	−3.4	6.5	3.5	3.4	3.4
Non-college labor input growth	3.5	2.4	−3.4	1.2	−0.5	3.0	6.0	15.2	−8.9	−0.2	3.1	3.0	3.0
ICT capital input growth	25.3	15.4	9.1	19.9	9.0	14.3	21.9	10.6	5.8	13.2	8.0	6.6	6.5
Non-ICT capital input growth	6.0	5.9	−0.3	6.2	6.0	3.3	5.9	4.3	2.4	1.4	1.5	1.9	1.9
Per-worker labor productivity growth	4.1	1.6	0.6	3.9	5.2	3.2	14.2	−5.9	4.9	0.2	6.6	3.5	4.6
Per-hour labor productivity growth	4.1	1.6	1.4	5.0	4.1	2.3	5.8	−3.2	8.9	−0.3	6.0	2.9	4.1
Capital productivity growth	−6.0	−5.9	0.2	−6.5	−6.0	−3.5	−6.2	−4.5	−2.5	2.8	6.0	2.5	3.8
TFP growth	−0.1	−0.4	1.7	0.5	0.4	−0.5	−1.7	−6.4	1.8	2.1	5.5	2.1	3.4

Production

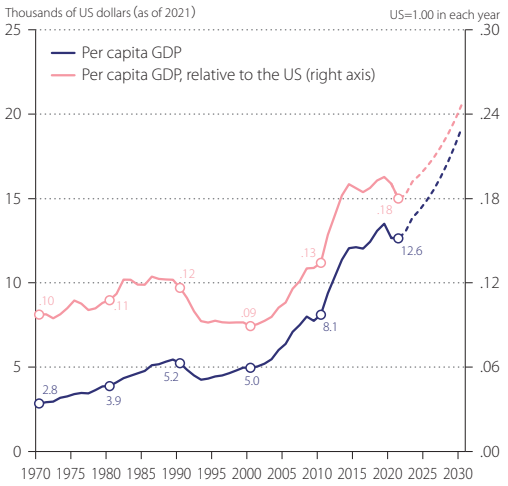

Figure 1 Per Capita GDP

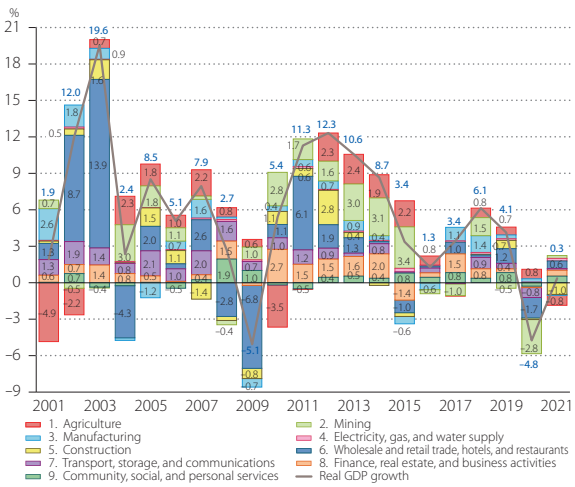

Figure 2 Industry Origins of Economic Growth

Labor

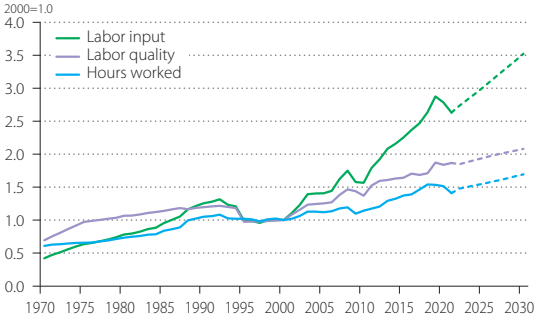

Figure 3 Labor Inputs

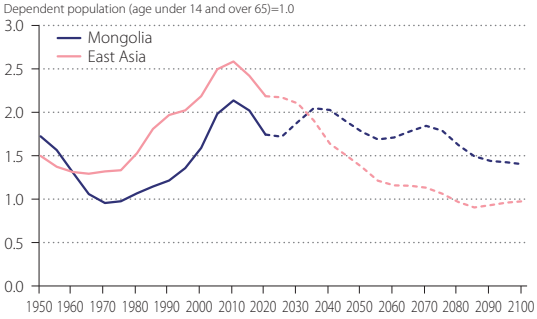

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

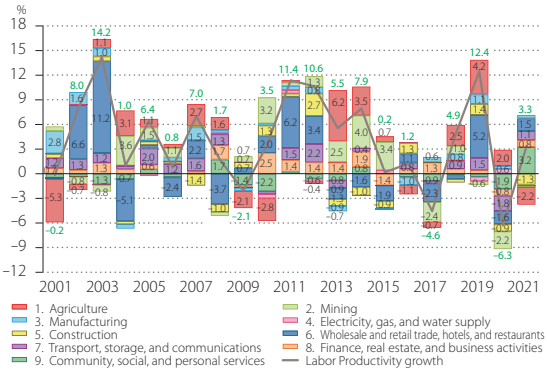

Figure 7 Industry Origins of Labor Productivity Growth

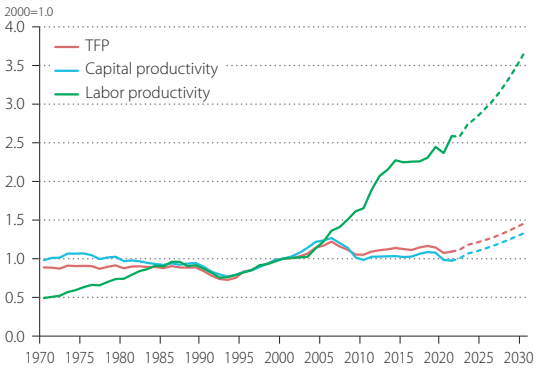

Figure 8 Productivity Indicators

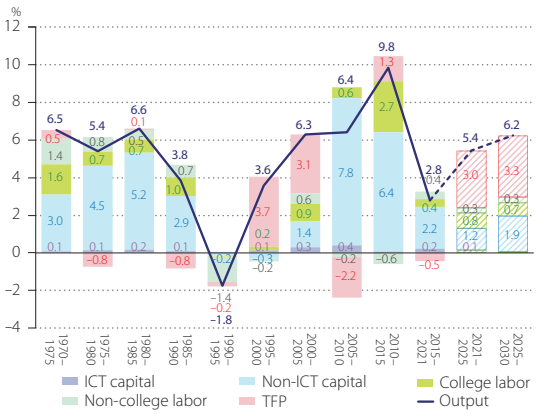

Figure 9 Decomposition of Economic Growth

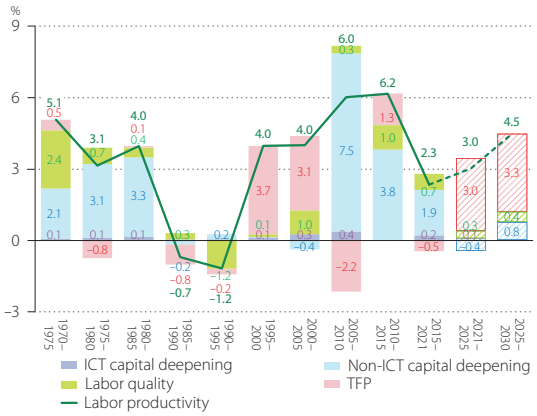

Figure 10 Decomposition of Labor Productivity Growth

App.

Nepal

Key Indicators

GDP in 2021	128	Billions of US dollars (as of 2021)
(exchange rate based)	35	Billions of US dollars (as of 2021)
Per capita GDP in 2021	4.4	Thousands of US dollars (as of 2021)
(exchange rate based)	1.2	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	9.7	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	5.3	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	15.4	US dollars (as of 2021)
Energy productivity levels in 2020	7.4	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	111.0	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	12,244	Thousands persons
Employment rate in 2021	42.0	%
Female employment share in 2021	45.0	%
Average schooling years of workers in 2021	4.9	Years
Investment share in 2021	36.7	%
ICT investment share in GFCF in 2021	0.9	%
Agriculture share in GDP in 2021	25.8	%
Manufacturing share in GDP in 2021	5.6	%
Agriculture share in employment in 2021	65.4	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	2.0	4.4	4.8	3.9	3.7	4.4	10.3	–0.5	8.3	6.1	1.7	4.1	3.4
Labor input growth	3.6	5.1	5.7	2.8	1.8	2.6	2.2	3.4	4.4	4.8	3.8	3.7	3.7
Labor quality growth	0.5	3.7	3.3	1.8	0.0	0.0	0.0	0.2	0.4	3.0	2.8	2.8	2.8
Hours worked growth	3.1	1.4	2.3	1.1	1.8	2.6	2.3	3.2	4.0	1.9	1.0	0.9	0.9
College labor input growth	8.8	8.9	16.8	8.5	2.2	2.8	2.3	3.8	5.0	6.9	5.6	5.5	5.5
Non-college labor input growth	3.4	4.9	4.0	0.7	1.6	2.5	2.1	3.2	4.1	3.6	2.7	2.6	2.6
ICT capital input growth	20.4	11.3	11.1	5.3	9.8	14.3	16.2	13.0	10.2	16.5	17.1	13.3	14.2
Non-ICT capital input growth	3.2	5.9	5.5	4.8	5.6	6.9	7.7	8.1	6.8	7.0	7.7	7.2	7.3
Per-worker labor productivity growth	–1.2	3.4	2.5	2.9	1.9	1.8	8.1	–3.6	4.5	4.4	0.8	3.3	2.6
Per-hour labor productivity growth	–1.1	3.0	2.5	2.9	1.9	1.8	8.1	–3.7	4.3	4.3	0.7	3.2	2.5
Capital productivity growth	–3.3	–5.9	–5.5	–4.8	–5.6	–6.9	–7.6	–8.1	–6.7	–0.9	–6.0	–3.1	–3.9
TFP growth	–1.6	–1.0	–0.8	0.4	0.5	0.1	6.0	–5.8	2.9	0.4	–3.7	–1.0	–1.7

Production

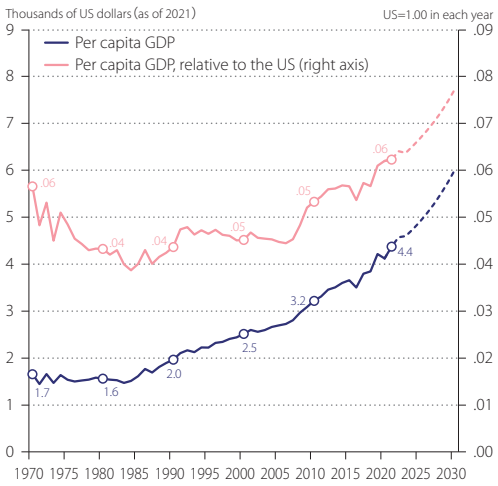

Figure 1 Per Capita GDP

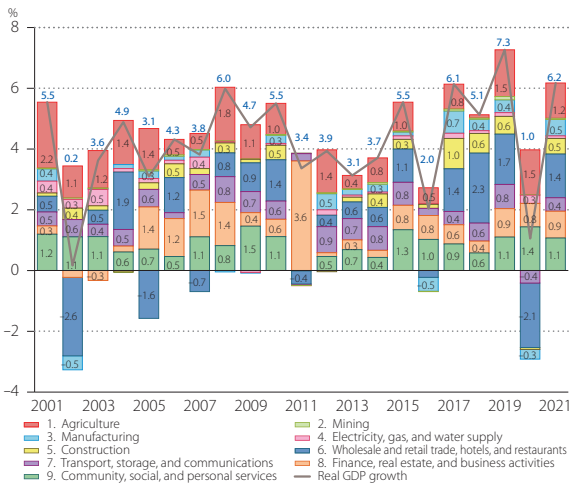

Figure 2 Industry Origins of Economic Growth

Labor

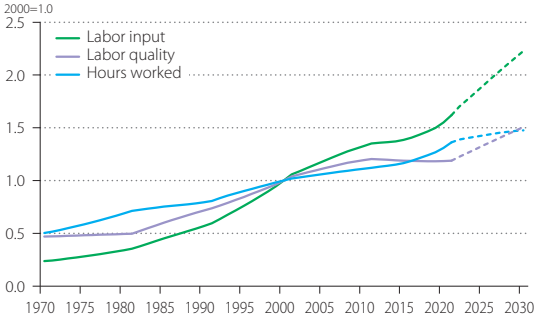

Figure 3 Labor Inputs

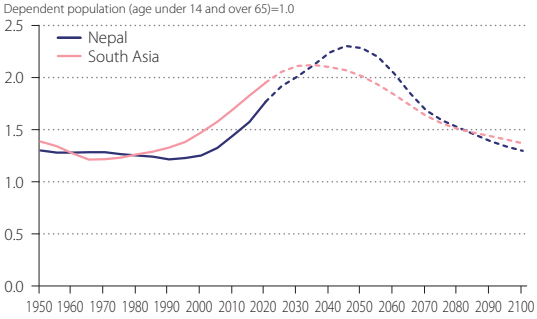

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

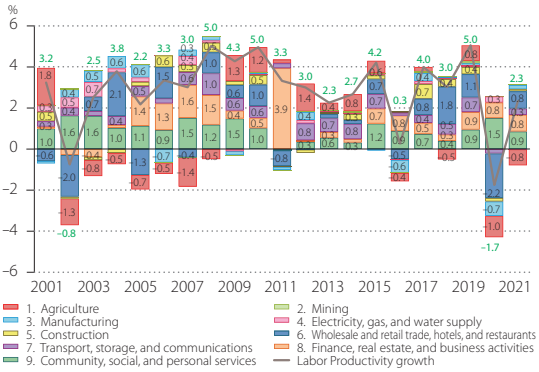

Figure 7 Industry Origins of Labor Productivity Growth

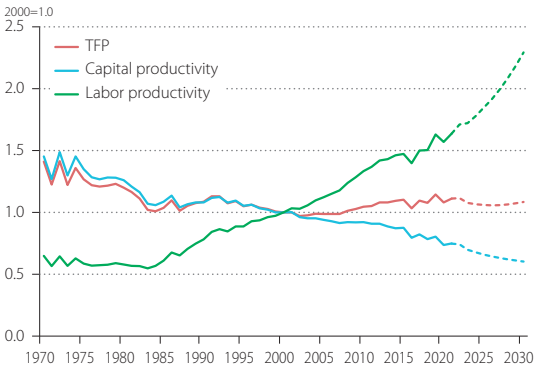

Figure 8 Productivity Indicators

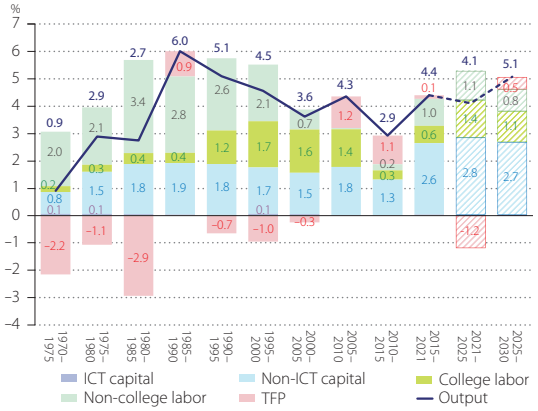

Figure 9 Decomposition of Economic Growth

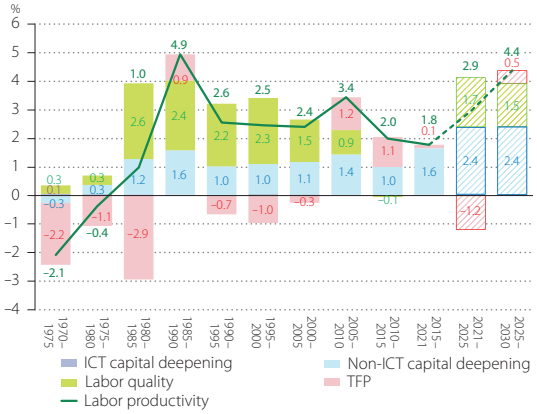

Figure 10 Decomposition of Labor Productivity Growth

Pakistan

Key Indicators

GDP in 2021	1,342	Billions of US dollars (as of 2021)
(exchange rate based)	342	Billions of US dollars (as of 2021)
Per capita GDP in 2021	6.5	Thousands of US dollars (as of 2021)
(exchange rate based)	1.7	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	19.2	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	8.9	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	11.5	US dollars (as of 2021)
Energy productivity levels in 2020	13.4	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	140.5	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	65,039	Thousands persons
Employment rate in 2021	31.5	%
Female employment share in 2021	22.1	%
Average schooling years of workers in 2021	5.2	Years
Investment share in 2021	14.4	%
ICT investment share in GFCF in 2021	7.3	%
Agriculture share in GDP in 2021	24.2	%
Manufacturing share in GDP in 2021	12.8	%
Agriculture share in employment in 2021	37.5	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	4.7	6.9	6.3	3.8	3.8	4.1	2.4	−0.6	5.8	4.5	1.7	3.2	2.8
Labor input growth	4.3	3.6	3.0	4.0	3.2	3.2	−3.0	3.1	3.5	3.1	4.2	4.2	4.2
Labor quality growth	1.6	1.1	1.1	1.0	1.2	1.0	−0.3	0.1	0.3	2.3	2.2	2.2	2.2
Hours worked growth	2.7	2.5	1.9	3.0	2.0	2.1	−2.6	3.0	3.2	0.8	2.1	2.1	2.1
College labor input growth	5.9	6.8	8.1	5.3	4.3	4.1	3.2	−1.0	−0.6	4.8	5.4	5.4	5.4
Non-college labor input growth	4.2	3.2	2.1	3.6	2.8	2.8	−5.5	4.8	5.1	2.5	3.8	3.8	3.8
ICT capital input growth	8.2	15.7	6.7	16.3	6.9	8.5	9.6	4.8	3.7	9.0	11.5	9.8	10.2
Non-ICT capital input growth	4.7	6.4	5.8	4.0	2.5	3.1	3.7	2.3	2.3	1.8	2.5	2.4	2.5
Per-worker labor productivity growth	1.9	4.4	4.3	0.6	1.9	2.3	3.7	−2.6	3.5	2.5	−0.5	1.1	0.7
Per-hour labor productivity growth	2.0	4.5	4.4	0.8	1.8	2.0	5.0	−3.6	2.6	3.6	−0.4	1.1	0.7
Capital productivity growth	−4.7	−6.4	−5.7	−4.2	−2.5	−3.2	−3.8	−2.3	−2.3	2.5	−1.0	0.6	0.1
TFP growth	0.3	2.3	1.8	−0.5	1.1	1.1	2.2	−3.3	3.6	2.0	−1.7	−0.1	−0.6

Production

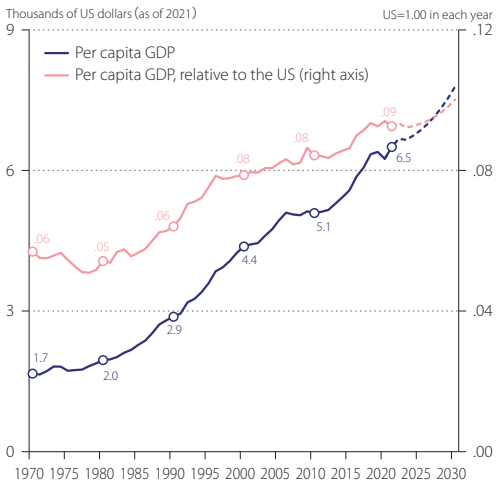

Figure 1 Per Capita GDP

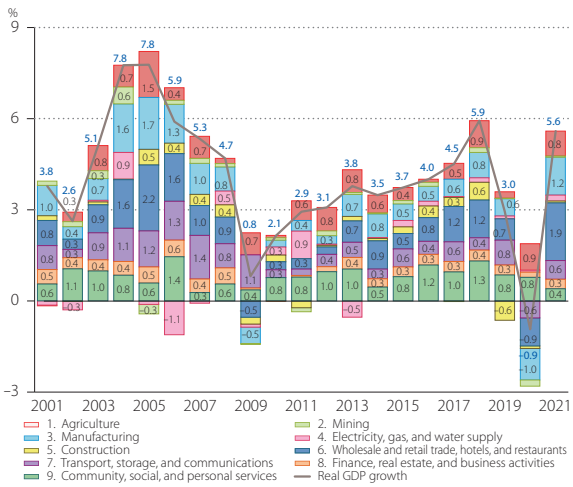

Figure 2 Industry Origins of Economic Growth

Labor

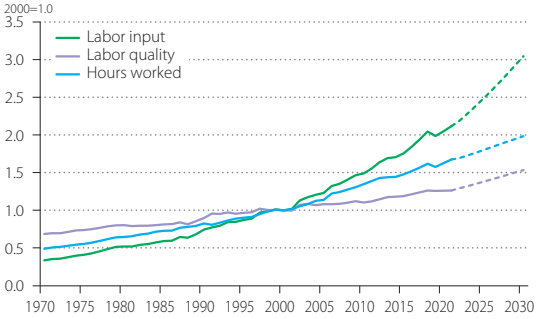

Figure 3 Labor Inputs

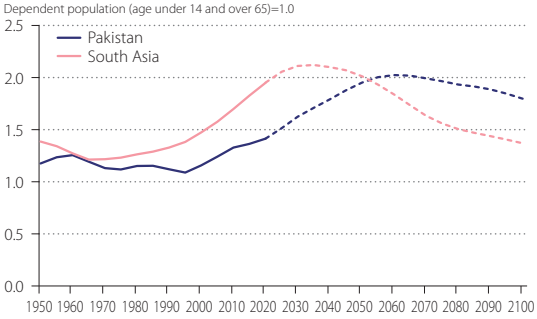

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

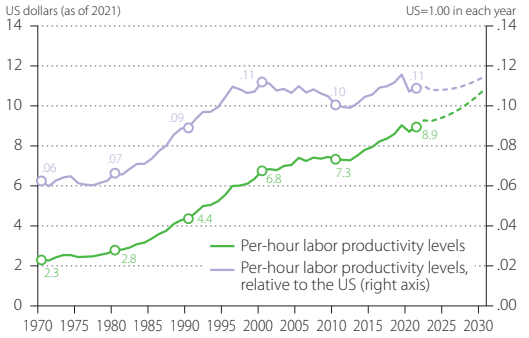

Figure 6 Per-Hour Labor Productivity Level

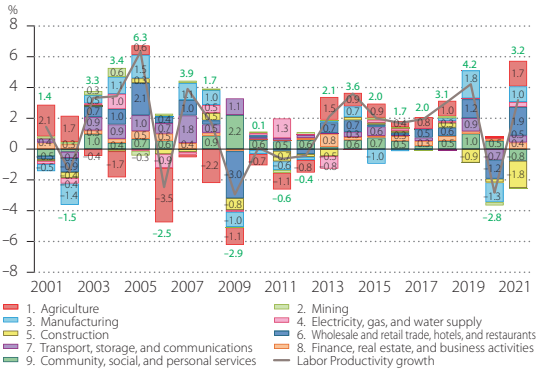

Figure 7 Industry Origins of Labor Productivity Growth

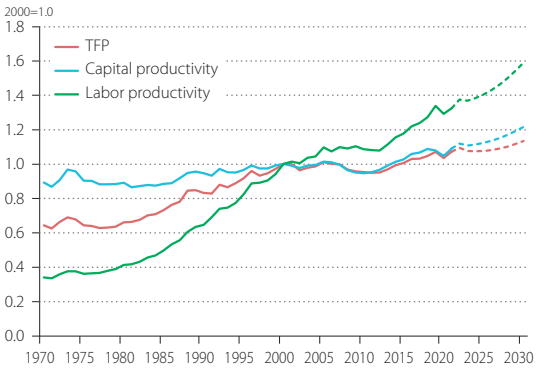

Figure 8 Productivity Indicators

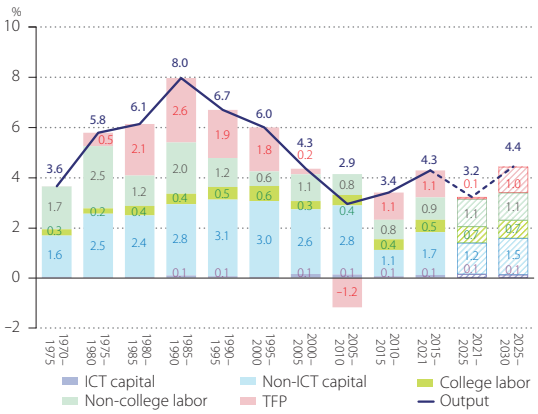

Figure 9 Decomposition of Economic Growth

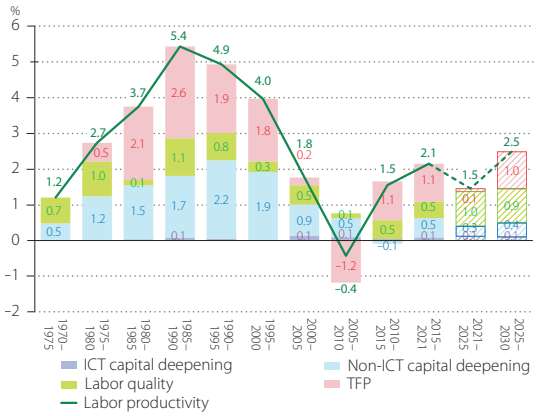

Figure 10 Decomposition of Labor Productivity Growth

App.

Philippines

Key Indicators

GDP in 2021	1,020	Billions of US dollars (as of 2021)
(exchange rate based)	394	Billions of US dollars (as of 2021)
Per capita GDP in 2021	9.2	Thousands of US dollars (as of 2021)
(exchange rate based)	3.6	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	23.6	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	11.8	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	24.9	US dollars (as of 2021)
Energy productivity levels in 2020	28.2	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	136.5	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	41,060	Thousands persons
Employment rate in 2021	37.1	%
Female employment share in 2021	38.6	%
Average schooling years of workers in 2021	10.4	Years
Investment share in 2021	21.2	%
ICT investment share in GFCF in 2021	4.8	%
Agriculture share in GDP in 2021	10.1	%
Manufacturing share in GDP in 2021	17.6	%
Agriculture share in employment in 2021	23.5	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–21	2015–21	2018–19	2019–20	2020–21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	5.9	2.6	3.8	4.8	4.6	3.6	5.2	−10.2	6.1	7.0	6.2	5.6	5.8
Labor input growth	4.7	4.1	3.3	3.3	2.1	1.2	4.1	−11.4	6.4	4.8	3.6	3.5	3.5
Labor quality growth	1.1	1.4	1.3	0.8	1.2	1.2	1.9	−1.4	1.4	1.0	1.8	1.7	1.7
Hours worked growth	3.6	2.7	2.0	2.5	0.9	0.0	2.3	−10.0	5.0	3.9	1.9	1.8	1.8
College labor input growth	7.6	7.3	5.5	5.6	3.2	1.8	8.4	−14.5	7.9	6.3	4.5	4.4	4.4
Non-college labor input growth	3.4	2.5	2.2	1.9	1.4	0.8	1.6	−9.5	5.4	3.9	3.0	2.9	2.9
ICT capital input growth	8.4	10.1	11.8	7.2	9.6	10.3	11.7	7.0	5.2	10.8	13.8	12.7	12.8
Non-ICT capital input growth	7.2	3.8	4.1	3.2	6.2	6.1	7.3	5.5	2.0	3.3	4.1	4.2	4.2
Per-worker labor productivity growth	2.0	−0.2	1.7	2.1	3.4	2.8	2.2	−2.7	1.9	5.2	4.3	3.7	4.0
Per-hour labor productivity growth	2.3	−0.1	1.8	2.3	3.7	3.6	3.0	−0.1	1.1	3.2	4.3	3.7	4.0
Capital productivity growth	−7.2	−3.9	−4.3	−3.4	−6.3	−6.2	−7.3	−5.6	−2.0	3.6	1.9	1.1	1.4
TFP growth	−0.2	−1.5	−0.1	1.4	0.0	−0.5	−1.0	−8.5	2.5	3.1	2.1	1.5	1.8

Production

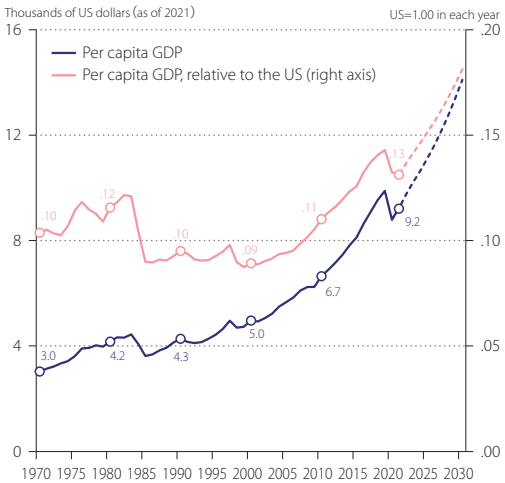

Figure 1 Per Capita GDP

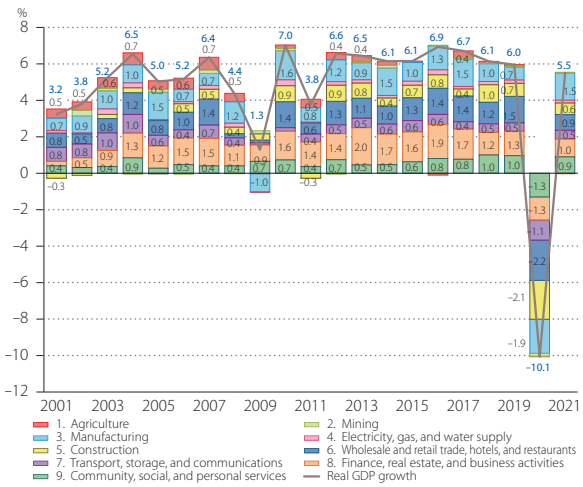

Figure 2 Industry Origins of Economic Growth

Labor

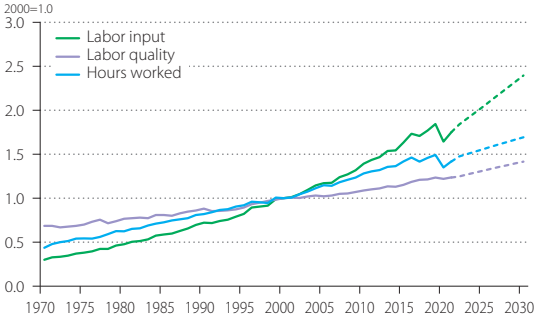

Figure 3 Labor Inputs

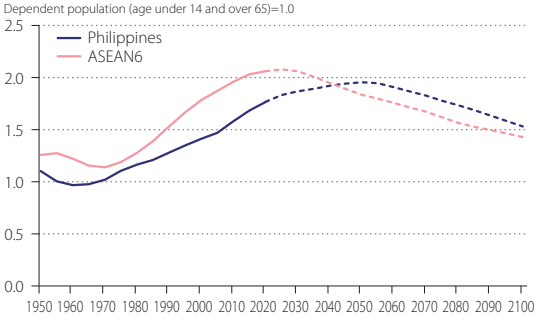

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

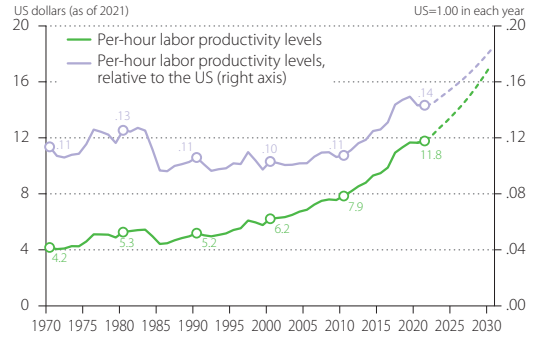

Figure 6 Per-Hour Labor Productivity Level

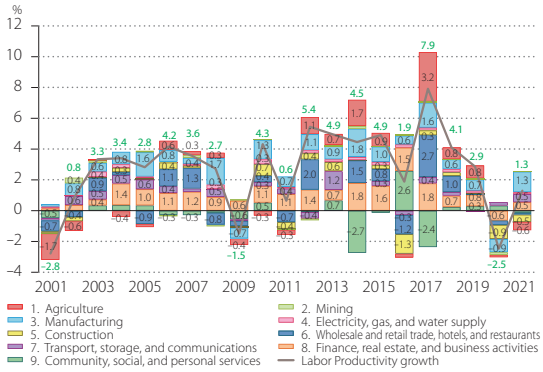

Figure 7 Industry Origins of Labor Productivity Growth

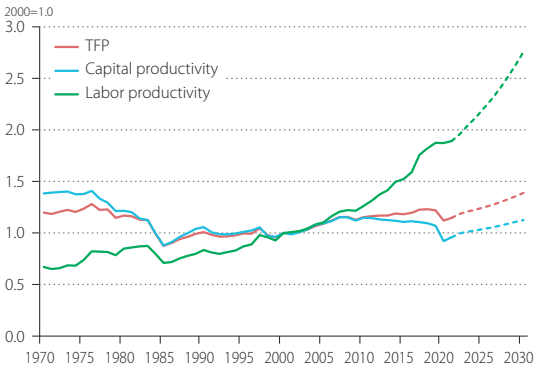

Figure 8 Productivity Indicators

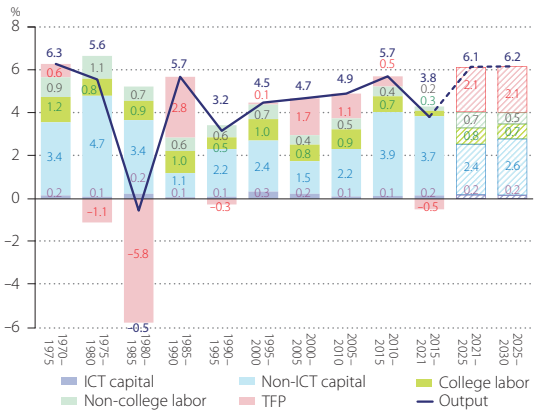

Figure 9 Decomposition of Economic Growth

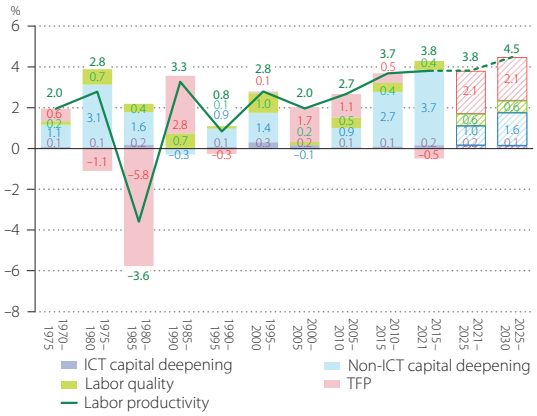

Figure 10 Decomposition of Labor Productivity Growth

Singapore

Key Indicators

GDP in 2021	652	Billions of US dollars (as of 2021)
(exchange rate based)	424	Billions of US dollars (as of 2021)
Per capita GDP in 2021	119.6	Thousands of US dollars (as of 2021)
(exchange rate based)	77.7	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	175.9	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	80.7	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	154.4	US dollars (as of 2021)
Energy productivity levels in 2020	32.2	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	76.9	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	3,483	Thousands persons
Employment rate in 2021	63.9	%
Female employment share in 2021	47.9	%
Average schooling years of workers in 2021	10.8	Years
Investment share in 2021	23.1	%
ICT investment share in GFCF in 2021	32.2	%
Agriculture share in GDP in 2021	0.0	%
Manufacturing share in GDP in 2021	22.0	%
Agriculture share in employment in 2021	0.6	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	8.4	7.1	7.4	6.1	3.9	3.3	1.1	–2.7	7.4	3.5	0.3	2.5	1.8
Labor input growth	6.1	6.3	6.5	5.0	2.3	1.0	2.8	–1.5	0.3	2.4	0.2	0.1	0.1
Labor quality growth	1.2	2.2	3.0	1.6	1.6	1.9	1.7	1.9	3.3	0.3	0.8	0.8	0.8
Hours worked growth	4.9	4.1	3.6	3.4	0.7	–0.9	1.2	–3.4	–3.0	2.1	–0.6	–0.7	–0.7
College labor input growth	9.7	13.5	17.8	9.5	5.3	3.9	5.3	1.1	4.9	1.9	0.9	0.9	0.9
Non-college labor input growth	5.7	5.2	2.7	2.0	–0.6	–2.3	0.1	–4.5	–5.7	3.1	–0.8	–0.9	–0.9
ICT capital input growth	14.9	23.1	14.5	10.5	12.5	8.8	6.7	5.6	7.2	14.6	13.1	10.8	11.4
Non-ICT capital input growth	8.8	6.8	6.1	3.4	2.5	1.5	2.2	1.2	–2.1	0.6	0.6	0.4	0.4
Per-worker labor productivity growth	3.2	3.7	4.4	2.3	2.7	3.4	–0.5	–1.1	10.0	3.9	0.8	3.1	2.3
Per-hour labor productivity growth	3.5	3.0	3.8	2.6	3.3	4.2	–0.1	0.7	10.5	1.4	0.9	3.2	2.5
Capital productivity growth	–8.9	–7.6	–6.7	–3.9	–3.4	–2.3	–2.7	–1.9	1.0	1.2	–1.8	0.9	0.1
TFP growth	0.9	0.2	0.8	1.7	1.1	1.8	–1.7	–3.1	9.5	1.2	–0.9	1.6	0.8

Production

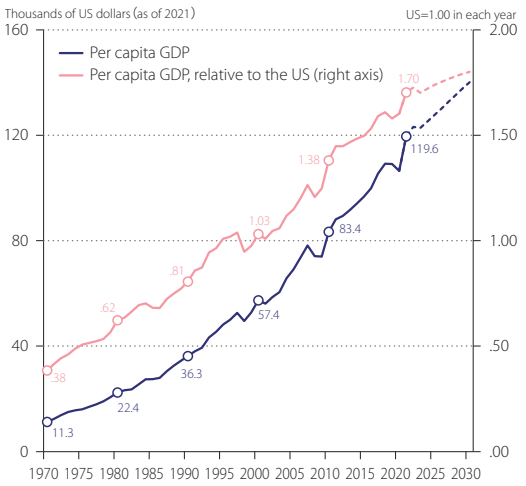

Figure 1 Per Capita GDP

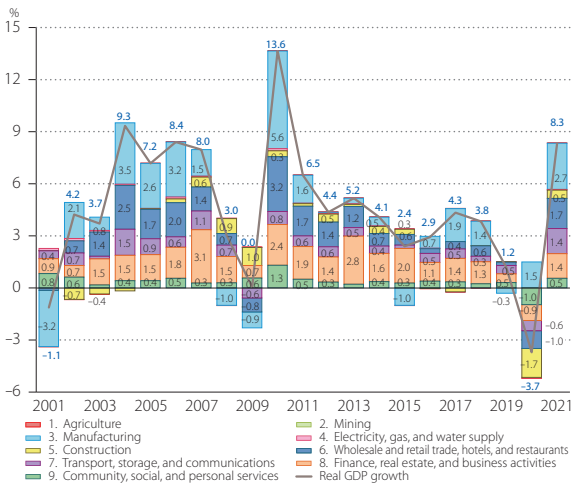

Figure 2 Industry Origins of Economic Growth

Labor

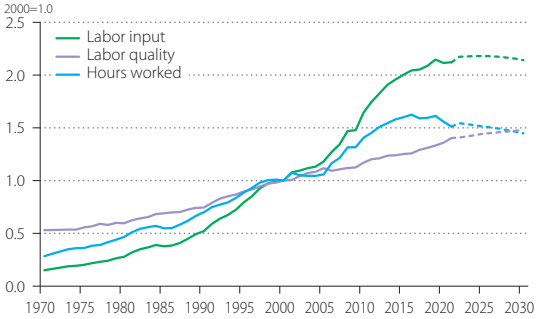

Figure 3 Labor Inputs

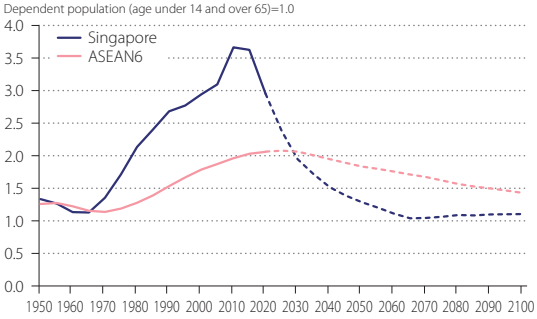

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

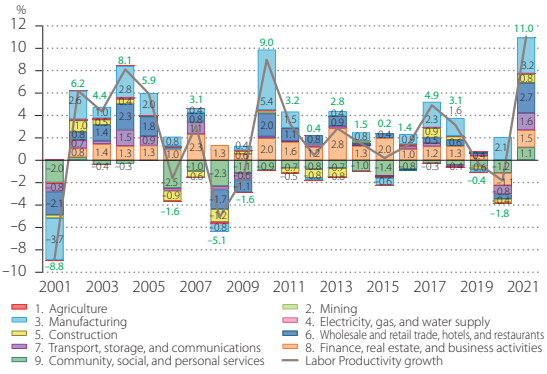

Figure 7 Industry Origins of Labor Productivity Growth

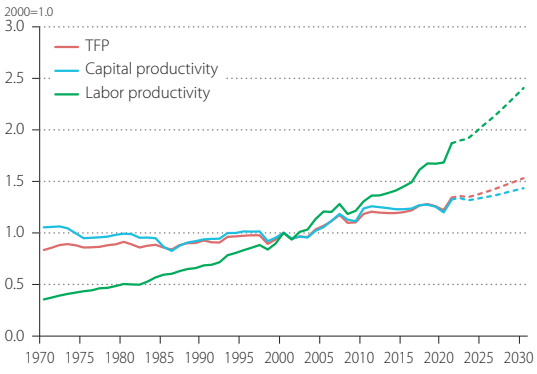

Figure 8 Productivity Indicators

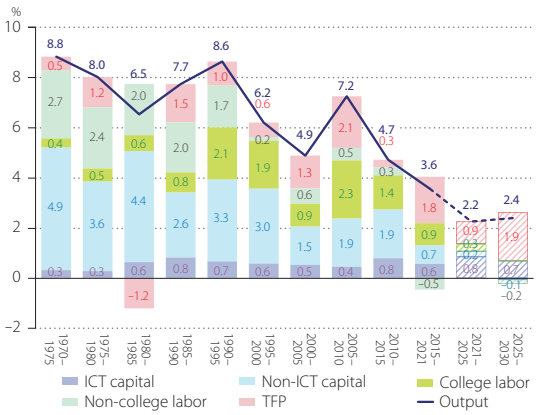

Figure 9 Decomposition of Economic Growth

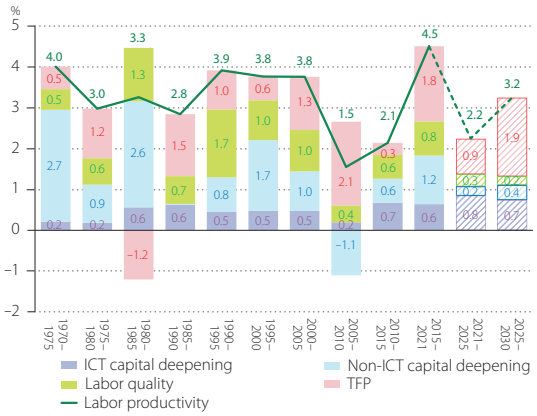

Figure 10 Decomposition of Labor Productivity Growth

Sri Lanka

Key Indicators

GDP in 2021	318	Billions of US dollars (as of 2021)
(exchange rate based)	89	Billions of US dollars (as of 2021)
Per capita GDP in 2021	14.4	Thousands of US dollars (as of 2021)
(exchange rate based)	4.0	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	35.6	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	18.5	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	45.1	US dollars (as of 2021)
Energy productivity levels in 2020	31.4	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	72.5	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	8,114	Thousands persons
Employment rate in 2021	36.6	%
Female employment share in 2021	33.3	%
Average schooling years of workers in 2021	11.7	Years
Investment share in 2021	35.0	%
ICT investment share in GFCF in 2021	2.8	%
Agriculture share in GDP in 2021	9.3	%
Manufacturing share in GDP in 2021	19.1	%
Agriculture share in employment in 2021	27.3	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	4.1	4.2	5.2	5.7	3.8	1.6	0.7	−2.8	0.4	−8.5	−12.2	4.4	−1.4
Labor input growth	2.3	2.8	3.3	1.4	1.3	1.6	2.3	−2.3	2.4	3.2	1.6	1.7	1.7
Labor quality growth	0.6	1.1	1.0	0.7	0.9	1.0	0.4	−0.2	1.0	2.3	0.8	0.8	0.8
Hours worked growth	1.8	1.7	2.3	0.7	0.3	0.6	1.9	−2.1	1.3	1.0	0.9	0.9	0.8
College labor input growth	0.6	12.0	6.9	4.3	4.1	4.7	8.0	−2.4	6.0	2.7	2.2	2.2	2.2
Non-college labor input growth	2.5	1.6	2.3	0.2	−0.6	−0.6	−1.9	−2.2	−0.6	3.7	1.1	1.2	1.1
ICT capital input growth	13.2	5.9	8.4	22.3	13.1	15.5	14.2	12.0	15.5	26.0	13.8	5.5	8.5
Non-ICT capital input growth	4.3	3.6	2.3	4.5	6.1	5.2	6.1	4.6	2.4	3.6	2.9	1.8	2.2
Per-worker labor productivity growth	2.7	2.6	3.0	4.3	3.7	1.0	−1.3	−0.6	−1.0	−9.5	−13.2	3.4	−2.4
Per-hour labor productivity growth	2.4	2.5	2.9	5.0	3.5	1.0	−1.2	−0.7	−1.0	−9.5	−13.1	3.6	−2.2
Capital productivity growth	−4.3	−3.5	−2.3	−4.8	−6.3	−5.6	−6.4	−4.9	−3.0	−13.0	−15.5	2.5	−3.9
TFP growth	0.7	0.9	2.4	2.3	−1.0	−2.6	−4.5	−5.4	−1.7	−12.6	−15.0	2.6	−3.6

Production

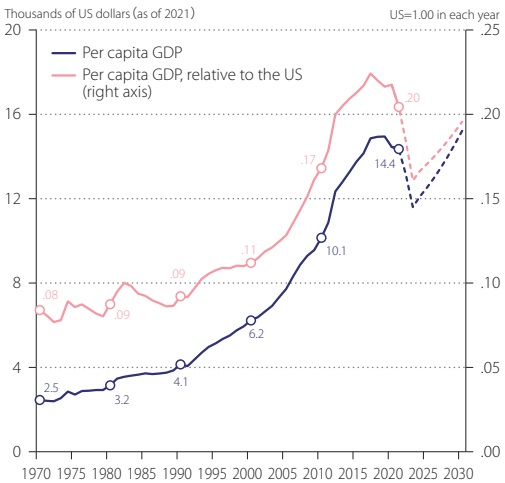

Figure 1 Per Capita GDP

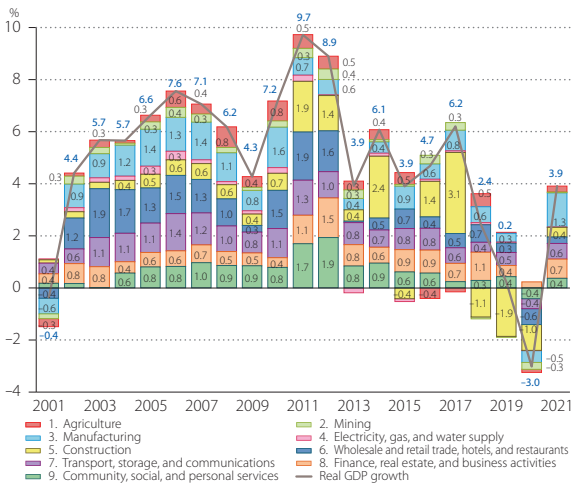

Figure 2 Industry Origins of Economic Growth

Labor

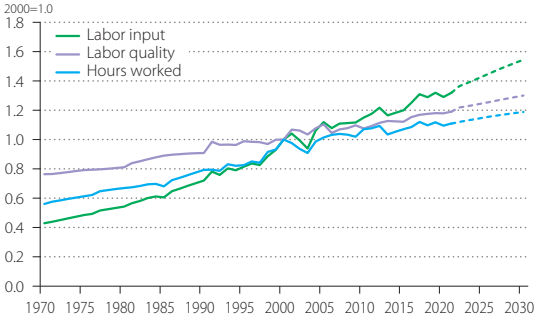

Figure 3 Labor Inputs

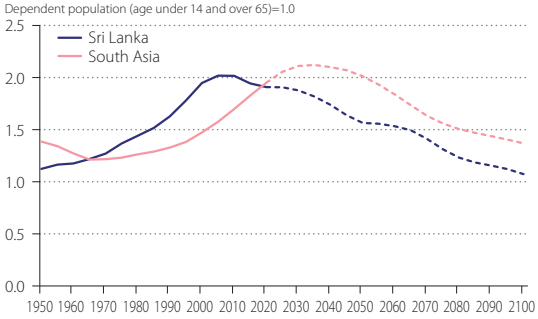

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

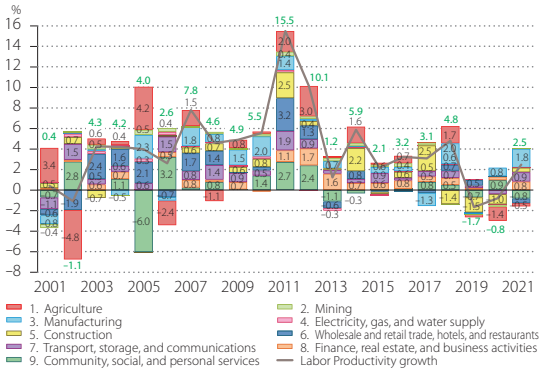

Figure 7 Industry Origins of Labor Productivity Growth

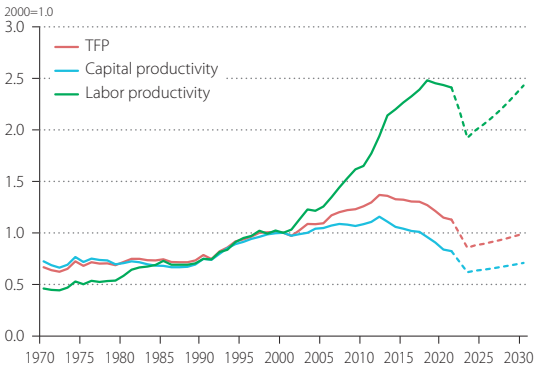

Figure 8 Productivity Indicators

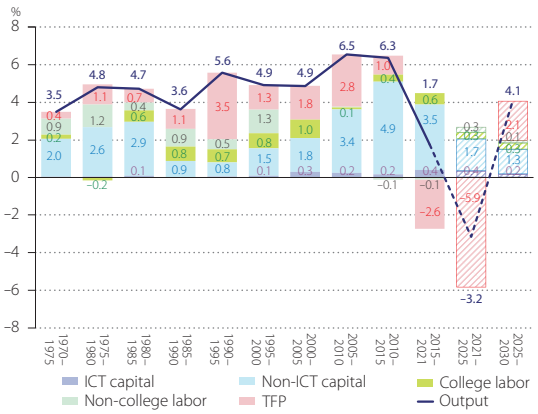

Figure 9 Decomposition of Economic Growth

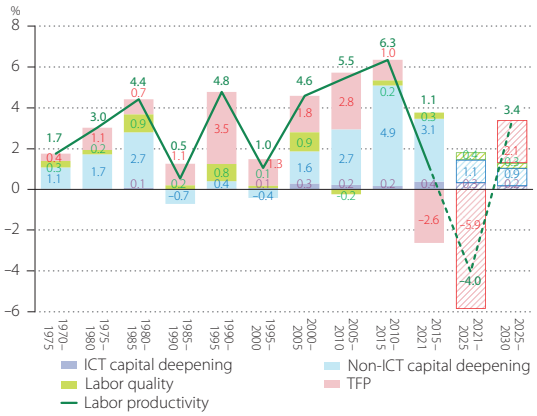

Figure 10 Decomposition of Labor Productivity Growth

Thailand

Key Indicators

GDP in 2021	1,328	Billions of US dollars (as of 2021)
(exchange rate based)	512	Billions of US dollars (as of 2021)
Per capita GDP in 2021	19.2	Thousands of US dollars (as of 2021)
(exchange rate based)	7.4	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	33.0	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	16.3	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	42.7	US dollars (as of 2021)
Energy productivity levels in 2020	12.7	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	198.5	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	37,649	Thousands persons
Employment rate in 2021	54.5	%
Female employment share in 2021	48.3	%
Average schooling years of workers in 2021	9.3	Years
Investment share in 2021	29.5	%
ICT investment share in GFCF in 2021	13.4	%
Agriculture share in GDP in 2021	8.7	%
Manufacturing share in GDP in 2021	27.2	%
Agriculture share in employment in 2021	32.0	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	7.0	7.8	4.6	4.6	1.7	0.5	2.3	−4.8	−1.3	2.6	2.6	3.2	3.1
Labor input growth	7.7	7.0	5.4	4.0	0.7	−0.5	−1.2	−1.1	−5.7	10.4	1.5	1.3	1.3
Labor quality growth	3.2	4.2	4.6	3.3	2.3	0.9	0.5	2.4	−2.5	4.8	1.9	1.8	1.8
Hours worked growth	4.5	2.8	0.7	0.7	−1.6	−1.4	−1.7	−3.6	−3.2	5.7	−0.4	−0.5	−0.5
College labor input growth	15.1	11.3	6.8	3.9	2.8	1.0	−0.6	2.7	−4.5	10.8	2.7	2.4	2.5
Non-college labor input growth	6.2	5.0	4.1	4.3	−1.5	−2.3	−1.8	−5.7	−7.2	10.0	−0.1	−0.3	−0.3
ICT capital input growth	14.4	20.5	13.1	13.9	5.1	0.6	1.6	−0.7	1.0	8.5	5.7	4.6	4.8
Non-ICT capital input growth	5.1	6.5	7.2	1.7	2.1	2.4	2.5	3.2	−0.1	1.5	1.3	1.4	1.4
Per-worker labor productivity growth	3.0	4.2	3.4	3.1	2.5	1.7	4.3	−7.4	2.1	2.6	2.8	3.5	3.4
Per-hour labor productivity growth	2.0	4.7	3.7	3.8	3.8	3.0	3.8	−2.7	4.7	−3.1	3.0	3.8	3.6
Capital productivity growth	−5.2	−6.8	−7.4	−2.4	−2.4	−2.2	−2.4	−3.0	0.0	0.5	1.0	1.6	1.4
TFP growth	0.3	0.6	−2.2	1.4	0.5	0.4	1.0	−7.6	3.7	−2.6	1.1	1.7	1.6

Production

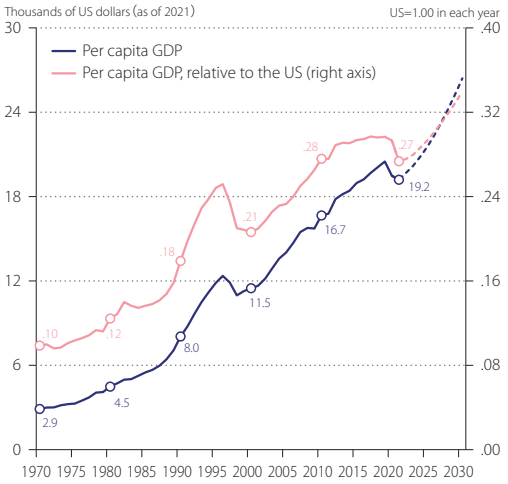

Figure 1 Per Capita GDP

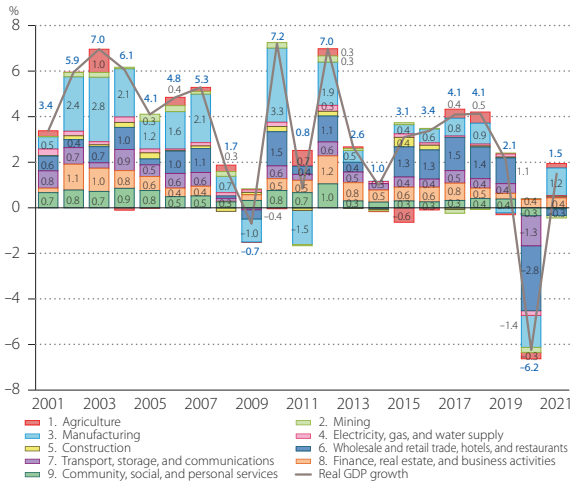

Figure 2 Industry Origins of Economic Growth

Labor

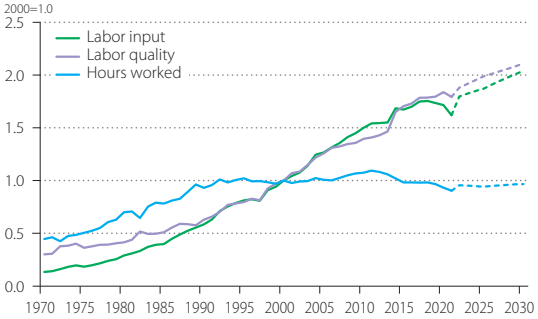

Figure 3 Labor Inputs

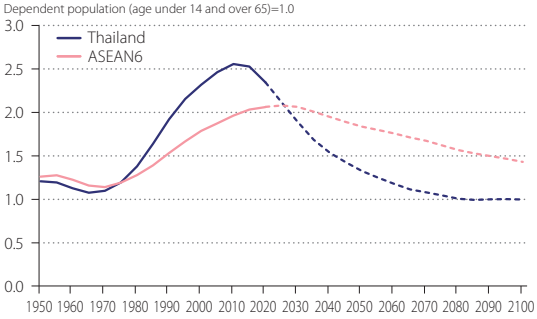

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

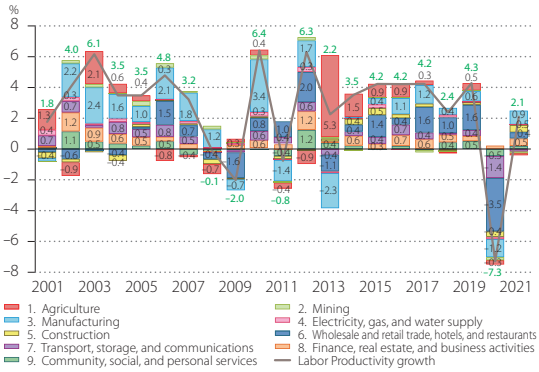

Figure 7 Industry Origins of Labor Productivity Growth

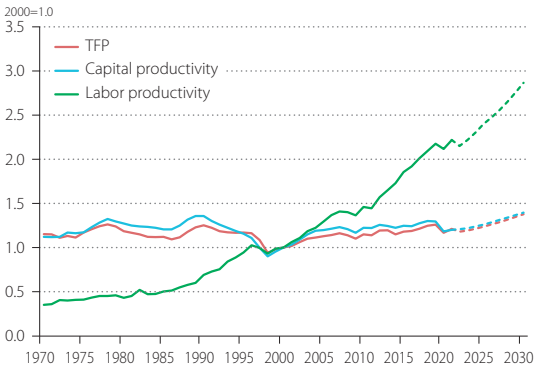

Figure 8 Productivity Indicators

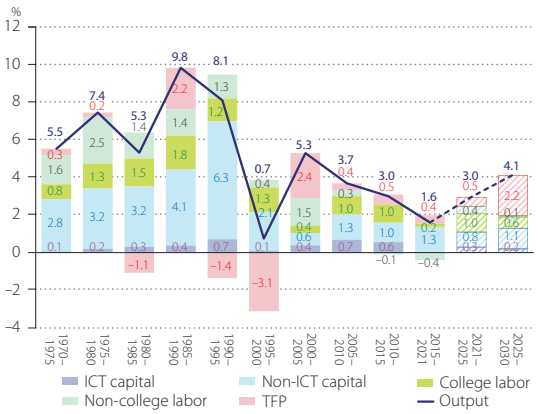

Figure 9 Decomposition of Economic Growth

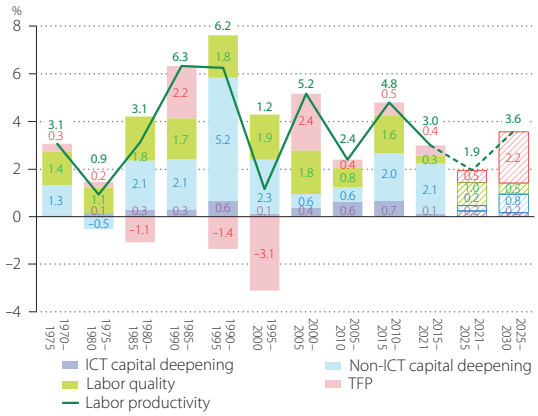

Figure 10 Decomposition of Labor Productivity Growth

Turkiye

Key Indicators

GDP in 2021	3,134	Billions of US dollars (as of 2021)
(exchange rate based)	819	Billions of US dollars (as of 2021)
Per capita GDP in 2021	37.0	Thousands of US dollars (as of 2021)
(exchange rate based)	9.7	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	90.0	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	46.0	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	113.7	US dollars (as of 2021)
Energy productivity levels in 2020	23.2	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	146.9	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	30,901	Thousands persons
Employment rate in 2021	36.5	%
Female employment share in 2021	29.8	%
Average schooling years of workers in 2021	9.4	Years
Investment share in 2021	31.9	%
ICT investment share in GFCF in 2021	6.2	%
Agriculture share in GDP in 2021	6.2	%
Manufacturing share in GDP in 2021	24.8	%
Agriculture share in employment in 2021	17.3	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	3.9	4.9	3.5	4.3	6.2	5.7	3.1	1.4	10.8	5.4	3.0	3.5	3.4
Labor input growth	4.0	4.3	2.3	4.2	3.8	3.0	–0.9	–4.7	14.9	3.3	1.3	1.1	1.1
Labor quality growth	1.2	1.2	1.7	2.2	2.0	1.9	2.4	3.6	0.7	–0.8	1.1	1.1	1.1
Hours worked growth	2.8	3.1	0.6	2.0	1.8	1.1	–3.3	–8.4	14.2	4.1	0.1	0.0	0.0
College labor input growth	12.7	7.1	5.8	9.0	7.5	6.1	5.6	1.6	13.6	4.8	2.9	2.7	2.8
Non-college labor input growth	3.4	3.9	1.7	2.6	1.6	1.1	–5.0	–9.1	15.7	2.1	0.0	–0.2	–0.1
ICT capital input growth	14.1	15.6	15.5	9.0	10.3	7.7	6.3	9.3	8.9	13.0	9.6	8.2	8.5
Non-ICT capital input growth	6.6	3.8	4.2	5.0	5.1	5.0	5.4	4.8	3.4	4.3	3.9	3.7	3.8
Per-worker labor productivity growth	1.3	2.2	2.9	2.7	3.4	3.3	5.4	6.0	–2.8	5.0	2.8	3.4	3.3
Per-hour labor productivity growth	1.2	1.8	2.9	2.4	4.4	4.6	6.4	9.8	–3.4	1.4	2.9	3.5	3.4
Capital productivity growth	–6.6	–3.9	–4.3	–5.1	–5.2	–5.0	–5.4	–4.9	–3.4	0.8	–1.1	–0.4	–0.5
TFP growth	–2.1	0.8	–0.4	–0.5	1.6	1.6	–0.1	0.5	3.5	1.3	–0.1	0.6	0.4

Production

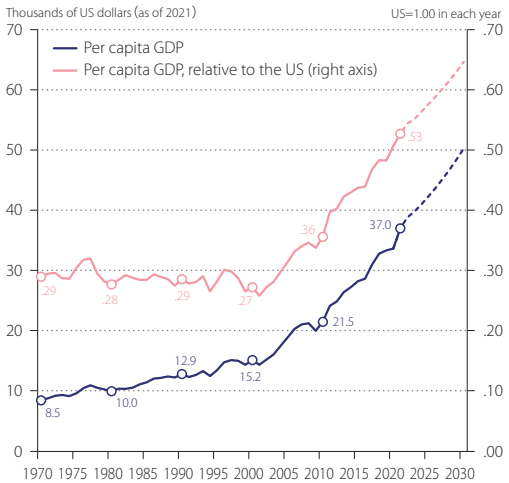

Figure 1 Per Capita GDP

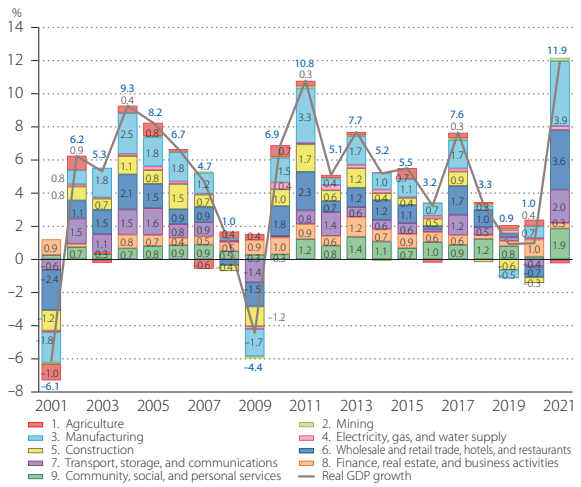

Figure 2 Industry Origins of Economic Growth

Labor

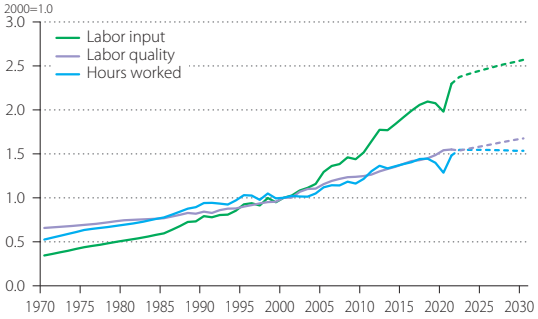

Figure 3 Labor Inputs

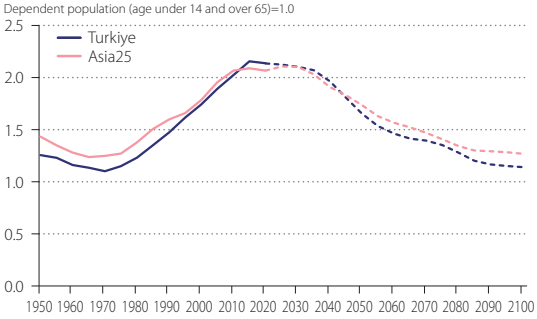

Figure 4 Demographic Dividend

Productivity

Figure 5 Per-Worker Labor Productivity Level

Figure 6 Per-Hour Labor Productivity Level

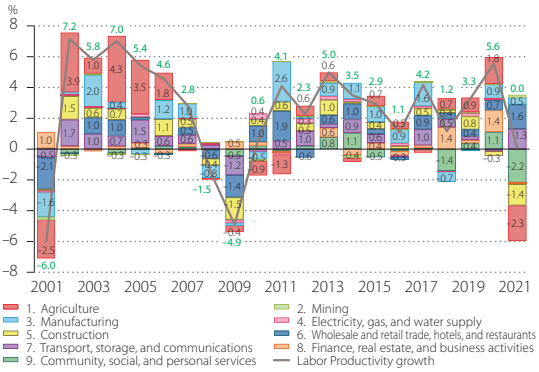

Figure 7 Industry Origins of Labor Productivity Growth

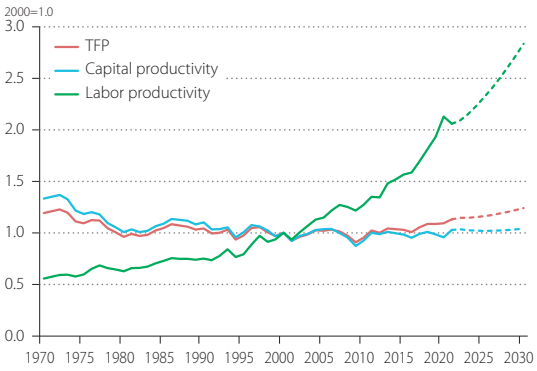

Figure 8 Productivity Indicators

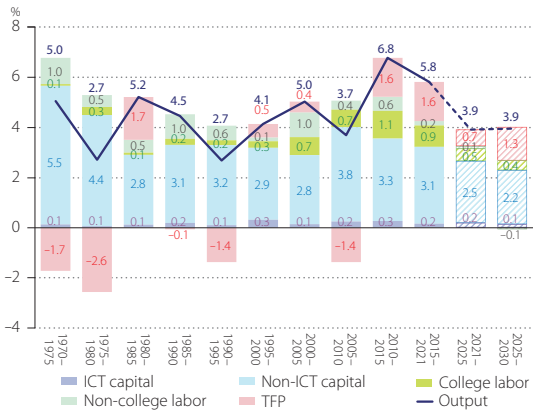

Figure 9 Decomposition of Economic Growth

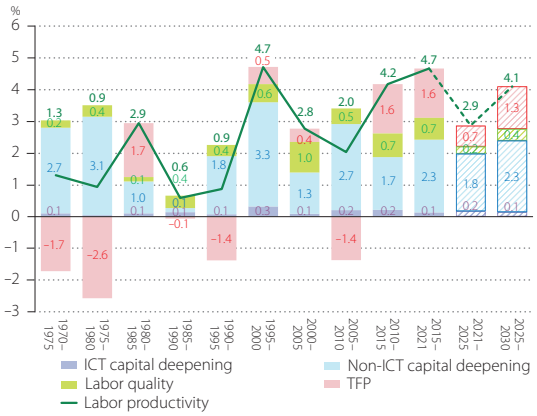

Figure 10 Decomposition of Labor Productivity Growth

App.

Vietnam

Key Indicators

GDP in 2021	1,192	Billions of US dollars (as of 2021)
(exchange rate based)	367	Billions of US dollars (as of 2021)
Per capita GDP in 2021	12.1	Thousands of US dollars (as of 2021)
(exchange rate based)	3.7	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	20.5	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	9.6	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	24.4	US dollars (as of 2021)
Energy productivity levels in 2020	15.4	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	286.4	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	52,760	Thousands persons
Employment rate in 2021	53.6	%
Female employment share in 2021	46.5	%
Average schooling years of workers in 2021	9.2	Years
Investment share in 2021	33.6	%
ICT investment share in GFCF in 2021	4.6	%
Agriculture share in GDP in 2021	13.8	%
Manufacturing share in GDP in 2021	27.0	%
Agriculture share in employment in 2021	29.1	%

(%: average annual growth rate)	1970–80	1980–90	1990–2000	2000–10	2010–21	2015–21	2018–19	2019–20	2020–21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	4.6	3.2	8.0	7.4	5.6	6.3	6.3	3.4	5.4	7.7	3.3	5.9	5.2
Labor input growth	5.2	3.6	2.7	4.4	1.3	1.4	5.9	1.1	−6.6	4.1	2.2	2.1	2.1
Labor quality growth	1.0	0.4	0.3	2.4	1.4	1.9	3.4	2.3	−1.3	1.5	1.0	1.0	1.0
Hours worked growth	4.2	3.2	2.5	2.0	−0.2	−0.6	2.5	−1.1	−5.3	2.7	1.1	1.1	1.1
College labor input growth	7.8	15.8	6.3	10.5	4.6	0.0	−2.0	1.2	−15.3	5.4	3.4	3.3	3.3
Non-college labor input growth	5.2	3.4	2.5	3.6	0.5	1.7	7.9	1.1	−4.7	3.8	1.9	1.8	1.8
ICT capital input growth	12.1	17.9	15.5	21.7	18.0	13.7	11.6	10.0	10.8	15.9	13.1	9.6	10.3
Non-ICT capital input growth	5.2	6.8	8.1	10.7	5.7	6.1	6.1	6.3	6.1	5.2	5.6	5.5	5.6
Per-worker labor productivity growth	0.5	−0.1	5.8	5.0	5.1	6.4	5.5	5.3	7.4	6.3	1.9	4.6	3.8
Per-hour labor productivity growth	0.4	−0.1	5.5	5.4	5.8	6.8	3.8	4.6	10.7	5.0	2.1	4.8	4.1
Capital productivity growth	−5.2	−6.8	−8.1	−10.7	−5.8	−6.2	−6.2	−6.3	−6.1	2.3	−2.5	0.4	−0.5
TFP growth	−0.5	−2.0	2.0	−0.9	1.9	2.3	0.0	−0.5	5.4	2.9	−0.9	1.9	1.1

Production

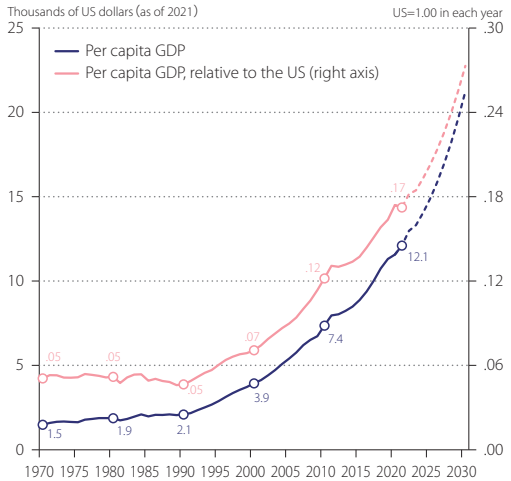

Figure 1 Per Capita GDP

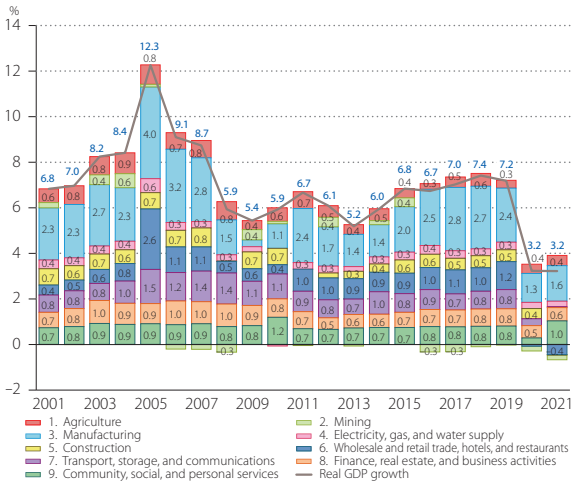

Figure 2 Industry Origins of Economic Growth

Labor

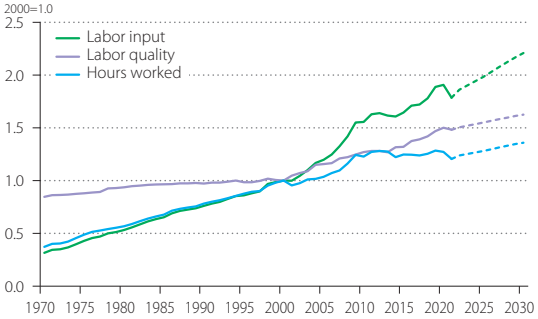

Figure 3 Labor Inputs

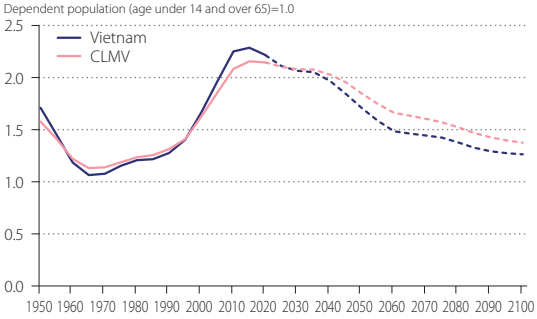

Figure 4 Demographic Dividend

Productivity

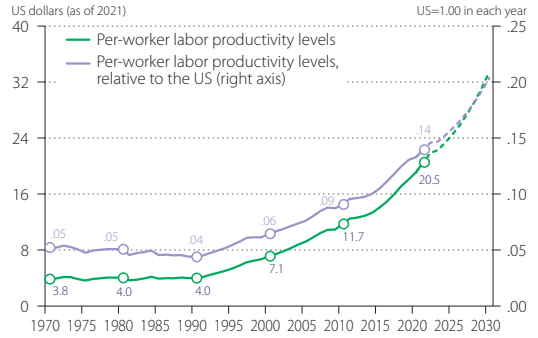

Figure 5 Per-Worker Labor Productivity Level

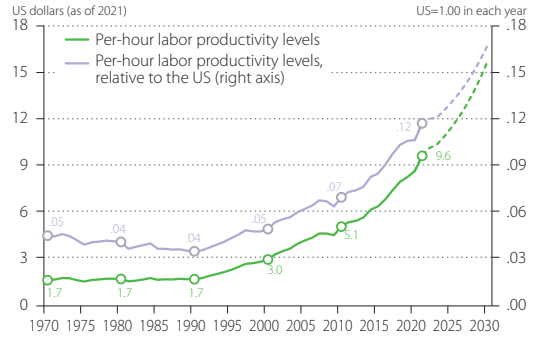

Figure 6 Per-Hour Labor Productivity Level

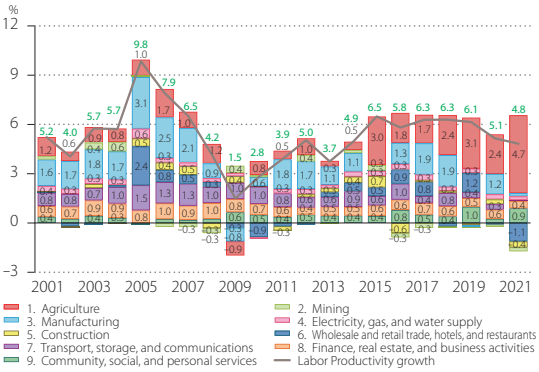

Figure 7 Industry Origins of Labor Productivity Growth

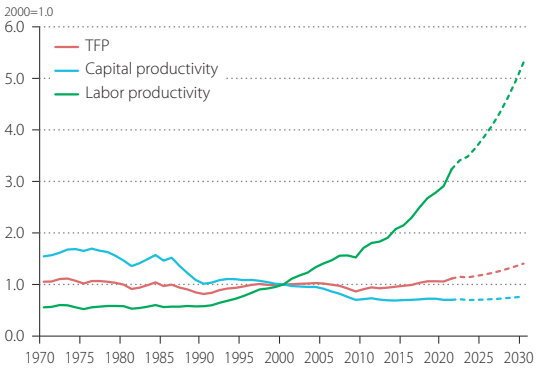

Figure 8 Productivity Indicators

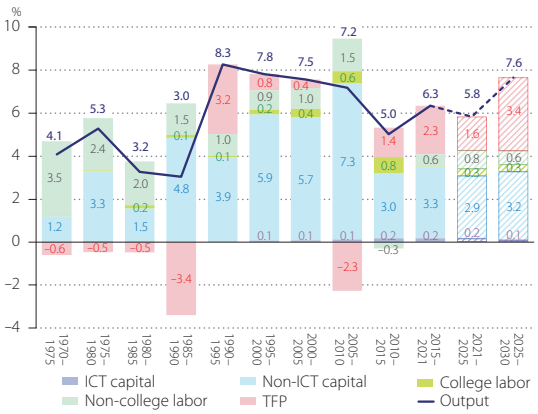

Figure 9 Decomposition of Economic Growth

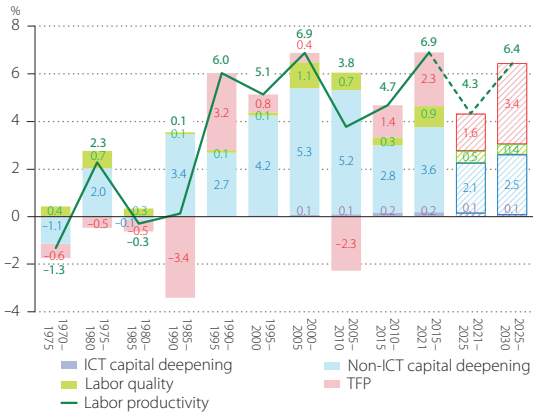

Figure 10 Decomposition of Labor Productivity Growth

APO21

Key Indicators

GDP in 2021	37,223	Billions of US dollars (as of 2021)
(exchange rate based)	18,158	Billions of US dollars (as of 2021)
Per capita GDP in 2021	13.2	Thousands of US dollars (as of 2021)
(exchange rate based)	6.4	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	31.1	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	15.0	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	41.8	US dollars (as of 2021)
Energy productivity levels in 2020	16.9	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	n.a.	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	1,146,891	Thousands persons
Employment rate in 2021	40.6	%
Female employment share in 2021	32.0	%
Average schooling years of workers in 2021	7.9	Years
Investment share in 2021	28.6	%
ICT investment share in GFCF in 2021	8.2	%
Agriculture share in GDP in 2021	10.4	%
Manufacturing share in GDP in 2021	19.6	%
Agriculture share in employment in 2021	34.0	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	4.8	5.1	3.7	4.3	3.7	3.3	1.9	–2.9	6.9	4.4	3.5	4.2	4.1
Labor input growth	3.2	3.3	2.7	2.9	2.0	1.4	1.8	0.3	0.4	3.5	2.2	2.2	2.2
Labor quality growth	0.6	1.1	1.1	1.4	1.1	0.7	0.7	0.5	0.2	1.6	1.4	1.4	1.4
Hours worked growth	2.6	2.2	1.6	1.6	0.9	0.7	1.1	–0.3	0.2	1.9	0.8	0.8	0.8
College labor input growth	8.9	8.1	6.3	5.9	3.6	2.5	2.9	1.4	0.9	4.7	3.0	3.0	3.0
Non-college labor input growth	2.5	2.4	1.7	1.7	1.2	0.8	1.3	–0.3	0.1	2.8	1.8	1.8	1.8
ICT capital input growth	12.4	18.0	10.9	6.7	5.5	5.1	5.4	4.8	4.4	2.6	2.8	2.8	2.8
Non-ICT capital input growth	5.0	4.3	3.8	3.2	3.7	3.8	4.1	3.5	2.9	3.0	3.3	3.4	3.4
Per-worker labor productivity growth	2.1	3.0	2.1	2.6	2.5	2.3	1.4	–3.1	5.1	3.6	2.7	3.4	3.2
Per-hour labor productivity growth	2.1	2.9	2.1	2.7	2.7	2.5	1.4	–2.8	5.8	2.5	2.8	3.4	3.3
Capital productivity growth	–5.1	–4.7	–4.1	–3.4	–3.8	–3.9	–4.1	–3.6	–2.9	1.2	0.1	0.7	0.5
TFP growth	0.5	1.2	0.3	1.1	0.7	0.6	–0.5	–4.9	4.3	1.4	1.0	1.7	1.5

Production

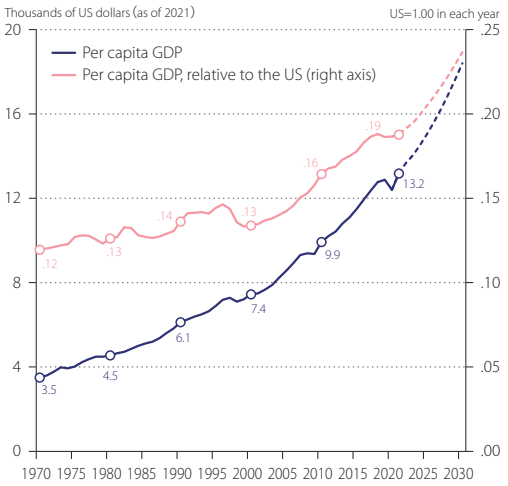

Figure 1 Per Capita GDP

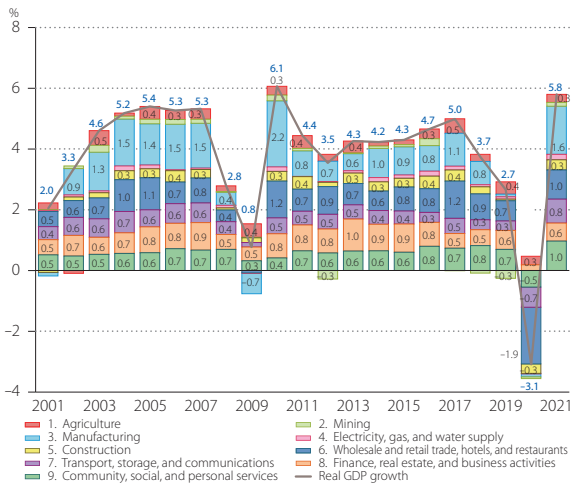

Figure 2 Industry Origins of Economic Growth

Labor

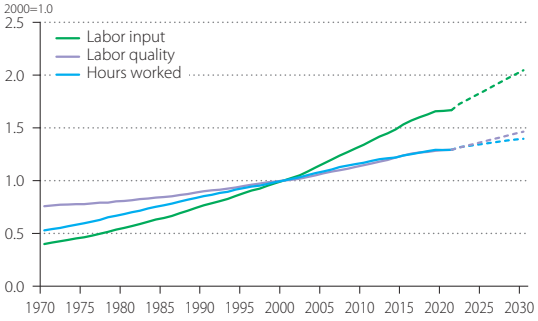

Figure 3 Labor Inputs

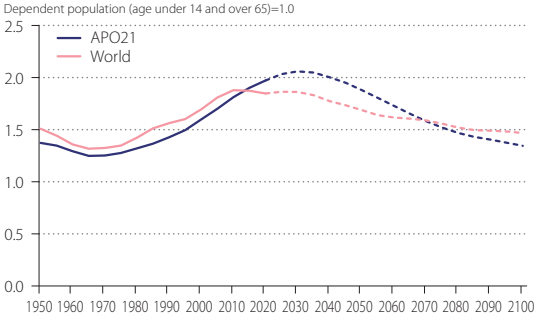

Figure 4 Demographic Dividend

Productivity

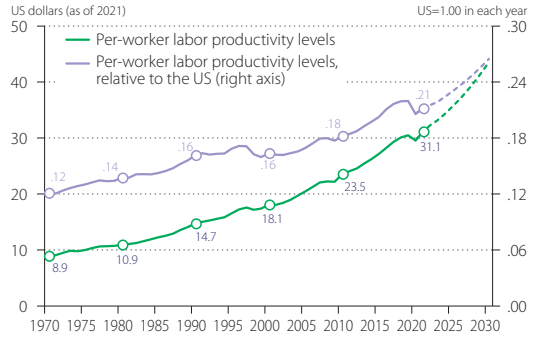

Figure 5 Per-Worker Labor Productivity Level

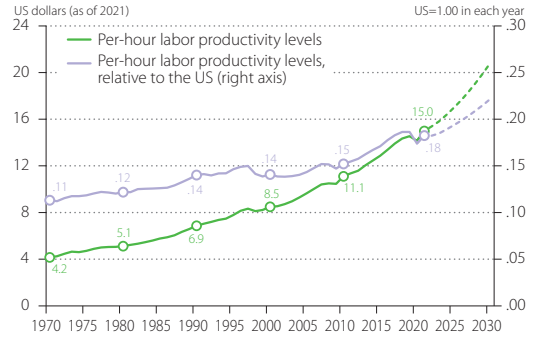

Figure 6 Per-Hour Labor Productivity Level

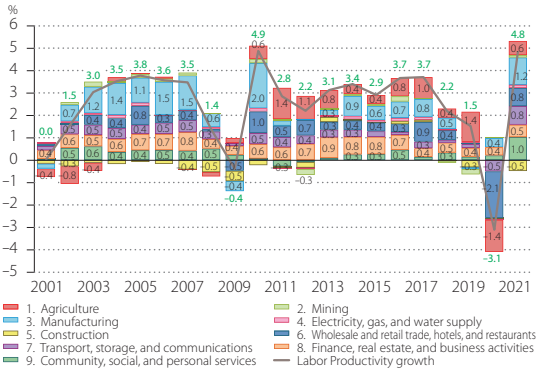

Figure 7 Industry Origins of Labor Productivity Growth

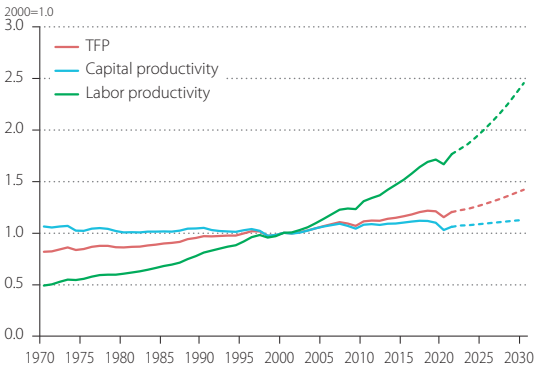

Figure 8 Productivity Indicators

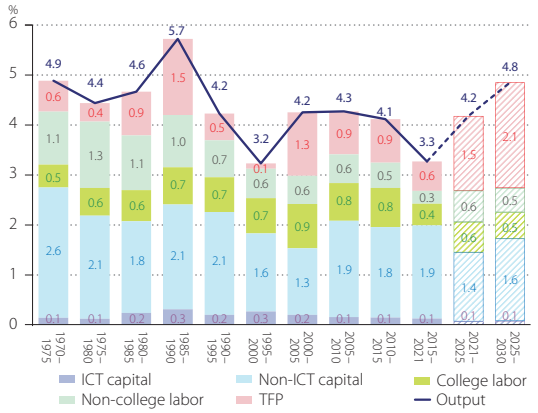

Figure 9 Decomposition of Economic Growth

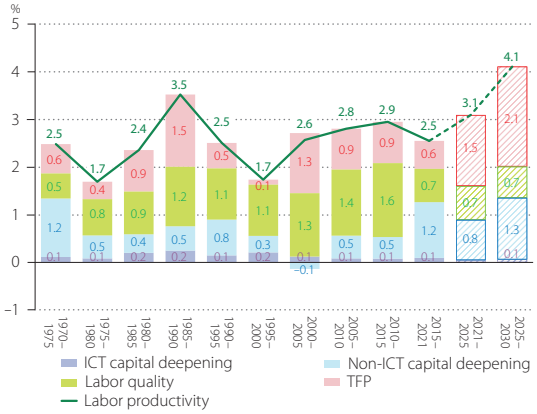

Figure 10 Decomposition of Labor Productivity Growth

Asia25

Key Indicators

GDP in 2021	65,216	Billions of US dollars (as of 2021)
(exchange rate based)	36,904	Billions of US dollars (as of 2021)
Per capita GDP in 2021	15.2	Thousands of US dollars (as of 2021)
(exchange rate based)	8.6	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	32.7	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	15.7	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	48.4	US dollars (as of 2021)
Energy productivity levels in 2020	13.9	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	n.a.	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	1,915,385	Thousands persons
Employment rate in 2021	44.6	%
Female employment share in 2021	n.a.	%
Average schooling years of workers in 2021	n.a.	Years
Investment share in 2021	33.8	%
ICT investment share in GFCF in 2021	7.6	%
Agriculture share in GDP in 2021	9.0	%
Manufacturing share in GDP in 2021	22.6	%
Agriculture share in employment in 2021	29.5	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	4.8	5.4	4.7	5.9	4.6	4.1	2.9	−1.3	7.5	3.8	3.9	4.3	4.2
Labor input growth	3.3	3.6	2.8	2.8	0.8	0.2	−0.2	0.0	−1.0	2.6	0.6	0.6	0.6
Labor quality growth	0.6	1.0	1.3	1.5	0.5	−0.1	−0.7	0.5	0.1	1.8	0.8	0.8	0.8
Hours worked growth	2.7	2.6	1.6	1.2	0.3	0.3	0.6	−0.4	−1.0	0.8	−0.2	−0.2	−0.2
College labor input growth	9.3	9.0	7.9	8.0	4.3	2.0	1.5	0.6	−0.9	4.8	2.6	2.6	2.6
Non-college labor input growth	3.0	3.2	2.2	1.8	−0.1	−0.3	−0.7	−0.1	−1.0	1.9	0.0	−0.1	0.0
ICT capital input growth	12.4	18.1	11.2	8.9	9.3	8.1	8.5	6.9	5.1	4.4	4.3	4.2	4.2
Non-ICT capital input growth	5.2	4.7	4.6	5.3	5.9	5.6	5.7	4.9	4.5	4.6	4.6	4.5	4.5
Per-worker labor productivity growth	2.0	2.9	3.3	4.7	4.0	3.8	2.8	−1.2	6.8	3.9	4.0	4.3	4.2
Per-hour labor productivity growth	2.0	2.9	3.2	4.6	4.3	3.8	2.7	−1.0	8.1	3.0	4.1	4.5	4.4
Capital productivity growth	−5.3	−5.0	−4.8	−5.6	−6.1	−5.7	−5.9	−5.1	−4.4	−1.1	−1.0	−0.6	−0.7
TFP growth	0.4	1.2	0.9	1.6	1.1	1.1	0.3	−4.1	5.1	0.5	1.5	1.9	1.8

Production

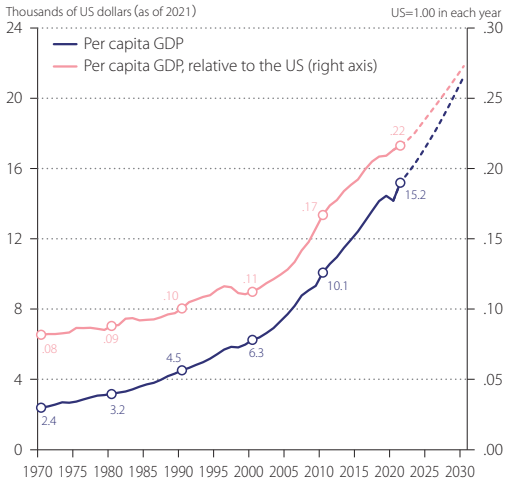

Figure 1 Per Capita GDP

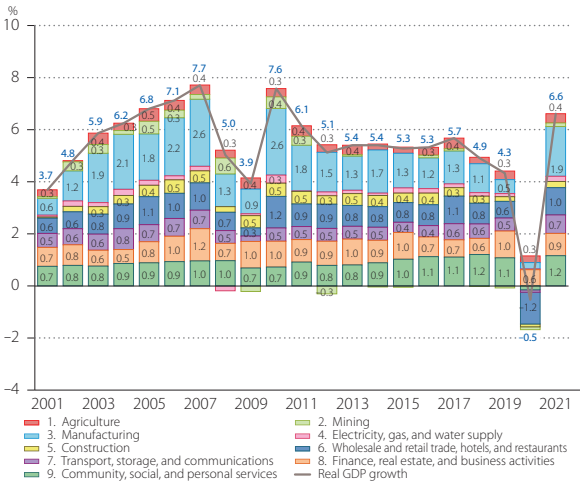

Figure 2 Industry Origins of Economic Growth

Labor

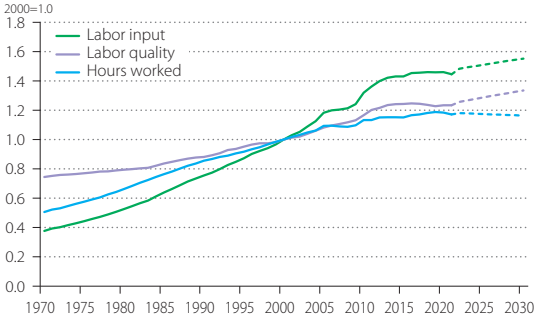

Figure 3 Labor Inputs

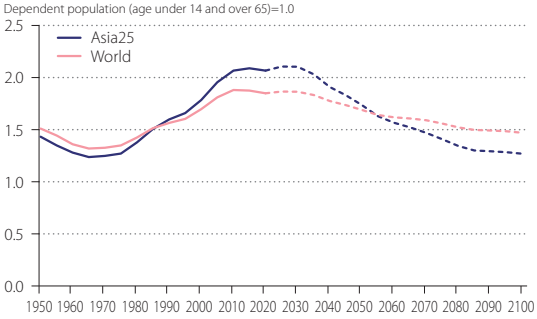

Figure 4 Demographic Dividend

Productivity

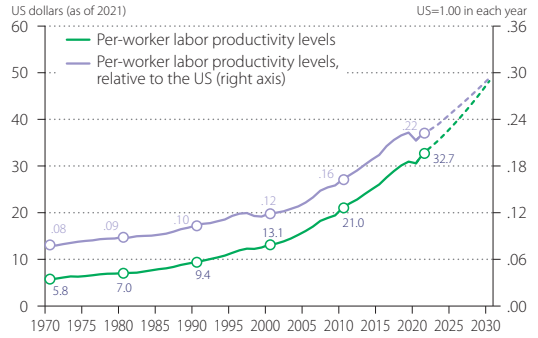

Figure 5 Per-Worker Labor Productivity Level

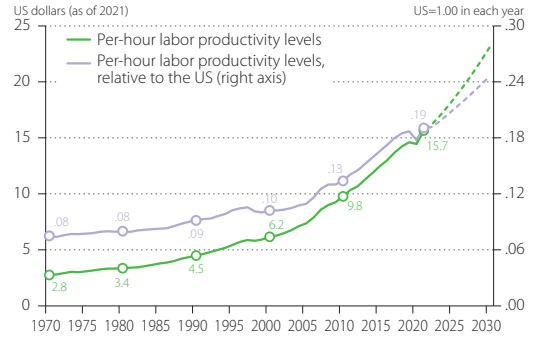

Figure 6 Per-Hour Labor Productivity Level

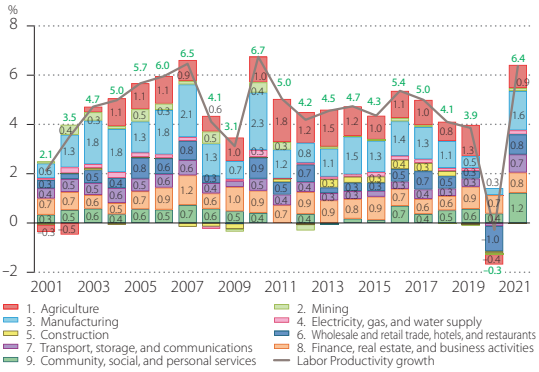

Figure 7 Industry Origins of Labor Productivity Growth

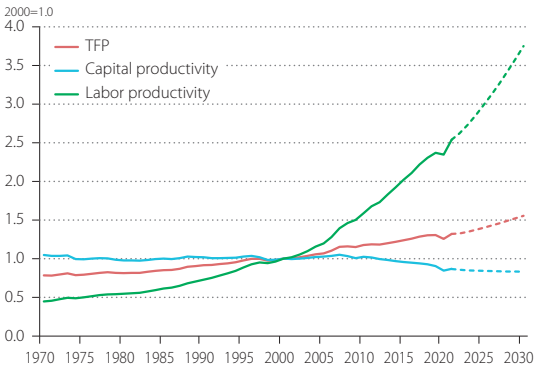

Figure 8 Productivity Indicators

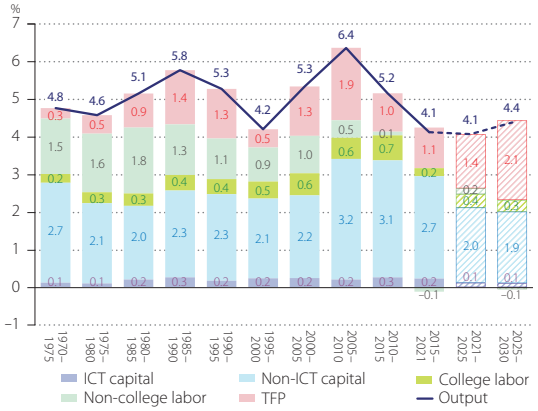

Figure 9 Decomposition of Economic Growth

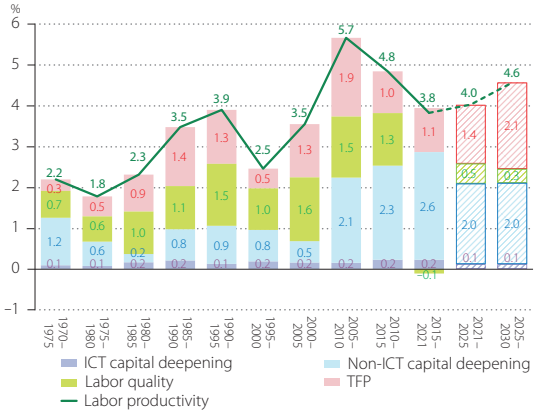

Figure 10 Decomposition of Labor Productivity Growth

East Asia

Key Indicators

GDP in 2021	38,083	Billions of US dollars (as of 2021)
(exchange rate based)	26,678	Billions of US dollars (as of 2021)
Per capita GDP in 2021	23.4	Thousands of US dollars (as of 2021)
(exchange rate based)	16.4	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	42.8	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	20.6	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	69.5	US dollars (as of 2021)
Energy productivity levels in 2020	12.6	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	n.a.	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	856,791	Thousands persons
Employment rate in 2021	52.8	%
Female employment share in 2021	42.4	%
Average schooling years of workers in 2021	10.2	Years
Investment share in 2021	37.0	%
ICT investment share in GFCF in 2021	8.0	%
Agriculture share in GDP in 2021	5.7	%
Manufacturing share in GDP in 2021	25.4	%
Agriculture share in employment in 2021	19.8	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	5.3	5.8	4.7	5.9	4.6	4.2	3.3	0.0	7.2	2.5	3.5	3.5	3.5
Labor input growth	3.2	3.6	2.6	2.4	−0.1	−0.8	−2.0	−0.3	−1.7	1.2	−1.1	−1.2	−1.2
Labor quality growth	0.6	0.9	1.3	1.7	0.3	−0.6	−1.7	0.4	0.4	2.3	0.7	0.6	0.7
Hours worked growth	2.6	2.7	1.3	0.7	−0.4	−0.2	−0.3	−0.7	−2.1	−1.1	−1.8	−1.9	−1.8
College labor input growth	8.1	9.6	9.6	10.5	5.3	1.2	−1.7	−0.3	−2.1	3.4	1.0	0.9	0.9
Non-college labor input growth	3.0	3.3	2.1	1.6	−0.9	−1.2	−2.1	−0.2	−1.7	0.8	−1.5	−1.6	−1.6
ICT capital input growth	12.5	18.1	10.8	8.1	8.9	7.9	8.3	6.8	4.6	4.7	4.4	4.2	4.2
Non-ICT capital input growth	6.0	5.0	4.4	5.7	6.3	5.8	5.9	5.1	4.8	5.2	4.9	4.7	4.7
Per-worker labor productivity growth	2.4	3.0	3.6	5.4	4.7	4.6	3.6	0.5	7.6	3.9	5.0	5.1	5.1
Per-hour labor productivity growth	2.4	3.0	3.4	5.2	5.0	4.3	3.5	0.7	9.2	3.6	5.3	5.4	5.3
Capital productivity growth	−6.1	−5.5	−4.7	−5.9	−6.4	−5.9	−6.0	−5.3	−4.7	−3.0	−1.8	−1.5	−1.6
TFP growth	0.5	1.3	1.1	1.8	1.4	1.5	1.1	−2.6	5.5	−0.5	1.7	1.9	1.8

Production

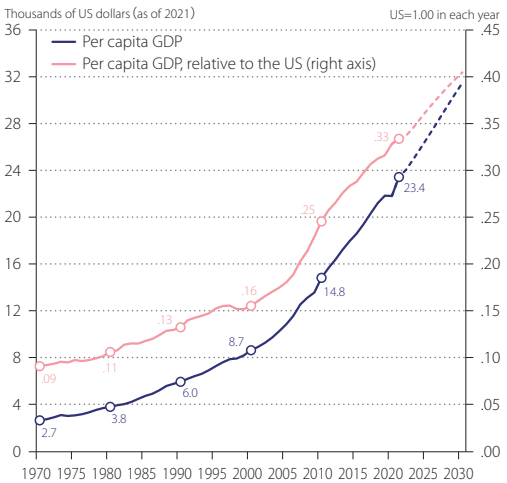

Figure 1 Per Capita GDP

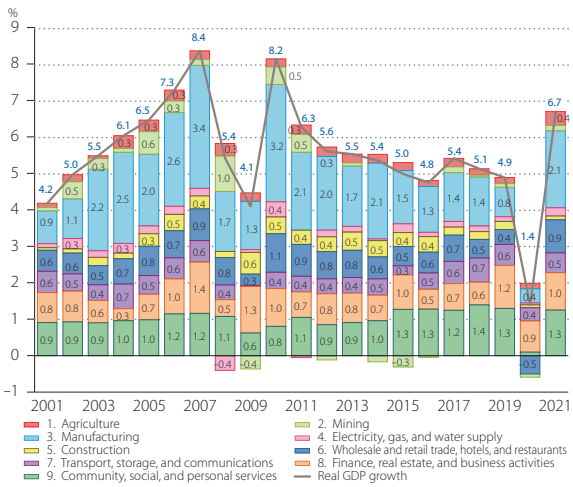

Figure 2 Industry Origins of Economic Growth

Labor

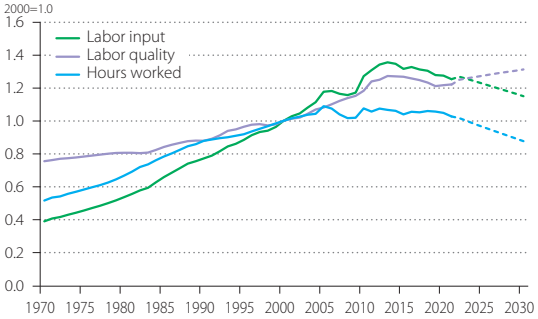

Figure 3 Labor Inputs

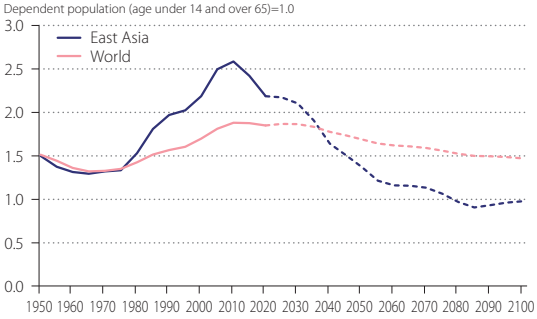

Figure 4 Demographic Dividend

Productivity

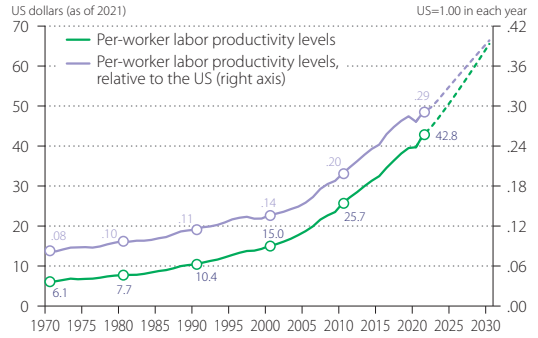

Figure 5 Per-Worker Labor Productivity Level

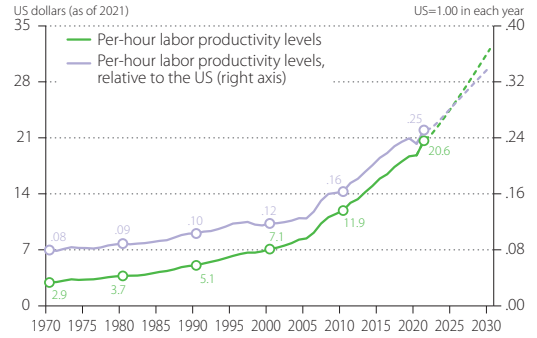

Figure 6 Per-Hour Labor Productivity Level

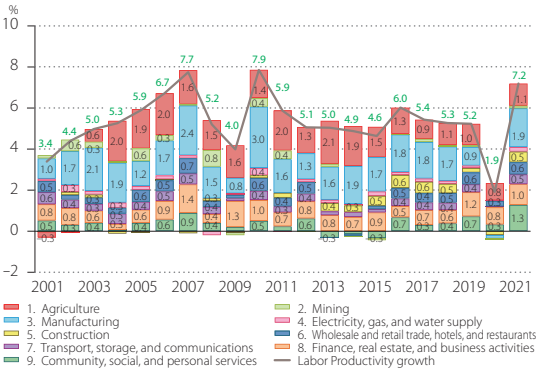

Figure 7 Industry Origins of Labor Productivity Growth

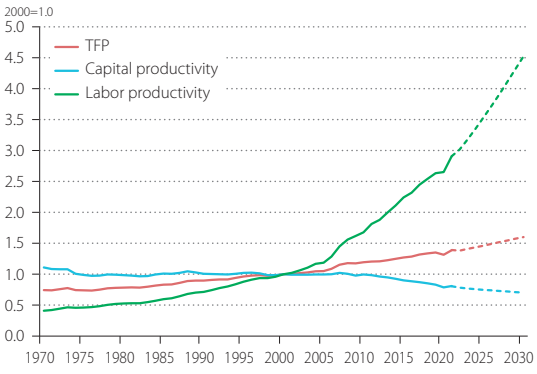

Figure 8 Productivity Indicators

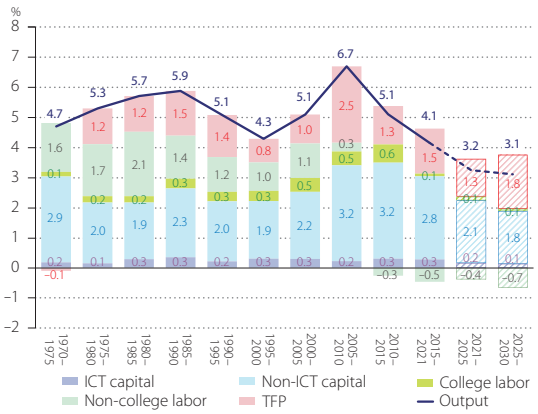

Figure 9 Decomposition of Economic Growth

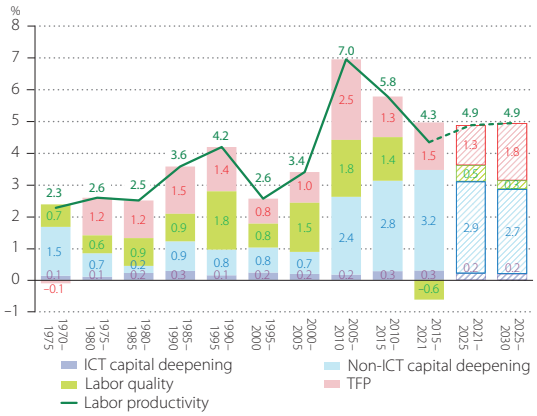

Figure 10 Decomposition of Labor Productivity Growth

South Asia

Key Indicators

GDP in 2021	13,471	Billions of US dollars (as of 2021)
(exchange rate based)	4,050	Billions of US dollars (as of 2021)
Per capita GDP in 2021	7.3	Thousands of US dollars (as of 2021)
(exchange rate based)	2.2	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	18.6	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	8.7	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	20.9	US dollars (as of 2021)
Energy productivity levels in 2020	15.9	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	n.a.	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	686,676	Thousands persons
Employment rate in 2021	37.4	%
Female employment share in 2021	26.3	%
Average schooling years of workers in 2021	6.2	Years
Investment share in 2021	28.8	%
ICT investment share in GFCF in 2021	6.3	%
Agriculture share in GDP in 2021	18.0	%
Manufacturing share in GDP in 2021	14.1	%
Agriculture share in employment in 2021	43.3	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	2.8	5.1	5.1	6.8	5.4	4.7	2.0	–4.4	11.3	6.0	5.2	6.1	5.9
Labor input growth	3.1	3.2	2.8	3.0	2.1	1.7	1.2	1.5	1.5	2.6	3.0	3.0	3.0
Labor quality growth	0.6	1.1	1.0	1.4	0.9	0.6	0.4	0.4	0.4	1.6	1.8	1.8	1.8
Hours worked growth	2.5	2.1	1.7	1.7	1.2	1.1	0.7	1.2	1.1	1.0	1.2	1.3	1.2
College labor input growth	11.3	8.3	6.1	6.0	3.0	2.5	2.7	1.9	2.1	3.4	3.9	3.9	3.9
Non-college labor input growth	2.5	2.4	2.0	2.0	1.7	1.3	0.5	1.4	1.3	2.2	2.6	2.6	2.6
ICT capital input growth	10.8	16.4	15.1	17.3	12.8	12.7	13.7	10.4	9.4	4.4	5.0	5.2	5.2
Non-ICT capital input growth	4.3	5.4	5.1	6.3	6.1	5.9	6.2	4.9	4.5	4.3	4.9	5.1	5.1
Per-worker labor productivity growth	0.3	3.5	3.6	5.0	4.2	3.6	3.0	–5.8	7.5	4.9	4.0	4.9	4.7
Per-hour labor productivity growth	0.3	3.4	3.6	4.9	4.0	3.5	3.1	–5.9	7.4	5.0	4.0	4.9	4.7
Capital productivity growth	–4.3	–5.5	–5.3	–6.6	–6.3	–6.1	–6.5	–5.2	–4.7	1.5	0.0	0.7	0.5
TFP growth	–0.7	1.5	1.7	1.9	1.2	0.9	0.3	–7.9	5.5	2.9	1.5	2.4	2.2

Production

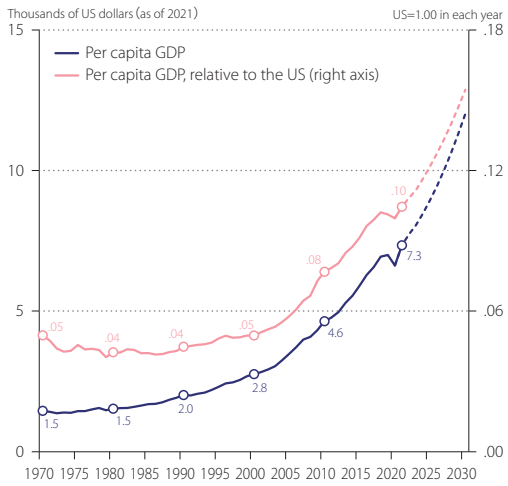

Figure 1 Per Capita GDP

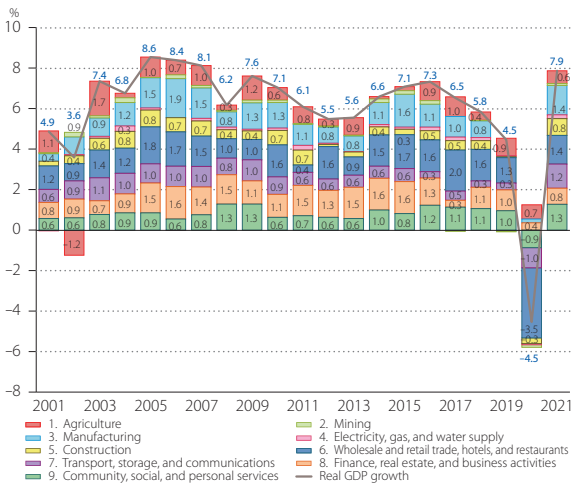

Figure 2 Industry Origins of Economic Growth

Labor

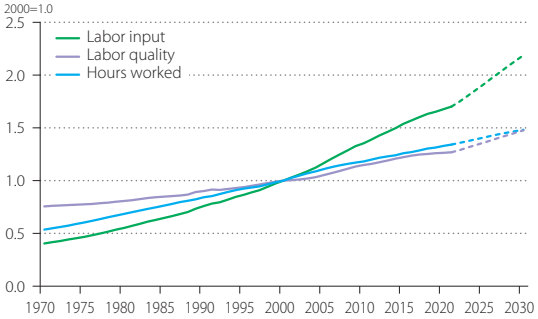

Figure 3 Labor Inputs

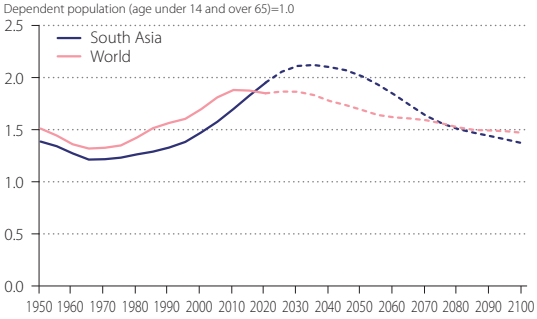

Figure 4 Demographic Dividend

Productivity

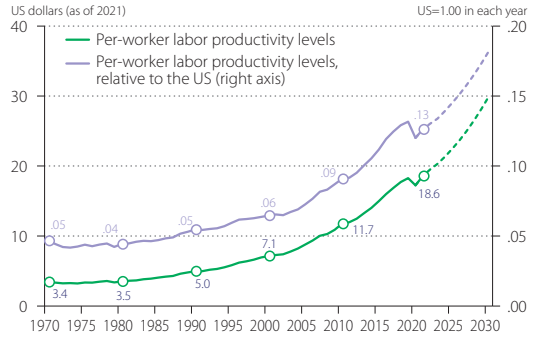

Figure 5 Per-Worker Labor Productivity Level

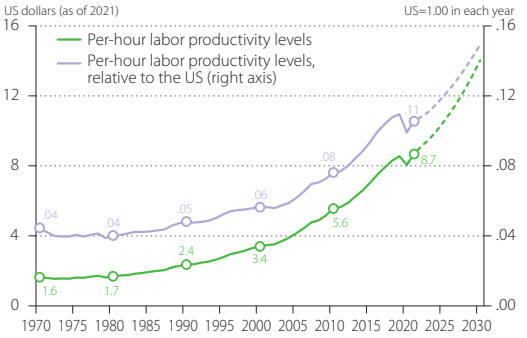

Figure 6 Per-Hour Labor Productivity Level

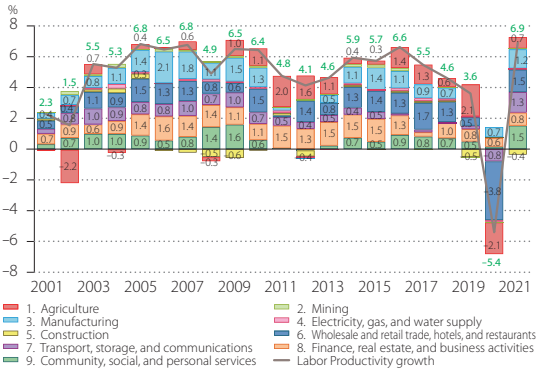

Figure 7 Industry Origins of Labor Productivity Growth

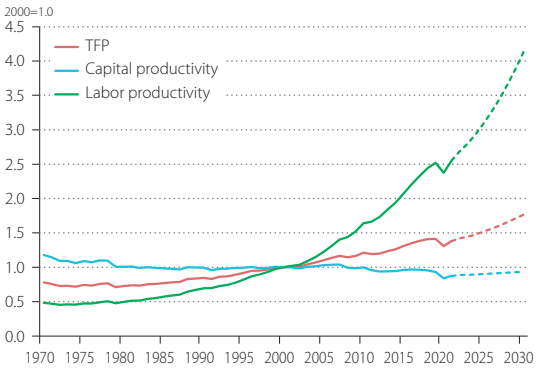

Figure 8 Productivity Indicators

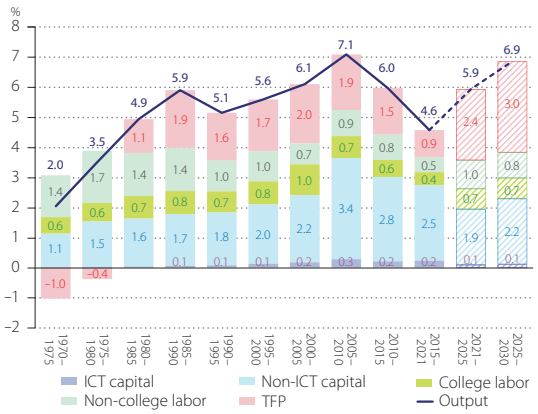

Figure 9 Decomposition of Economic Growth

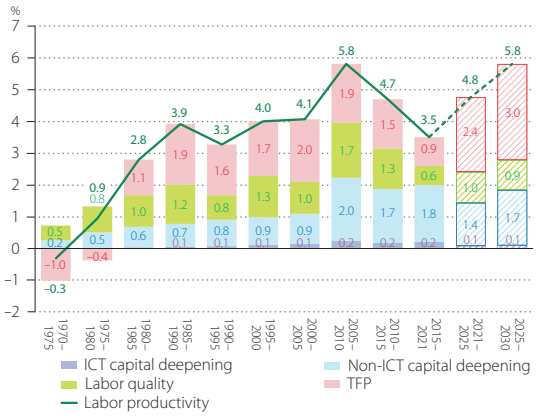

Figure 10 Decomposition of Labor Productivity Growth

App.

ASEAN

Key Indicators

GDP in 2021	9,086	Billions of US dollars (as of 2021)
(exchange rate based)	3,351	Billions of US dollars (as of 2021)
Per capita GDP in 2021	13.8	Thousands of US dollars (as of 2021)
(exchange rate based)	5.1	Thousands of US dollars (as of 2021)
Per-worker labor productivity level in 2021	27.8	Thousands of US dollars per worker (as of 2021)
Per-hour labor productivity level in 2021	13.9	US dollars per hour worked (as of 2021)
Capital stock per hour worked in 2021	42.4	US dollars (as of 2021)
Energy productivity levels in 2020	18.7	Thousands of US dollars per toe (as of 2021)
Carbon intensity of GDP in 2020	n.a.	g-CO2 per US dollar (as of 2021)

Number of employment in 2021	316,579	Thousands persons
Employment rate in 2021	47.9	%
Female employment share in 2021	42.1	%
Average schooling years of workers in 2021	8.7	Years
Investment share in 2021	28.9	%
ICT investment share in GFCF in 2021	8.0	%
Agriculture share in GDP in 2021	11.4	%
Manufacturing share in GDP in 2021	22.0	%
Agriculture share in employment in 2021	28.2	%

(%: average annual growth rate)	1970 –80	1980 –90	1990 –2000	2000 –10	2010 –21	2015 –21	2018 –19	2019 –20	2020 –21	projection 2021–22	2022–23	2023–24	2021–25
GDP growth	6.9	5.4	5.0	5.2	4.0	3.1	4.1	–3.4	3.4	5.5	4.2	5.0	4.8
Labor input growth	4.9	4.6	4.3	4.2	2.3	1.1	4.5	–0.8	–4.6	7.9	2.7	2.6	2.6
Labor quality growth	1.1	1.5	2.2	2.2	2.0	1.3	1.8	1.6	–0.2	2.9	2.0	2.0	2.0
Hours worked growth	3.8	3.1	2.1	2.0	0.3	–0.2	2.6	–2.3	–4.4	5.0	0.7	0.7	0.6
College labor input growth	9.7	9.7	7.6	7.0	4.8	2.0	5.1	0.3	–5.9	10.0	3.5	3.4	3.4
Non-college labor input growth	4.4	3.7	3.4	3.2	1.1	0.7	4.2	–1.3	–4.0	6.8	2.3	2.2	2.2
ICT capital input growth	11.9	19.0	14.4	12.8	9.5	6.6	6.3	4.2	4.9	3.0	3.4	3.4	3.4
Non-ICT capital input growth	6.0	4.8	6.3	3.7	4.7	4.8	4.9	4.7	3.2	3.1	3.5	3.6	3.6
Per-worker labor productivity growth	3.2	2.3	3.0	3.1	2.9	2.5	2.1	–2.3	4.4	4.7	3.3	4.2	3.9
Per-hour labor productivity growth	3.0	2.3	2.9	3.2	3.8	3.5	1.5	–1.3	8.2	0.5	3.5	4.3	4.1
Capital productivity growth	–6.0	–5.0	–6.5	–4.0	–4.8	–4.8	–4.9	–4.7	–3.2	2.2	0.5	1.2	1.0
TFP growth	1.2	0.5	–0.7	1.1	0.3	0.1	–0.6	–5.9	4.0	0.6	1.3	2.1	1.8

Production

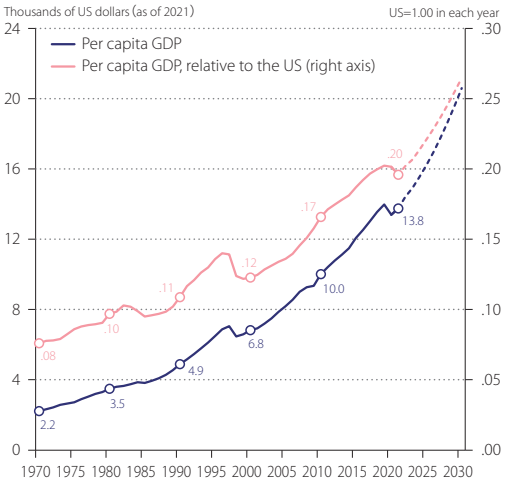

Figure 1 Per Capita GDP

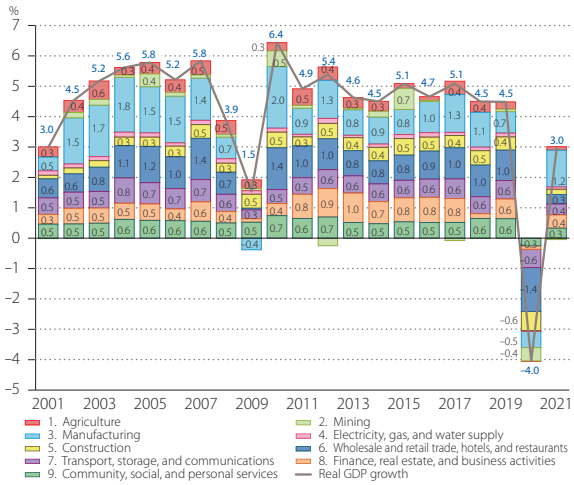

Figure 2 Industry Origins of Economic Growth

Labor

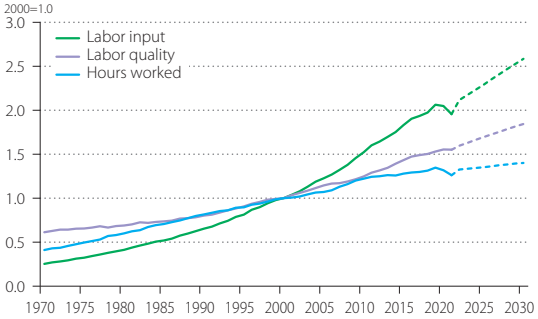

Figure 3 Labor Inputs

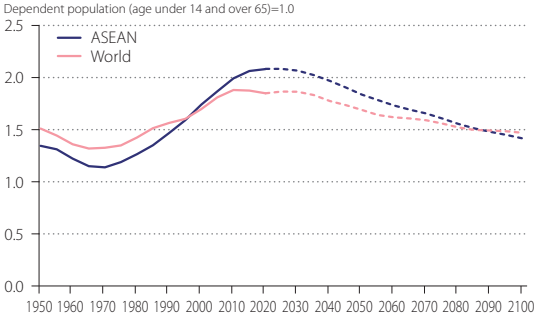

Figure 4 Demographic Dividend

Productivity

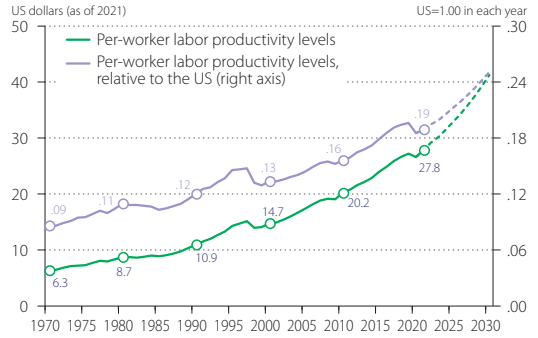

Figure 5 Per-Worker Labor Productivity Level

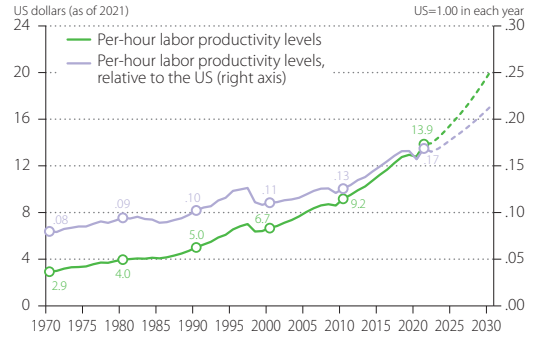

Figure 6 Per-Hour Labor Productivity Level

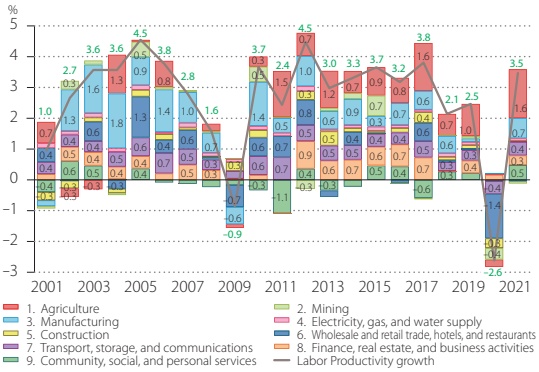

Figure 7 Industry Origins of Labor Productivity Growth

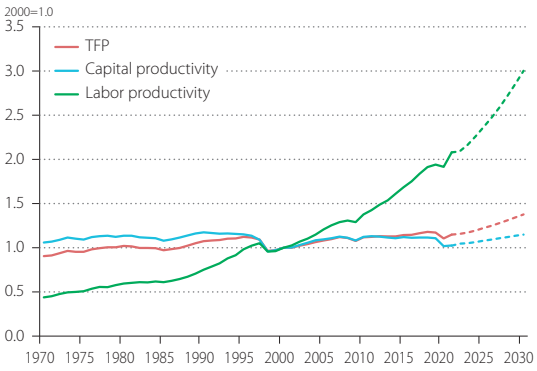

Figure 8 Productivity Indicators

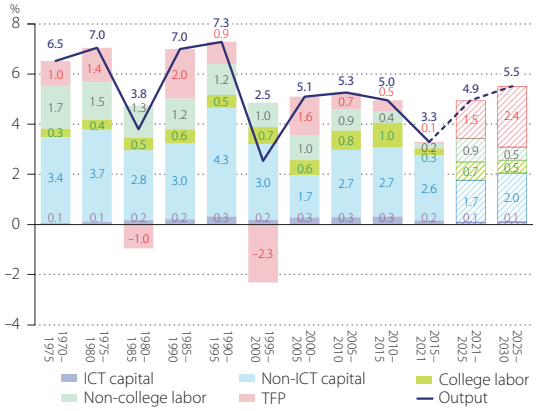

Figure 9 Decomposition of Economic Growth

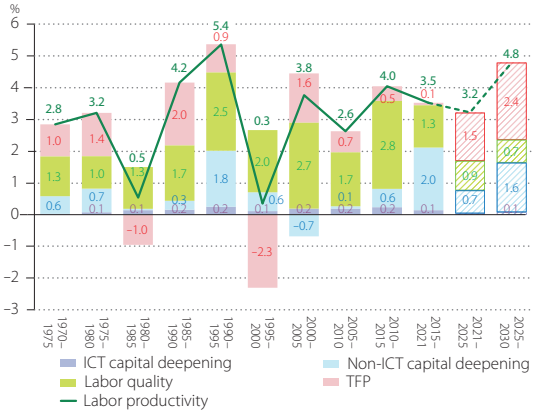

Figure 10 Decomposition of Labor Productivity Growth

App.

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