

**APO**

# PRODUCTIVITY OUTLOOK 2023

Services Sector Productivity  
Trends and Prospects



**KDI**

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The Asian Productivity Organization (APO) is an intergovernmental organization that promotes productivity as a key enabler for socioeconomic development and organizational and enterprise growth. It promotes productivity improvement tools, techniques, and methodologies; supports the National Productivity Organizations of its members; conducts research on productivity trends; and disseminates productivity information, analyses, and data. The APO was established in 1961 and comprises 21 members.

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# APO PRODUCTIVITY OUTLOOK 2023

SERVICES SECTOR PRODUCTIVITY  
TRENDS AND PROSPECTS

APO Productivity Outlook 2023  
Services Sector Productivity Trends and Prospects

Korea Development Institute served as the volume editor.

First edition published in Japan  
by the Asian Productivity Organization  
1-24-1 Hongo, Bunkyo-ku  
Tokyo 113-0033, Japan  
[www.apo-tokyo.org](http://www.apo-tokyo.org)

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# FOREWORD

Higher productivity is the driving force behind economic growth and increased citizens' well-being. As a part of its think-tank and policy advisory functions, the APO produces statistics and analyses on productivity trends and progress in its members. The *APO Productivity Outlook* series was first published in 2022, in collaboration with the Korea Development Institute (KDI), to provide key insights into prospects for future productivity enhancement in APO members.

Employing a sectoral productivity decomposition approach, the *APO Productivity Outlook* reports reveal not only the sources of a country's economic dynamics and characteristics but also its strengths and weaknesses. The *APO Productivity Outlook 2023*, the second edition in the series, focuses on the services, one of the fastest-growing and most dynamic sectors in the Asia-Pacific region. The status of the services sector, specifically labor productivity and its underlying determinants, is examined in detail, and the implications of service-sector expansion for development are analyzed. This edition also provides a set of policy implications to enhance service-sector contributions and synergy with other sectors to drive growth in APO member economies.

The contributions and cooperation of the team of experts from the Center for International Development, KDI, are very much appreciated. The APO hopes that the comprehensive analyses of regional productivity development will complement productivity policymaking in APO members and other economies.

Dr. Indra Pradana Singawinata  
Secretary-General  
Asian Productivity Organization



# INTRODUCTION

This outlook report focuses on productivity in the services sector and tries to coin out policy implications for APO member economies. The services sector is one of the fastest growing and most dynamic sectors of the global economy. Services are on the rise as economies reach higher levels of income, with the acceleration of digital technologies; adoption of new working patterns such as remote work; and rapid globalization, which is breaking down previous barriers. Additionally, the COVID-19 pandemic precipitated significant changes in the structure of the economy, with implications for services. The changing landscape calls for attention to the role of services for the economy.

Tertiarization appears to be a global phenomenon: the share of GDP, employment, and trade in services are increasing around the world. Employment and production in advanced as well as emerging economies are increasingly concentrated more in services, and this sector is growing at a higher rate in APO members countries compared with the global average. Nevertheless, not only does the services sector differ from the productivity of the manufacturing sector, but also the growth in services is highly linked to other industries, and its characteristics depend on the income level of each country.

The present report, given the phenomenon of increasing importance of the services sector across the globe, aims to identify trends and challenges in the services sector. Two specific issues are addressed in discussing productivity: financial development and business services. For financial development, it is natural for the services sector to demand more financial resources for its growth and development. The effect of financial development on economic performance or productivity is a key issue as the valuable yet limited financial resources are to be reallocated to the financial sector. When the impact of financial development, which varies by income levels, sovereign characteristics, and sectors, is identified and measured, APO member economies can formulate more effective policies to enhance productivity.

Business services have long been attracting attention as a service sector that absorbs employment and creates high value added, given that employment in the manufacturing sector has decreased due to the adoption of technology and its rapid development. This increasing trend in business services is also apparent in APO member economies in terms of employment and value added. Particularly, knowledge-intensive business services (KIBS) play a very important role in improving the productivity of the manufacturing sector and moving toward a knowledge-based economy due to KIBS's importance as intermediate inputs in manufacturing and their impact on knowledge dissemination. In the current report, two APO member economies (Vietnam and Philippines) are selected for in-depth analysis of the relationship between business services and productivity.

Additionally, two more issues around productivity are discussed: regulatory reforms and global value chains (GVCs). The linkages between regulatory reforms and productivity growth are explored empirically and extensively, including details of methodological approaches and results of the analyses. Specifically, it explores whether reforms promote productivity; analyzes the channels through which regulatory reforms can boost productivity; and examines how different types of reforms affect productivity differently.

The second issue pertains to GVCs. As the global economy has undergone a dramatic shift toward services in recent decades, GVCs that link national economies far tighter than before have appeared. The development of GVCs necessitates a new perspective on economic development. Participation in GVCs provides opportunities for productivity growth of participating firms; and this in turn triggers the reallocation of resources toward more productive firms and sectors. The current report reviews the current status of services trade and GVCs in APO member economies. Using readily available data and indicators, a concise snapshot of complex relations and networks running through APO member economies and also within other economies is provided.

# TRENDS AND CHALLENGES IN SERVICES SECTOR

## Introduction

Tertiarization is a global phenomenon. The services sector is one of the fastest growing and most dynamic sectors in the global economy. Traditionally, manufacturing was regarded as the main engine of growth, but with the recent slowdown in productivity growth, the services sector has been drawing more attention as a new driver of economic growth.

In the mid-20th century, authors such as Fisher [1] and Clark [2] classified industries into primary industries (agriculture and fishing); secondary industries (mining and manufacturing); and tertiary industries (non-material services) based on the composition of workers, income elasticity, consumer demand structure, technological progress, and economic development. In addition, they argued that as the income level of a specific country increases, the consumption structure gradually changes from the demand of goods to that of services, and the industrial structure shifts mainly toward the tertiary industry.

Based on the aforementioned changes, tertiarization refers to a phenomenon in which the proportion of the manufacturing sector decreases as the proportion of the services sector expands in a country's economic activities. The rise of services can also be attributed to various socioeconomic factors such as increased income levels; widening productivity gaps between manufacturing and services; spread of GVCs and direct foreign investment (FDI); and the demographic expansion of aging populations. This change can be clearly identified based on the share in GDP or total employment of the services sector.

In the past, tertiarization has been recognized as a phenomenon visible in advanced economies. However, services are on the rise in emerging economies as well. Despite their growing importance, services tend to receive far less attention than other sectors such as manufacturing, and studies on their contribution to economic growth remain limited due to the sector's nature, its heterogeneity, and weak supply of relevant data. Furthermore, while research on the tertiarization of the global economy has been conducted, the results have not been consistent.

Some of the early studies on the role of services for productivity, such as the study by Baumol [3], presented the “unbalanced growth hypothesis,” arguing that if purchasing power increases due to increased productivity in manufacturing, the demand for services and the relative prices of services will increase, thereby moving labor resources from manufacturing to services. In other words, due to deindustrialization, productivity and employment shares of manufacturing and service sectors move in the opposite direction, which means that productivity of services decreases as employment moves from manufacturing to services.

On the other hand, Oulton [4] and Fixler and Siegel [5] suggested that services can contribute to mid- to long-term economic growth by enabling efficient allocation of resources among industries and by generating interindustrial linkage effects as well as the final consumption of goods. Oulton

[4] argues that when services are introduced as intermediate goods for other industries, they induce productivity improvements in other industries that demand them as intermediate goods despite the insignificant productivity improvement in the services sector itself, resulting in improved productivity of the overall economy.

Tertiarization is a major phenomenon in the global economy, but in addition to the conflicting arguments mentioned above, the discussion regarding growth as a result of tertiarization has also yielded contradictory views. Productivity analysis of the services sector has shown characteristics that are different from that of manufacturing. The traditional measurement of productivity defined as output (value added, GDP) per input (labor) can easily be applied to the production of goods. In the case of manufacturing, the sector could be analyzed using the Cobb–Douglas production function. In other words, based on this technique, major factors of productivity in the manufacturing sector can be explained based on output versus input (technological innovation and human capital).

On the other hand, the services sector exhibits features and structural characteristics that are different from those of manufacturing. In this regard, Maroto [6] explains the relationship between the services sector and economic growth (see Figure 1). As shown in Figure 1, the interaction between services and manufacturing, the proportion of service activities and their roles in production of goods, and the outsourcing of services, are increasing in the economy as a whole. Additionally, services are increasingly embodied in the production of manufactured goods. Although the role of services has grown increasingly dominant in the economy, there have been continued limitations in conducting productivity measurement in this sector, which can lead to misleading results that are not fully captured in the records, as per Berndt and Griliches [7] and Pilat *et al* [8].

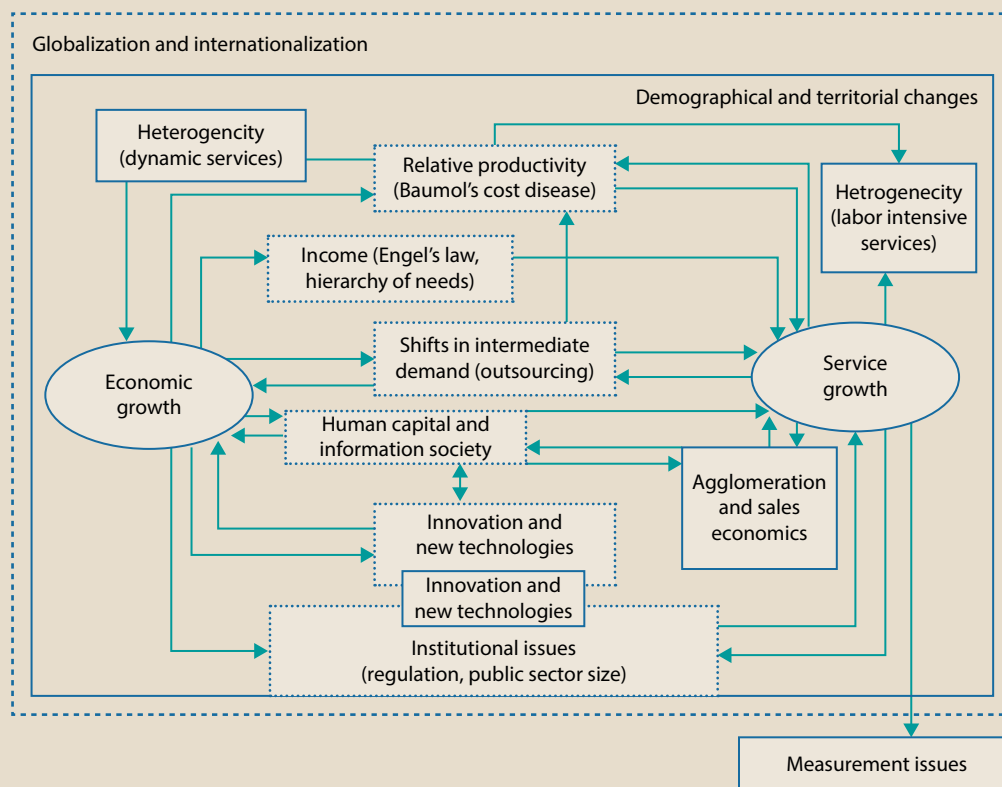
Meanwhile, the demand for services is on the rise as economies reach higher levels of income, in the contexts of acceleration of digital technologies; adoption of new working patterns such as remote work; and rapid globalization, which is breaking down the barriers that existed in the past. Services are becoming essential inputs in the production of goods, i.e., servicification of manufacturing (see Box 1), consequently blurring the lines between manufacturing and services.

The changing landscape calls attention to the role of services in the economy. Understanding the main features of services and their direct as well as indirect effects and implications for the economy are key to developing better policies and allocating resources efficiently toward high-value-added activities and increasing overall productivity growth.

This chapter is organized as follows: the first part addresses the importance of the services sector by analyzing key trends of structural change, and deeply examining the increasing services sector in APO member economies with particular attention to the role of services as intermediate inputs of production and the impact of services on other sectors of the economy. The second part touches upon key issues related to productivity such as sectoral convergence and the contribution of a services-based economy to productivity growth. In addition, the chapter presents an empirical verification of whether Baumol’s productivity slowdown actually appears with the rise of services in APO member economies; and seeks to identify policy implications and service subsectors that have the potential to achieve high productivity growth. We argue that although the slowdown in productivity is centered on high-income countries, policies should be designed based on differences by the industry and the income level in APO member economies.

FIGURE 1

## RELATIONSHIPS BETWEEN SERVICES AND ECONOMIC GROWTH.



Source: Maroto-Sánchez [6].

## Importance of the Services Sector

### The Rise of the Services Sector

Overall Trend: Global Structural Changes

The tertiarization of the economy is a global phenomenon. Its dominance is apparent around the world, including APO member economies, with trends varying depending on the income group and on unique, country-specific characteristics. High-income economies such as Hong Kong had already undergone a significant increase in the proportion of services in the 1990s. On the other hand, countries such as India have recently seen a rapid increase in services. Conventionally, it has been believed that economic development is associated with progressive structural changes. After departing from the early stages of development in the agriculture sector, progress is made toward advanced, modern sectors of the economy with the development of the industrial sector. This is followed by growth in services as the economy reaches higher levels of income.

However, it is important to point out that the rise in services is not only visible in advanced countries as they reach higher income levels, but also in emerging countries, which attain a higher share of services even before reaching higher levels of industrialization. Rodrik [9] defines this phenomenon as “premature industrialization,” and explains that international trade and globalization are the most important factors for premature industrialization in developing countries. This is because when developing countries trade with developed countries in open economies, they are affected by the relative prices of developed countries, and thus tertiarization occurs similar to developed countries[10].

Other scholars such as Dasgupta and Singh [11] have presented evidence of early deindustrialization in developing countries based on the framework of Kaldor [12]. They raised concerns regarding the negative impact of services on growth, but also noted that the services sector is increasing at a faster rate than the manufacturing sector in some developing countries such as India. Dasgupta and Singh [11] have emphasized that more active and creative industrial policies are needed for sustainable growth in developing countries and also argued that the modernization of services (using ICT) would remain critical for the future.

The rise of services can be attributed to other socioeconomic factors, including acceleration in the use of digital technologies; increasing use of services in the production of manufacturing; and changes in demographic composition with an increase in the aging population [13]. Especially, with the advent of the Fourth Industrial Revolution (4IR), developments including increased use of offline and digital solutions; digital transformation of existing industries; and appearance of new industries based on artificial intelligence (AI) and data are expected to narrow the gap between manufacturing and services, and consequently accelerate the importance of servicification of production [14].

This section presents evidence demonstrating structural changes on a global scale, with a special focus on APO member economies. Figure 2 examines sectoral economic activity by income level, by plotting the sectoral value added (of manufacturing and services) and employment shares in APO member economies and the rest of the world, compared by their income levels and divided into three periods (1990–99, 2000–07, 2010–19), based on data drawn from WDI indicators.

The manufacturing sector's share of value added and employment shows that no correlation is observed as income increases (see Figure 2), and the changes over time are not clear. In other words, there is no clear evidence that the proportion of the manufacturing sector increases as the income level increases. On the other hand, in case of the services sector, its share of total value added increases as the income level increases, and the same pattern is clear for APO member economies.

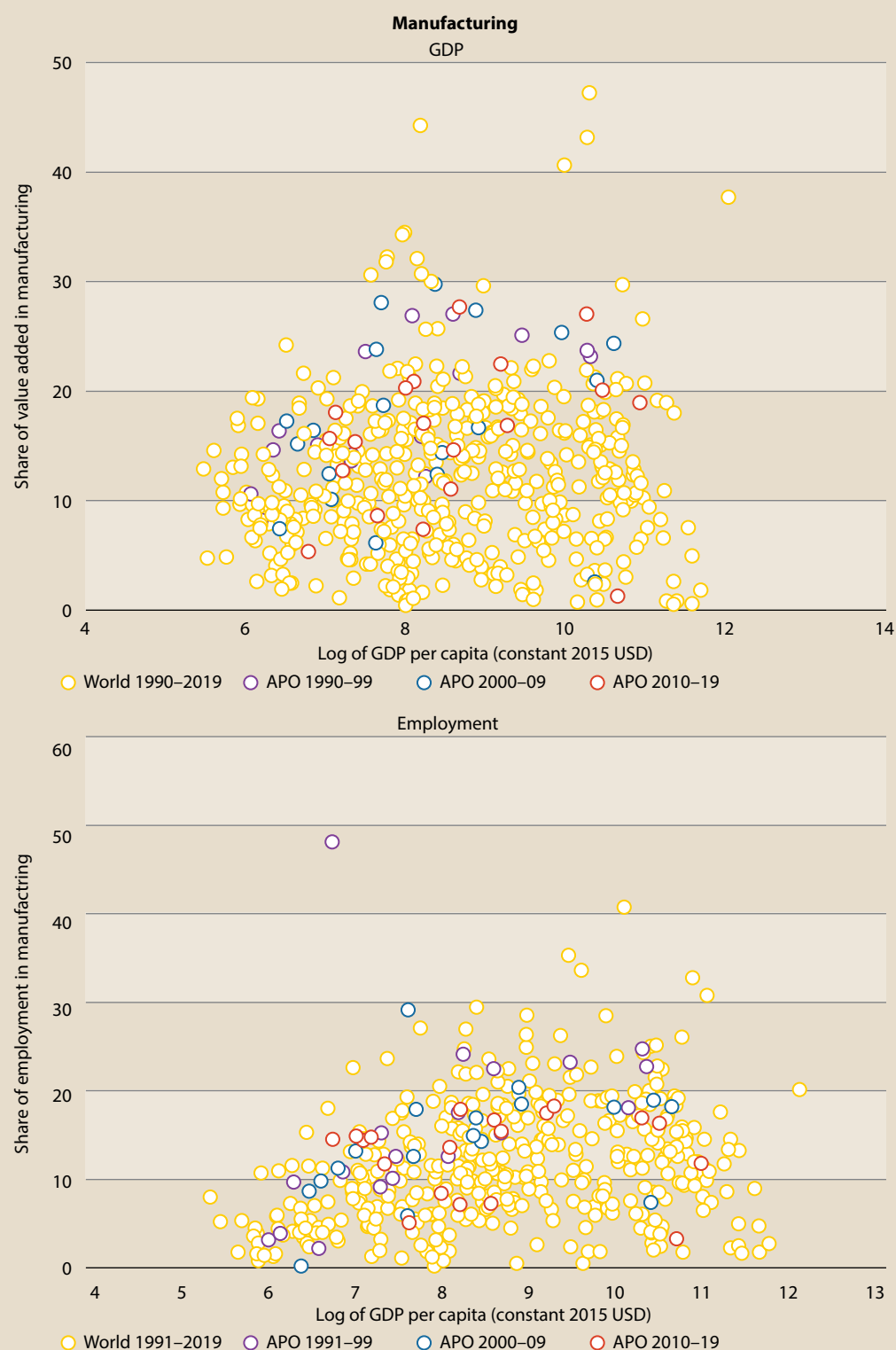
As described above, even for APO member economies, marked patterns are visible in the case of services. As economies attain higher income levels, the services sector's share of employment and value added increases, but there is no clear pattern or causality with regard to the increase of manufacturing based on time period. Nonetheless, the overall structural changes in APO member economies largely follow the same pattern as those observed in the rest of the world, with the services sector growing in terms of employment and value added.

As shown in Figure 3, the global annual GDP growth rate had recently slowed down sharply due to the outbreak of the COVID-19 pandemic, but the annual growth rate of value added in services is believed to have contributed strongly to driving economic growth. As shown in the figure, the global value added of services maintained a growth rate that exceeded that of the overall GDP growth rate. In particular, the value added of services in APO member economies recorded a notably higher level of growth. However, with the outbreak of COVID-19, the GDP growth rate saw a rapid decline. In-depth diagnosis is needed to respond to the urgent demand.

The key question is whether services can actually contribute to productivity and economic growth. Traditional studies have characterized services as a stagnant and technologically backward sector that contributes little to productivity growth compared with the goods-producing sectors. According

FIGURE 2A

## SECTORAL GDP AND EMPLOYMENT SHARE IN APO VS. REST-OF-THE-WORLD, 1990–2019.

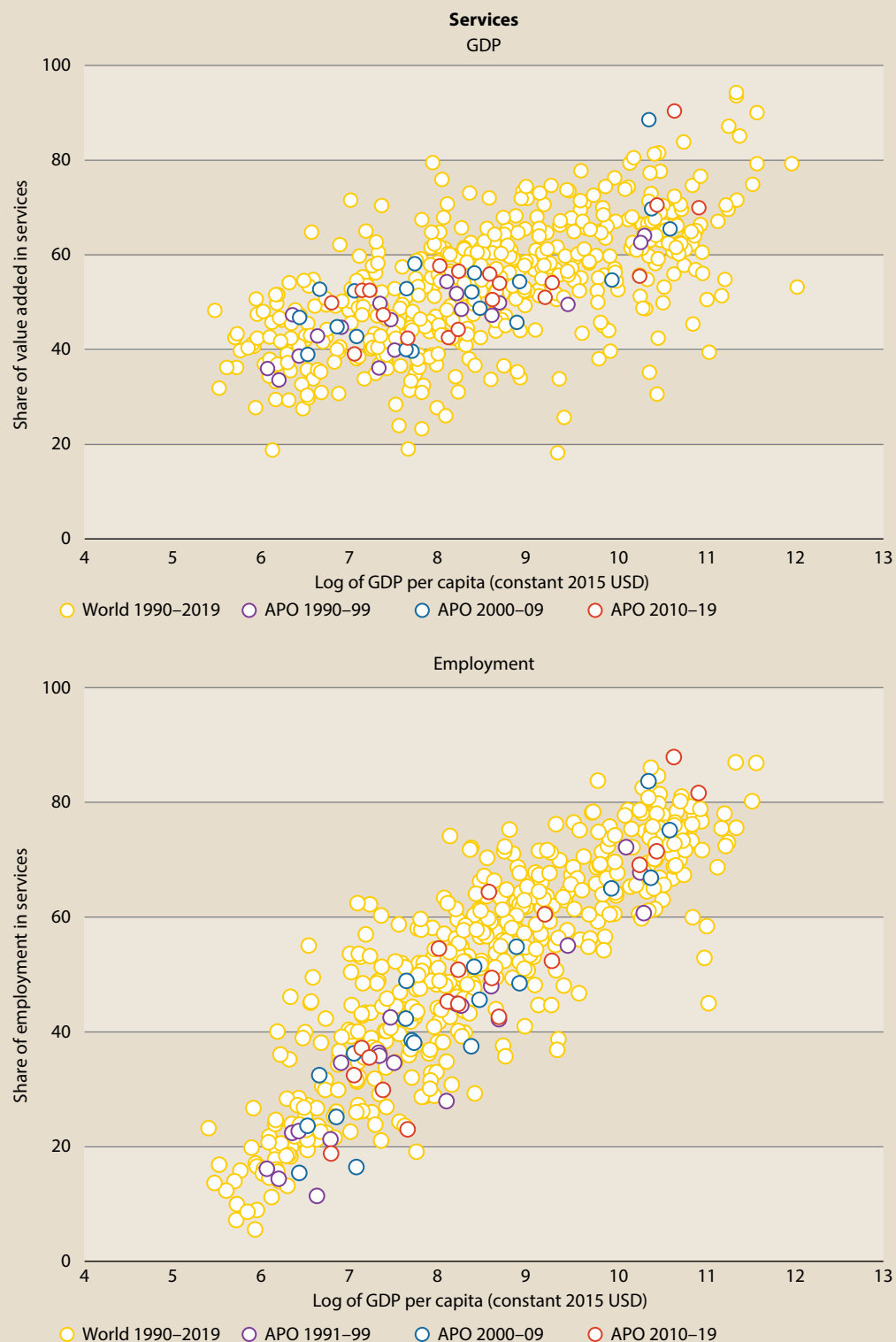


**Source:** The World Bank, World Development Indicators.

**Notes:** The graph plots the sectoral value-added share and employment share against the natural log of GDP per capita (in constant 2015 USD). Data are plotted every 10 years for the period 1990–2019. APO data are for 20 member economies excluding the Republic of China (ROC). The 'world data' includes 197 countries, excluding APO member economies.

FIGURE 2B

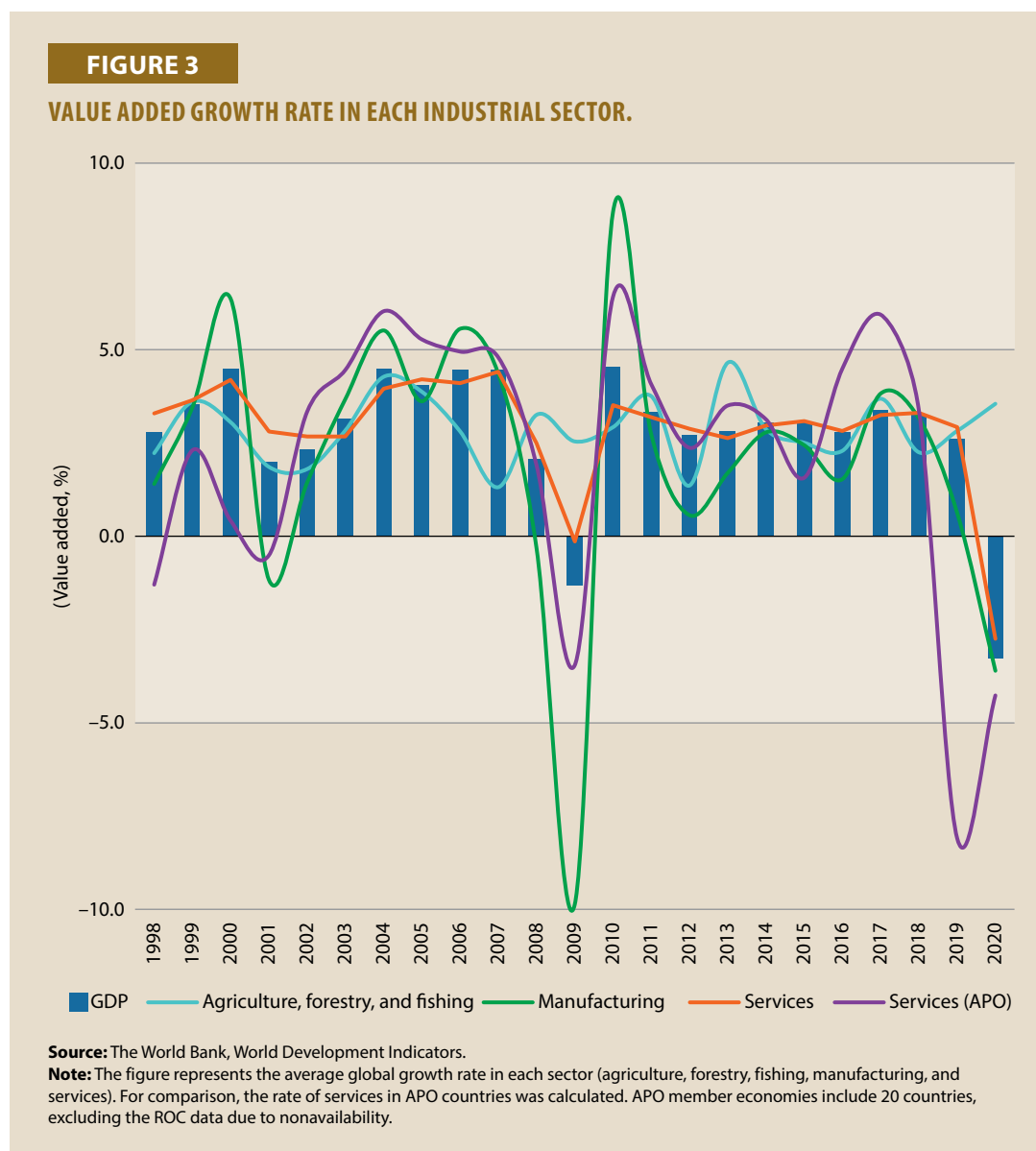
## SECTORAL GDP AND EMPLOYMENT SHARE IN APO VS. REST-OF-THE-WORLD, 1990–2019.



**Source:** The World Bank, World Development Indicators.

**Notes:** The graph plots the sectoral value-added share and employment share against the natural log of GDP per capita (in constant 2015 USD). Data are plotted every 10 years for the period 1990–2019. APO data are for 20 member economies excluding the Republic of China (ROC). The 'world data' includes 197 countries, excluding APO member economies.

to this view, as economies shift toward a larger services sector, it implies the allocation of resources toward less productive sectors (deindustrialization), resulting in a slowdown in overall national productivity growth. This is known as the cost disease argument of Baumol [3, 16].



However, contrary to these preceding arguments, the increase in services has not corresponded to a decrease in economic growth. In reality, services are not only demanded as final goods but are also embodied as intermediate inputs of production. Recent studies point out that services are highly linked with other sectors of the economy, contributing to mid-to-long-term economic growth [4, 17, 18]. Services are playing a vital role in the production of goods, becoming increasingly specialized, and developing toward higher value-added forms through outsourcing.

Services are composed of both low value-added and high value-added services. While some services are highly linked with other sectors of the economy, there are also sectors with low linkages and low value added. Other positive studies have suggested specific service sectors that contribute to productivity growth [19, 20].

**BOX 1: SERVICIFICATION OF MANUFACTURING**

Servicification of manufacturing refers to a phenomenon in which manufacturers expand service input as intermediate goods or provide services in the form of final goods in the production process. This concept includes the outsourcing of service functions as well as increasing the proportion of in-house provision of services created by manufacturers simultaneously producing and selling goods and services.

Miroudot and Cadestin [21] have explained, “The servicification of manufacturing means that the manufacturing sector is increasingly dependent on services as an input, as an activity within the company, or as an output sold in a bundle with goods.” As such, the servicification of manufacturing is a broad concept that encompasses not only an increase in the intermediate input of services for the production of industrial products, but also an increase in the sale of services in combination with the products in which services are embodied.

On the other hand, another representative term used to refer to the servicification of the manufacturing industry is “servitization.” Vandermerwe and Rada [22], who first presented the concept, stated, “More and more companies are adding value to their core products through services. This trend is prevalent in almost every industry, and modern companies are increasingly offering more complete market packages or bundles that combine products, services, support, self-service, and knowledge for their customers.” This change is referred to as the servitization of business, a change in which manufacturers increase value-added and secure competitive advantages by providing packages or bundles to customers by adding services to their main products.

**Global Trade Trends**

The importance of the services sector is also visible in the increasing trade in services, with the global trends showing tertiarization, the advancement of ICT, and increasing participation in the GVC. Trade is also considered to be an important part of productivity. Evidence suggests that relatively open economies are more productive [23], and productivity can be boosted with increased trade in services as final goods as well as inputs for intermediate goods of production. In the past, services were regarded as non-tradable and tended to be excluded from trade transactions. However, recently, it has become possible to measure services trade with efforts of the World Trade Organization (WTO), which classifies and distinguishes tradable services from non-tradeables. The trade in services is classified into four modes (see Box 2) as per the WTO’s General Agreement on Trade in Services (GATS).

In this regard, Hufbauer and Stepheson [24] argue that Mode 1 accounts for approximately 35% of global trade in services, Mode 2 accounts for 10–15%, Mode 3 accounts for 50%, and Mode 4 accounts for 1–2%. Despite the GATS’s definition of trade in services, it is not yet easy to capture trade services with statistics. By default, data and statistics for some of the services in Mode 1 and Mode 2 are available, but it is difficult to attain precise data in the case of Mode 3 or Mode 4. In this part of the chapter, we briefly examine the trade in services between the world and APO member economies, based on the service trade statistics of the World Development Indicators (WDI); the WTO [25]; and the World Trade Statistical Review 2020 [26].

**BOX 2: SERVICE TRADE AND MODES OF SUPPLY**

Trade in services can be classified into four modes based on the WTO's General Agreement on Trade in Services (GATS).

**Mode 1 (cross border supply):** services supplied from one country to a customer in another country;

**Mode 2 (consumption abroad):** supply of services from one country to the service consumer of another country;

**Mode 3 (commercial presence):** services supplied by a service supplier from one country through commercial presence in another country; and

**Mode 4 (presence of natural persons):** supply of services by a service supplier of one country through the presence of natural persons of the country in another country.

Source: UNESA [27].

Panel A in Figure 4 presents the export trends of goods and services, with the rankings of the top 30 countries including APO member economies and other countries around the world. It is organized in the order of the highest being on the left, based on the WTO database in 2020. The average trade amount for each period of time was calculated for each country. Although it is well known that major countries account for a very high proportion of global trade, APO member economies also occupied higher ranks in terms of exports and imports.

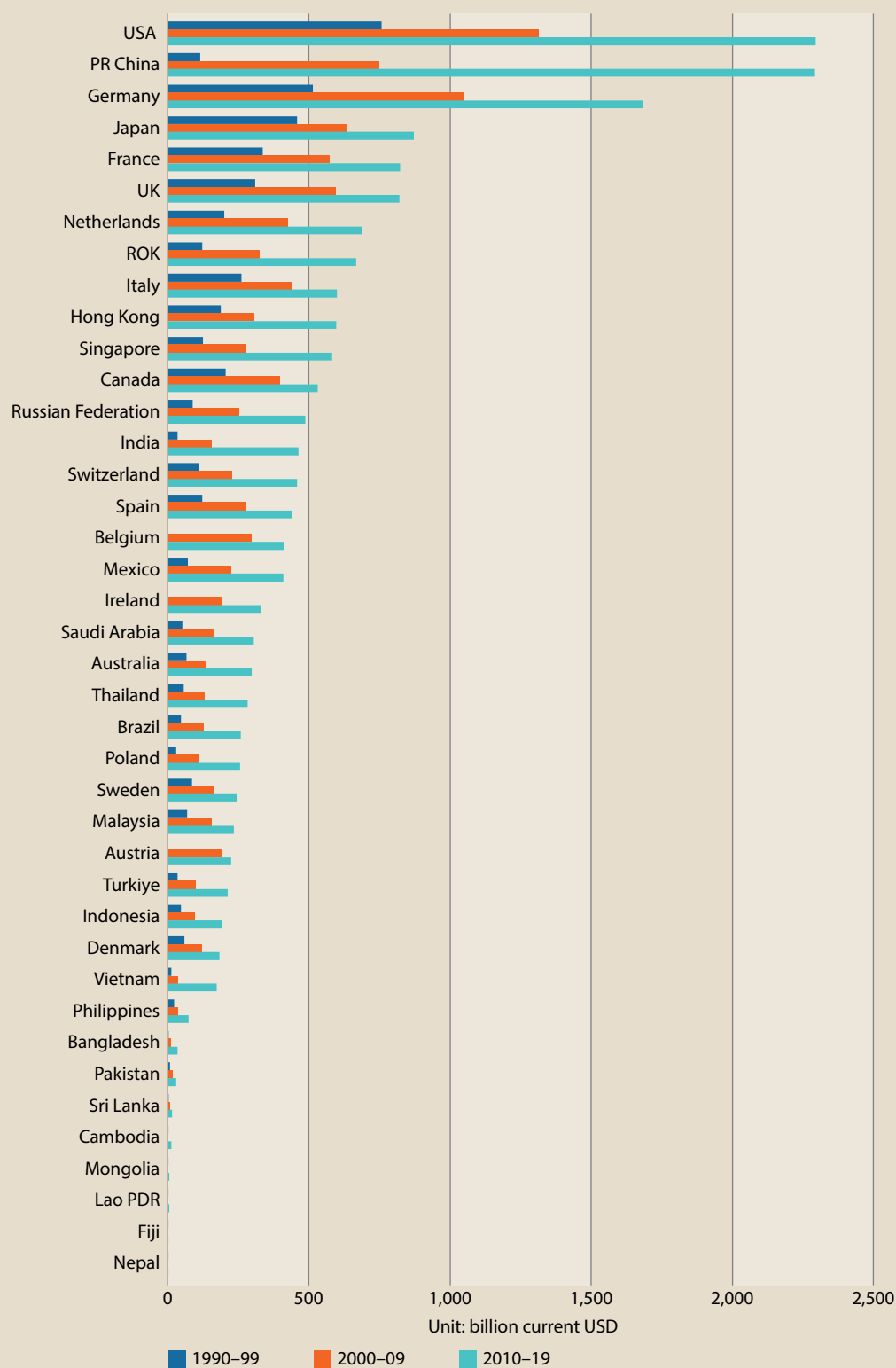
In Panel B of Figure 4, similar patterns appear in the imports of goods and services. The increase of imports in other APO member economies seems relatively small due to the rise of India in the global economy, but the rise of other APO member economies such as Thailand, Türkiye, and Malaysia are also noticeable in terms of their growth rates.

It can be observed that exports and imports are increasing in most countries. In particular, rapid increases are seen in APO member economies. However, further individual country data and statistics are needed on the amount of trade for countries such as Bangladesh, Sri Lanka, Mongolia, and Fiji.

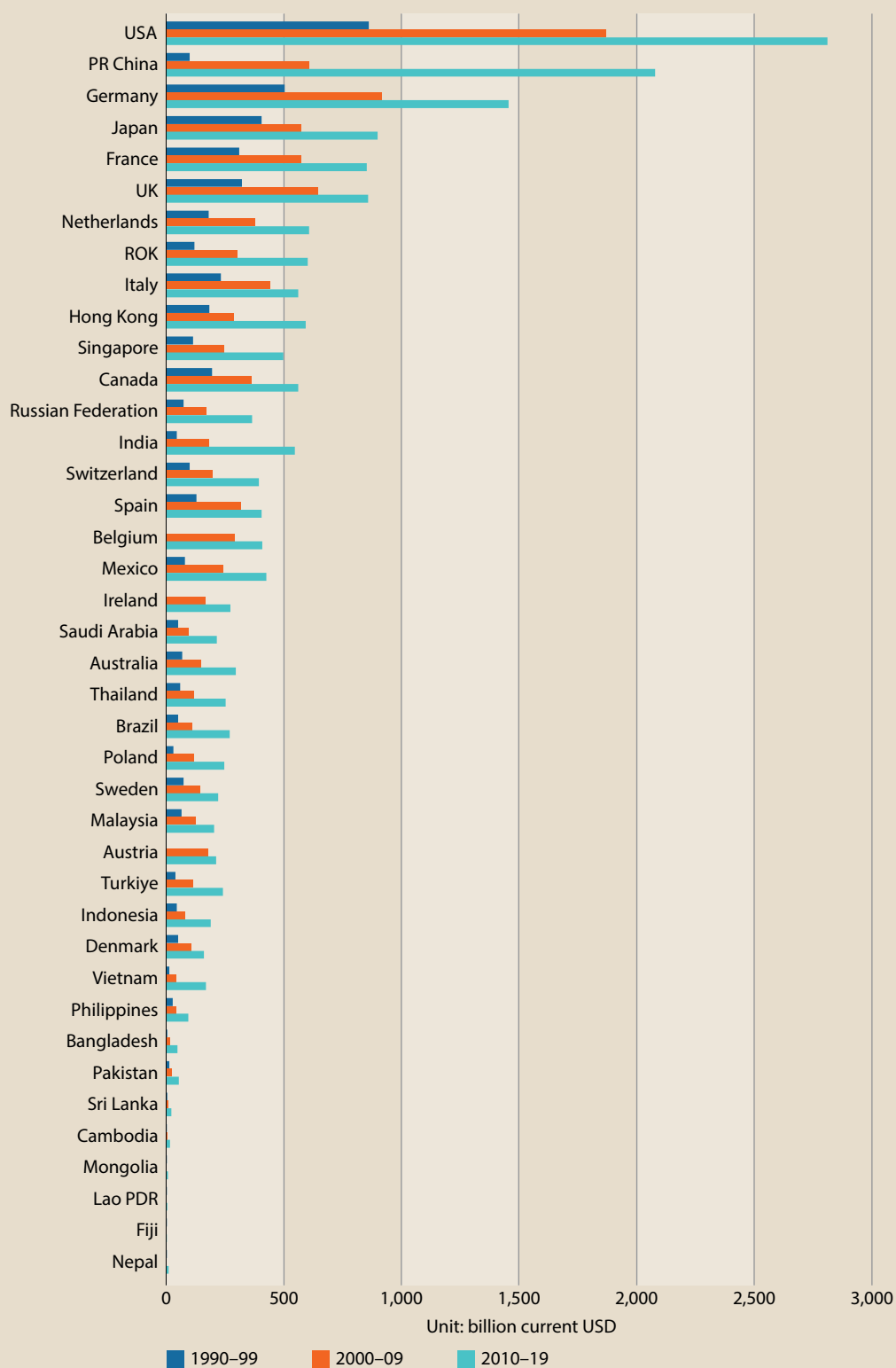
Globalization has also contributed to the demand for services [28, 29, 30]. This section examines the increase in the services trade of APO countries within the global trade. As a result of globalization, exports of each country in the global market have increased rapidly over the past three decades. Figure 5 demonstrates that trade in APO member economies has been growing rapidly, especially in the case of India, Singapore, and the Philippines.

Over the past three decades, there has been a rapid increase in the exports trade in services, but the proportion of services within total exports has varied from country to country, depending on various economic and industrial characteristics [31, 32, 33]. According to traditional trade theories such as the Heckscher–Ohlin theory, the impact of trade on employment and value added is determined by resource intensity and resource endowments.

Due to the recent deepening of the GVC, the importance of research on the effect of trade on final demand between countries has also increased. Also, the analysis of the effect of increasing

**FIGURE 4A****EXPORTS AND IMPORTS OF GOODS AND SERVICES IN TOP 30 COUNTRIES GLOBALLY.****Panel A. Exports of goods and services in the world (top 30 economies)**

Source: Authors' calculations, using the WTO database.

**FIGURE 4B****EXPORTS AND IMPORTS OF GOODS AND SERVICES IN TOP 30 COUNTRIES GLOBALLY.****Panel B. Imports of goods and services in the world (top 30 economies)**

Source: Authors' calculations, using the WTO database.

employment and value added by countries and industries using the World Input-Output Table (WIOT) is emerging as a major research method. Services trade in intermediate goods is a concept that measures the input of services at the production stage of each country's industry and is generally viewed through IO table analysis.

The importance of services trade between countries is accelerating with the global trend of tertiarization [34]. As discussed above, the tertiarization of the economy is rapidly advancing not only in developed countries but also in developing countries. The WTO's GATS classifies services into 12 major categories based on the Services Sectoral Classification List from the *Manual on Statistics of International Trade in Services* (MSITIS) [35]. In many cases, service trade is counted as the trade of commodities in the current trade statistics system. The 12 major categories are: (1) business services; (2) communication services; (3) construction and related engineering services; (4) distribution services; (5) educational services; (6) environmental services; (7) financial services; (8) health-related and social services; (9) tourism and travel-related services; (10) recreational, cultural, and sporting services; (11) transport services; and (12) other services not included elsewhere.

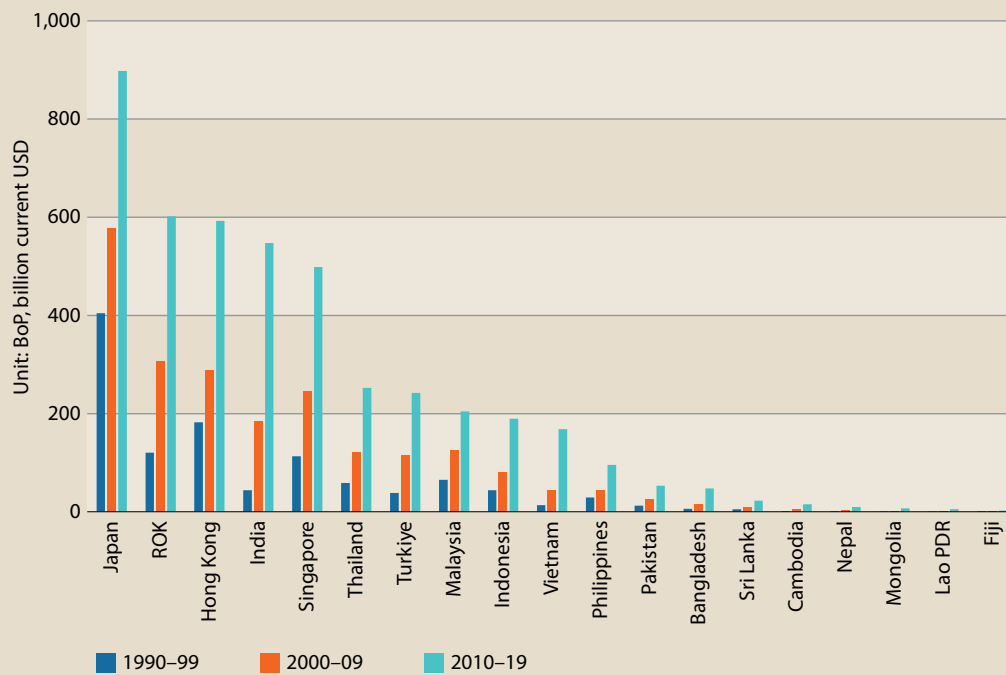
Studies such as those by Bernard [31] and Lodefalk [32] have found a positive relationship between the increase in service input in production and exports intensity in the manufacturing sector. Aquilante and Vendrell-Herrero [34] highlight that the bundling of goods and services has a positive effect on exports; and the companies that perform such bundling are more productive than those selling products and services separately. That said, the export of goods and services is a key measurement that influences not only manufacturing but also services, since both the sectors are highly intertwined.

As shown in Figure 5, exports from APO member economies have been growing rapidly in recent years, notably for countries such as India, Singapore, and Thailand. The figure shows the approximate average change in service exports in three time periods.

Figure 6 shows that in some countries, such as India, Singapore, and the Philippines, there has been an increase in the amount of services as share of total exports. However, some characteristics are specific to certain income-level groups. In HICs such as Japan and the Republic of Korea (ROK), the share of service exports within total exports has remained the same as in the 1990s. By contrast, in India, Thailand, and Turkiye there have been significant changes in service exports. In the case of India, service exports have increased in the recent period while in Turkiye they have decreased.

However, when analyzing decreases and increases in the proportion of service exports in relation to total exports, we need to exercise caution since the data cannot capture many characteristics of services, though there has been increased participation of services in the GVC. Miroudot and Cadestin [36] divided the roles of services into different categories. The first category refers to services as inputs for manufacturing activities and is linked with the value chain. The second category is the provision of services within manufacturing firms, and the last category consists of services that are bundled with goods and sold by manufacturing firms. However, some services are not well captured as they are embodied in the manufacturing processes, i.e., services are exported not only by service companies but also by manufacturing companies [37]. Moreover, it is not easy to distinguish between services used as intermediate goods of production and those embodied in the production, etc.

Existing studies related to services trade show that services trade contributes to economic growth and is a source of job creation. UNCTAD [38] showed that 1% increase in service exports leads to around 0.53% increase in employment, based on an empirical analysis covering 30 developed

**FIGURE 5****EXPORTS OF GOODS AND SERVICES IN APO COUNTRIES.**

Source: Authors' calculations using the WDI database.

**FIGURE 6****RATIO OF THE SERVICES SECTOR TO TOTAL EXPORTS.**

Source: Authors' calculations using the WDI database

countries and 10 developing countries. According to Miroudot and Cadestin [36], the proportion of services used as inputs, whether domestic or overseas, accounts for 37% of the value of manufacturing exports. Moreover, this proportion increases to 53% when services are added within manufacturing firms.

Other studies such as those by Bernard [31] and Lodefalk [32] analyzed the relationship between services inputs and the increase of exports in the manufacturing industry, concluding that 10% increase in the share of services in in-house production leads to 0.6% increase in export intensity. Aquilante and Vendrell-Herrero [34] examined the effect of bundling products and services, which represents one of the characteristics of recent services, by analyzing SMEs in Germany. They concluded that firms that bundle products and services are more likely to have larger exports than firms that sell services and goods separately (7–9% p higher).

Figure 7 represents the exports of different subsectors of services. In the 1990s, service exports from APO countries were mostly concentrated in high-income economies such as Japan, Hong Kong, and Singapore. Japan's service exports reached the highest among member economies, while the financial industries were higher in countries such as Mongolia and Islamic Republic of Iran (IR Iran). In the 2010s, service exports increased in most of the countries relative to figures from the 1990s. By sector, financial services and insurance have particularly gone up, especially in Singapore and Hong Kong.

The existing literature shows that an increase in services impacts economic growth and employment. Furthermore, there are studies that empirically demonstrate that services promote economic growth when used as an intermediate input in the manufacturing sector. Figure 7 indicates that service exports have increased in most APO member economies between the 1990s and the 2010s. Particularly, trade volume has significantly increased in some countries such as Japan, the ROK, and India. However, the trade trends may exhibit different characteristics depending on the industrial structure, local characteristics, and the development stage of each country.

As will be discussed in more detail in this chapter, the role of services as intermediate goods is increasing according to the IO analysis. However, it is believed that it is facing a new turning point due to the global financial crisis and the recent spread of global protectionism. Service exports from countries such as India, the ROK, Japan, and Singapore, have increased significantly. Although, in general, intermediate services as inputs have also increased, for some industries, intermediate services as inputs do not appear to increase significantly due to a decrease in the cost efficiency of each production process.

### Key Trends and Characteristics of the Services Sector in APO Member Economies

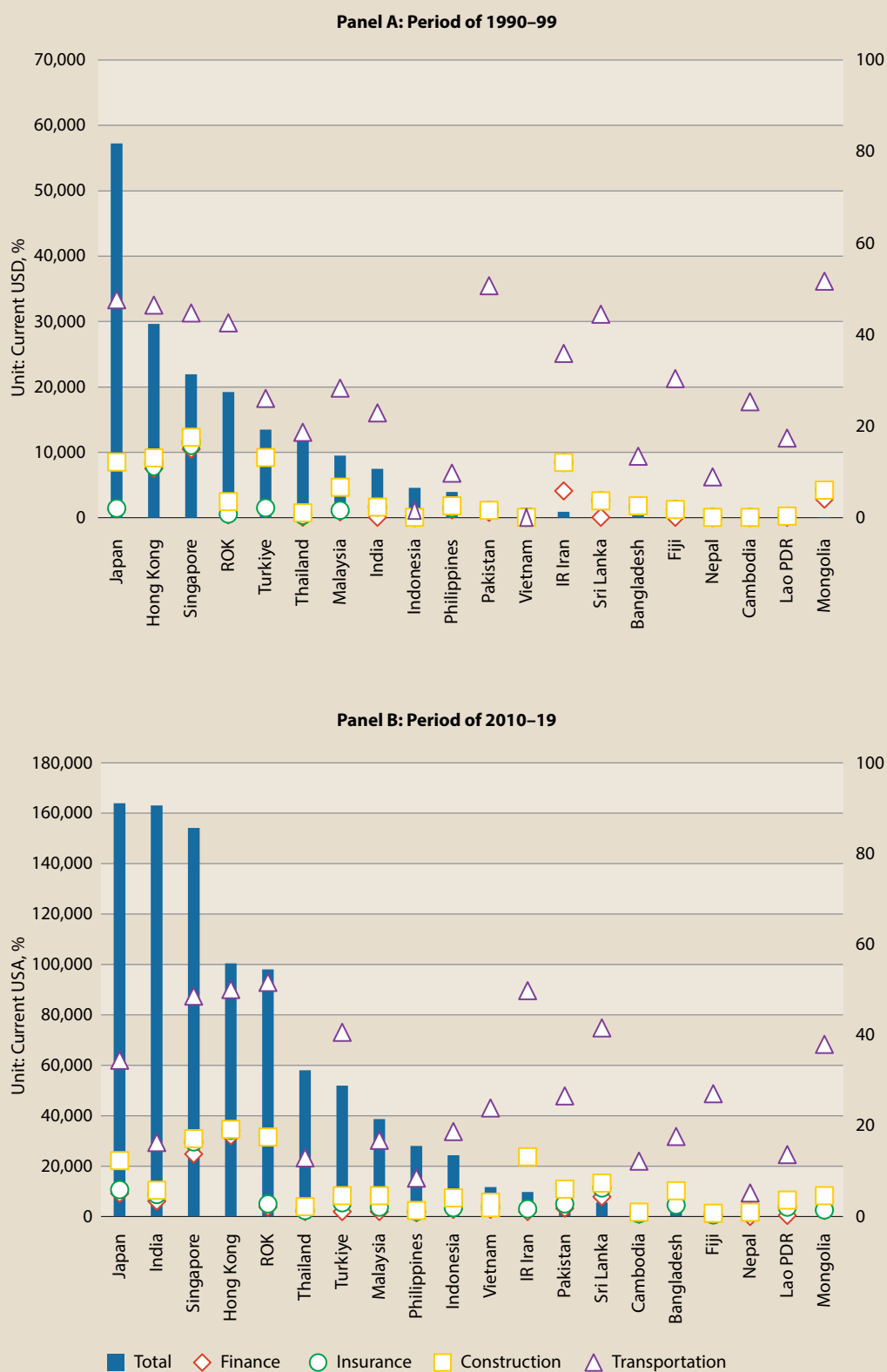
#### Services Sector in APO Member economies

APO member economies are increasingly dominated by services. Figure 8 presents sectoral GDP and employment shares in APO member economies from 1990 to 2019, based on income levels. High-income economies are Hong Kong, Japan, the ROC, and the ROK; upper-middle-income economies include Fiji, Malaysia, Thailand, and Türkiye; and low-middle-income economies include Bangladesh, Cambodia, India, Indonesia, IR Iran, Lao PDR, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, and Vietnam.

The most distinct feature is that the services sector has become the dominant sector across member economies in terms of GDP and employment; and is higher even than manufacturing is for advanced economies and agriculture is for low-income countries. Compared with manufacturing, services

FIGURE 7

## SERVICES EXPORTS BY COUNTRY AND SECTORAL SHARES OF EXPORTS (%) IN APO.



**Source:** Authors' calculations using the WTO database. The right axis represents the share of each subservice sector in percentage.

are rising at a faster speed. In 1990, the services sector comprised 54.7% of the total GDP share, but it increased to 60.7% in 2019. In terms of employment, the services sector absorbed 42.2% of the labor force in 2019, compared with 28.6% in 1990.

Although there is some variation depending on the development state of a member economy, it reflects differences in policies, institutions, and service performance among APO member economies. For high-income economies, with GDP share of 68.9% and employment share of 71.3%, the pattern is similar to that of the OECD member countries. According to Woelf [39], the services sector accounted for 70% of total employment and value added in OECD economies in 2002.

Figure 9 represents the composition of services in APO member economies. High-value-added services such as finance and business activities comprise smaller portions of shares of GDP and employment compared with the large proportion of low-value-added services such as wholesale, retail and trade, and nonmarket services (community and personal services), which have changed little over the past three decades. However, it is notable that the increase in GDP share of the services sector can mainly be attributed to growth in transport, storage, and communication, followed by financial intermediation, real estate, renting, and business activities, with an increase accounting for 8.3% and 16.5% of GDP in the total economy, respectively, in 2019. Productivity improvements are under pressure since these activities are driven by market forces [13].

The case is similar with employment: almost two-thirds of jobs from total services are concentrated in low-skill and traditional subsectors such as wholesale, retail trade, repair of vehicles and households, hotels and restaurants, and community and personal services. Meanwhile, high-skill, knowledge-intensive services such as financial intermediation and business activities only represent 8% of the total jobs in the services sector.

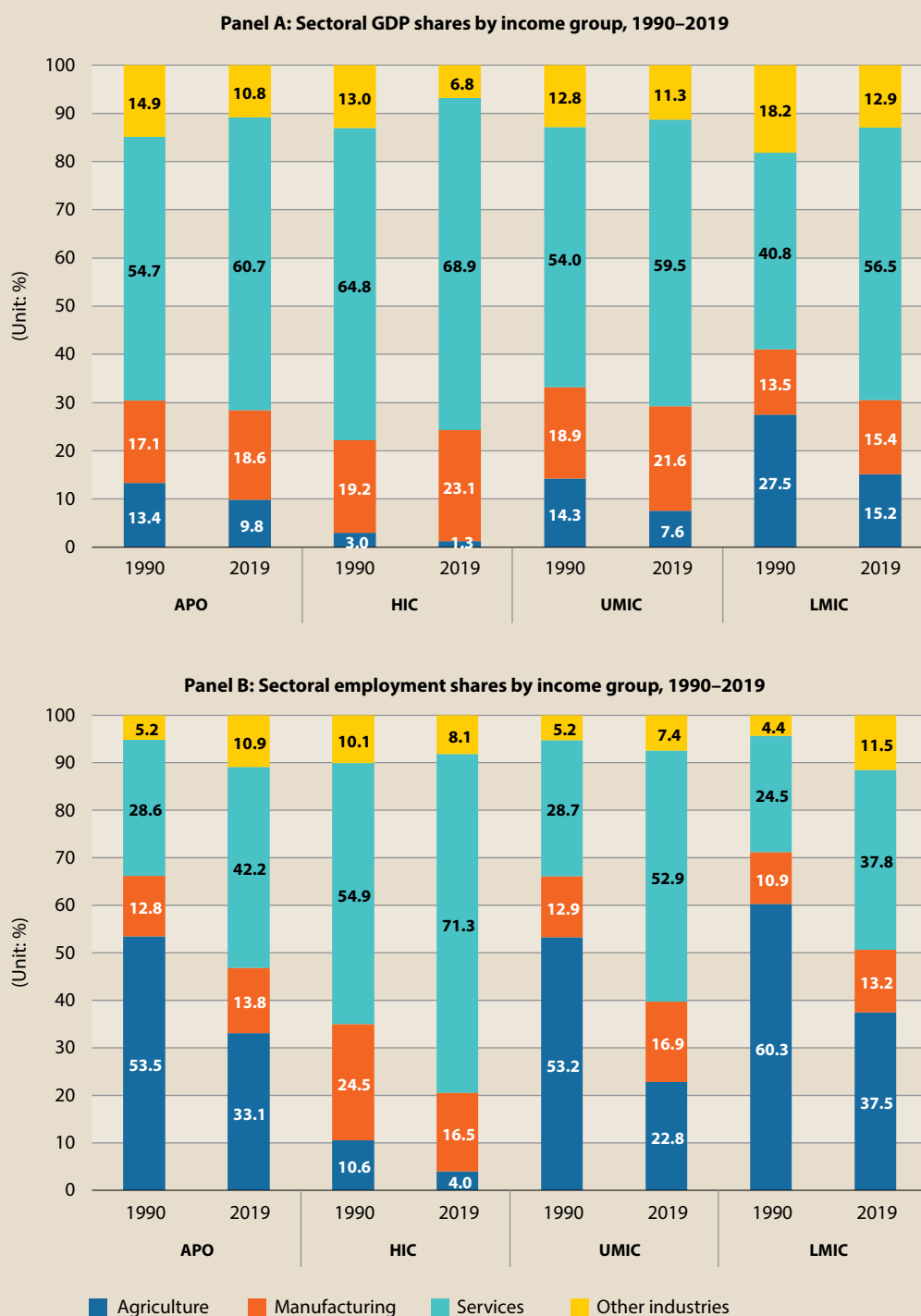
Although there are general patterns in different types of services, cross-country differences also exist based on income level, regulatory policy, specialization, etc. [40].

It is important to understand the key characteristics behind services, which lead to an increase in the GDP of the sector, since performance and characteristics vary by sector. In the next section we expand on the role of service subsectors. We also discuss the role of services as intermediate inputs of production and the sector's linkage with other sectors.

#### Inter-industrial Linkage

According to Oulton [4], when the demand for services as intermediate goods increases, even though the productivity improvement of services as a whole may not be significant, it contributes to the overall productivity improvement of the economy through industry-related effects.

The IO table represents production consisting of the input of intermediate goods and the input of value added. The input of intermediate goods includes physical or material intermediate inputs such as manufacturing (light or heavy manufacturing) products and other agricultural, forestry, and mining products, as well as services such as transportation services, business services, and information technology services. Services as well as physical intermediate goods are classified into domestic intermediate goods and imported intermediate goods. Due to the limitation of available data, it is not possible to distinguish whether services are used as intermediate goods in the processes of outsourcing and offshoring. It is also not possible to distinguish whether services were produced and supplied by the holding company, subsidiary company, or other companies.

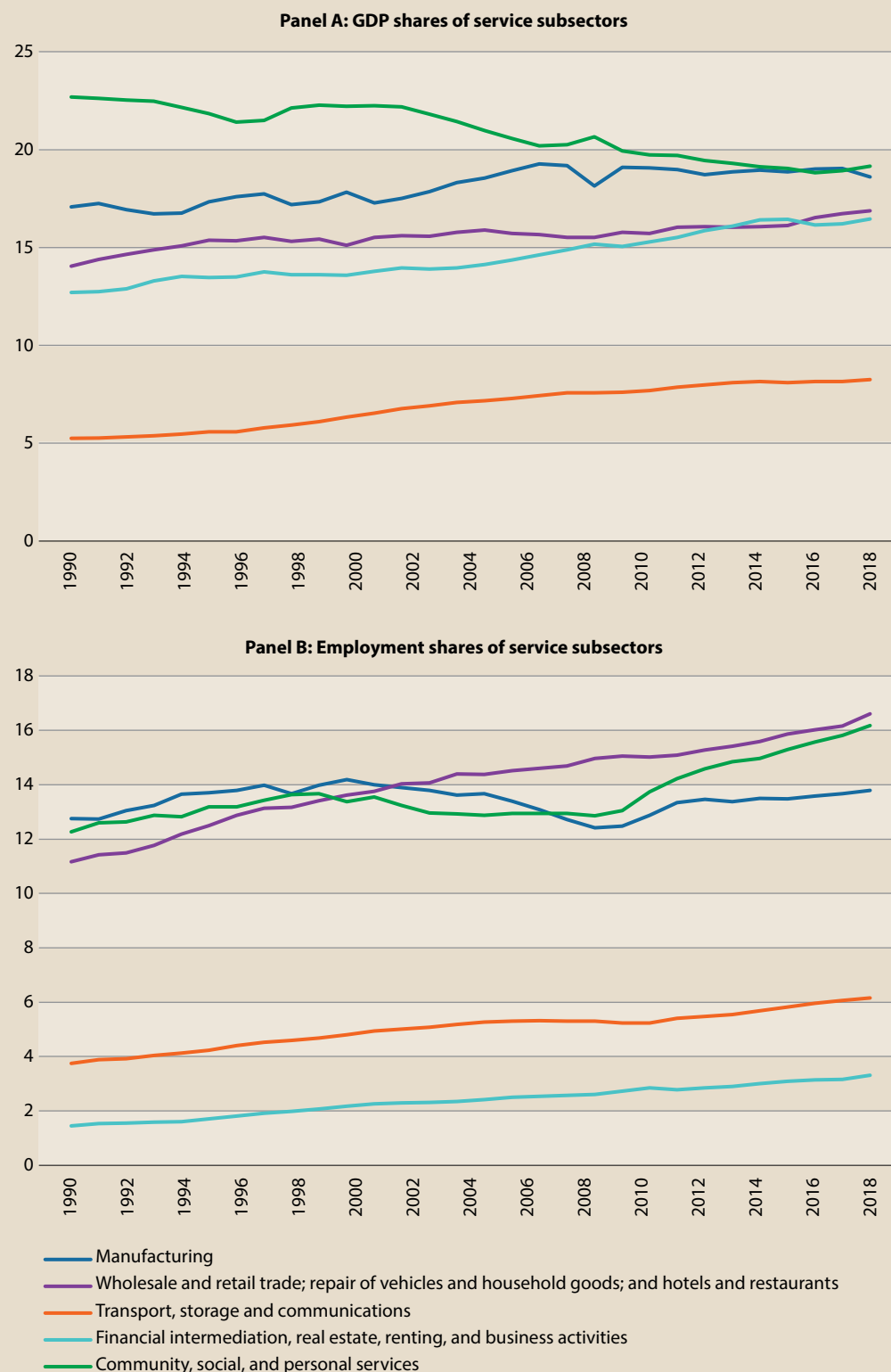
**FIGURE 8****SECTORAL GDP AND EMPLOYMENT SHARES BY INCOME GROUP IN APO MEMBER ECONOMIES, 1990–2019.**

**Source:** APO Productivity Database, 2021.

**Note:** GDP is by industry at constant prices per worker, using 2017 PPP. The services sector consists of four service branches (1) wholesale and retail trade, repair of vehicles and household goods, hotels, and restaurants; (2) transport, storage, and communications; (3) Financial intermediation, real estate, renting, and business activities; and (4) community, social, and personal services. Other industries include mining and quarrying; electricity, gas, and water supply; and construction.

FIGURE 9

## GDP AND EMPLOYMENT SHARES OF SERVICE SUBSECTORS IN APO MEMBER ECONOMIES, 1990–2019.



Source: APO Productivity Database, 2021.

Note: GDP is by industry at constant prices per worker, using 2017 PPP.

In this part of the chapter, services as intermediate inputs will be analyzed through the IO Table. The IO Table is a statistical table developed by the American economist Wassily Leontief [41]. It records the flows of goods and services using the transaction values between industries. In other words, this is a comprehensive statistical table that records all transactions related to the production and disposal of goods and services occurring in the economy over a certain period of time, in accordance with certain principles and formats. This statistical table shows the goods and services that were produced within an economy and the sectors that were used.

IO analysis is based on the numerical interdependencies between different economic sectors or industries. This analysis can be used to identify key service subsectors and their interlinkages in APO member economies. IO analysis has been regarded as a crucial tool for analyzing the spatial interdependencies between countries. Here, IO analysis will be applied to study the importance of the services sector. The Multi-regional Input Output Table (MRIOT) is structured so that the domestic transactions of each economy fall into the main diagonal blocks of the entire matrix, with off-diagonals representing the explicit trade links of one economy with another. In other words, the IO analysis quantitatively analyzes the relationship between industries, and is intended to find how changes in the service industry's input of intermediate goods directly contribute to the production of final outputs as well as exports, and in this manner indirectly capture the impact on productivity [42].

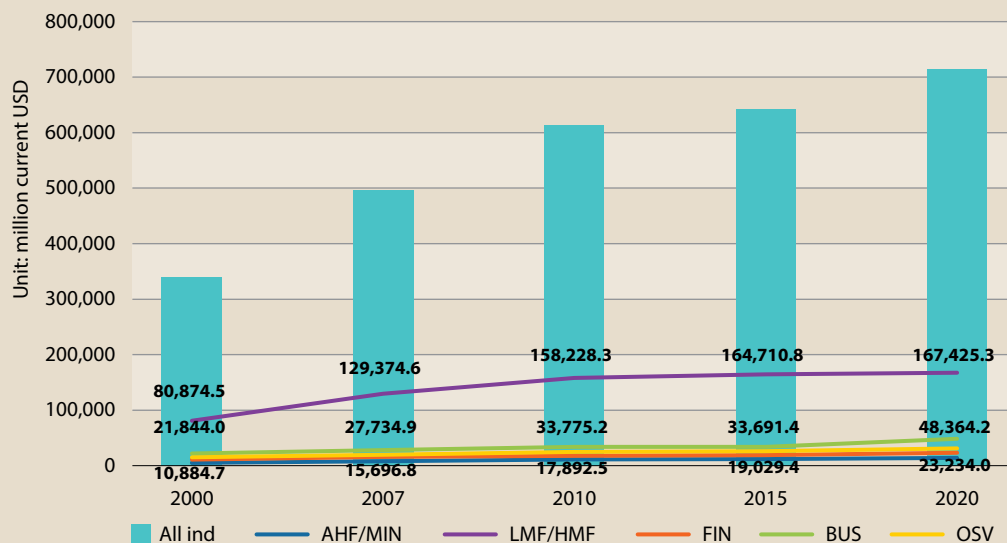
In the IO analysis, effects of inter-industrial linkages such as backward-linkage effects, forward-linkage effects, and net effects are to be seen as major indicators. The domestic linkages show the various indices of linkages and multipliers among domestic sectors and their corresponding multipliers derived from national IO tables. Multipliers examine how exogenous changes in the system are translated into changes in macroeconomic variables included in the study. Macroeconomic variables determined in the system include outputs and incomes; and may be expanded to include employment and value-added multipliers [43].

Prior to the industry-related analysis results shown in Figure 10, we briefly examined the proportion of total output by industry in APO member economies and the proportion of intermediate goods input. We confirmed that, on an average, the proportion of financial industries and business services is increasing and is higher than the overall industry average of APO member economies. In this analysis, AHF/MIN refers to agriculture, forestry, and mining; LMF/HMF to light and heavy industry manufacturing; FIN to financial services; BUS to business services, and OSV to other service industries. In addition, the data from 19 APO member economies excluding Türkiye and IR Iran, which are available in the ADB database, were calculated by averaging them by industry.

Backward linkages represent how a change in the output of one sector affects the input needed from other sectors. In other words, it represents the relationship of a sector with its suppliers. The backward linkages of APO member economies by industry have maintained a constant level without significant changes over the past 20 years, as indicated in Figure 11. Meanwhile, as shown in Figure 12, forward linkages map how changes in the output of sector  $j$  affect the sectors consuming  $j$ 's output for their own respective production. This relies on a supply-driven input-output analysis and makes use of the *Ghosh inverse*. As presented in Figure 12, the forward linkages of APO member economies were reduced during the financial crisis, but they appear to have been recovering recently, though it is judged that there are differences by industry. In particular, such a phenomenon is relatively clearer in the case of financial services compared with other areas.

FIGURE 10

## TOTAL INTERMEDIATE INPUTS BY SECTOR IN APO MEMBER ECONOMIES.

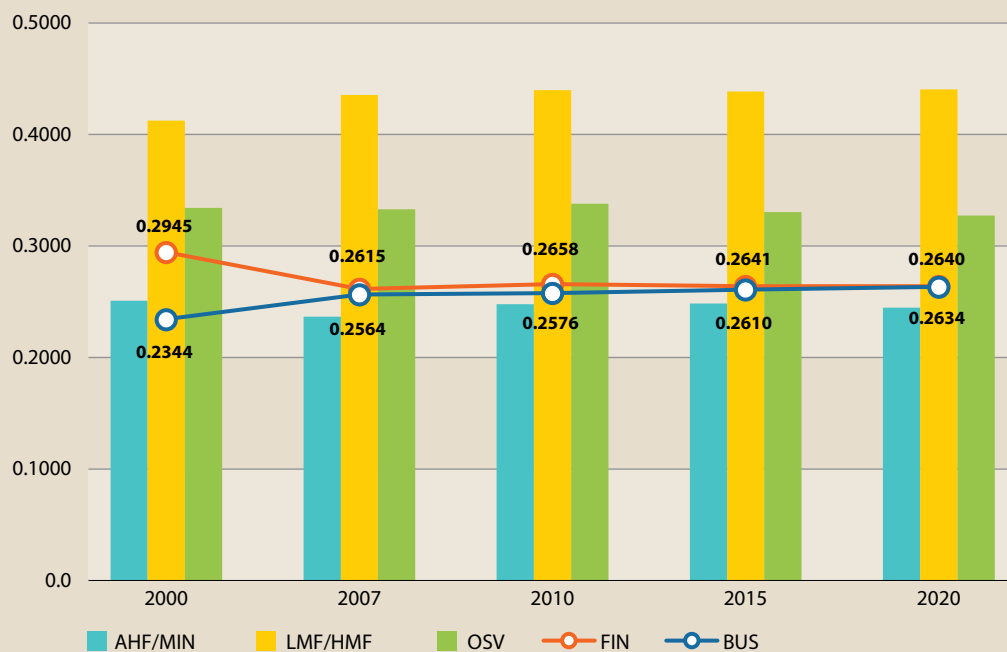


Source: Authors' calculations using the ADB MRIO Database.

Note: Based on data availability, the analysis includes 19 APO member economies, excluding Türkiye and IR Iran. AHF = agriculture, fisheries; MIN = mining; LMF = light manufacturing; HMF = heavy manufacturing; FIN = financial; BUS = business service; and OSV = other services (education, defense, government services, etc.).

FIGURE 11

## AVERAGE DIRECT BACKWARD LINKAGE COEFFICIENTS IN APO MEMBER ECONOMIES.

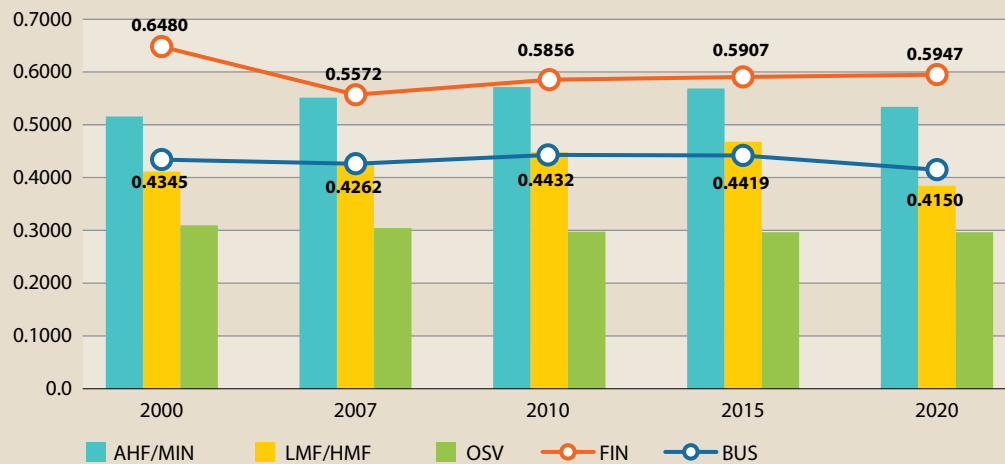


Source: Authors' calculations using the ADB MRIO database.

Note: Based on data availability, the analysis includes 19 APO member economies, excluding Türkiye and IR Iran. AHF = agriculture, fisheries; MIN = mining; LMF = light manufacturing; HMF = heavy manufacturing; FIN = financial; BUS = business service; and OSV = other services (education, defense, government services, etc.).

FIGURE 12

## AVERAGE DIRECT FORWARD LINKAGE COEFFICIENTS IN APO MEMBER ECONOMIES.



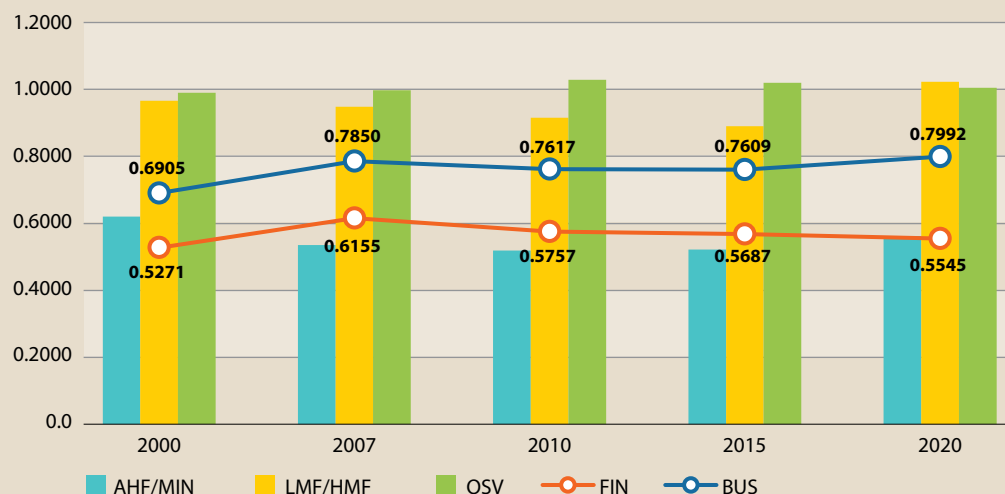
Source: Authors' calculations using the ADB MRIO database.

Note: Based on data availability, the analysis includes 19 APO member economies, excluding Türkiye and IR Iran. AHF = agriculture, fisheries; MIN = mining; LMF = light manufacturing; HMF = heavy manufacturing; FIN = financial; BUS = business service; and OSV = other services (education, defense, government services, etc.).

The net backward linkage (see Figure 13) and the net forward linkage (see Figure 14) indicators reflect the two-sided nature of linkage effects, taking account of “one sector versus the entire economy.” The backward dependence of sector  $i$  on all industries of the economy is divided by the backward dependence of all sectors on sector  $i$ , and the forward dependence of sector  $i$  on all industries of the economy is divided by the forward dependence of all sectors on sector  $i$ .

FIGURE 13

## AVERAGE NET BACKWARD LINKAGE COEFFICIENT IN APO MEMBER ECONOMIES.

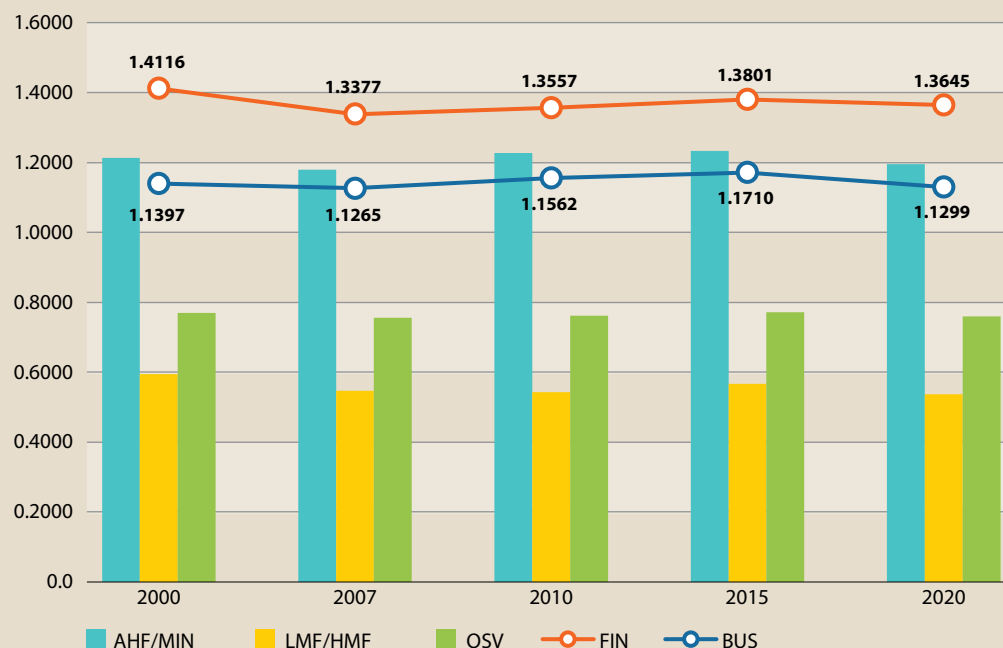


Source: Authors' calculations using the ADB MRIO database.

Note: Based on data availability, the analysis includes 19 APO member economies, excluding Türkiye and IR Iran. AHF = agriculture, fisheries; MIN = mining; LMF = light manufacturing; HMF = heavy manufacturing; FIN = financial; BUS = business service; and OSV = other services (education, defense, government services, etc.).

FIGURE 14

## AVERAGE NET FORWARD LINKAGE COEFFICIENTS IN APO MEMBER ECONOMIES.



**Source:** Authors' calculations using the ADB MRIO database.

**Note:** Based on data availability, the analysis includes 19 APO member economies, excluding Türkiye and IR Iran. AHF = agriculture, fisheries; MIN = mining; LMF = light manufacturing; HMF = heavy manufacturing; FIN = financial; BUS = business service; and OSV = other services (education, defense, government services, etc.).

Most subservices in APO member economies appear to be included in the strong forward-linkage sectors. The financial or business services sector appears to be dependent on the supply between industries and has become a key sector due to the continuous increase in the backward-linkage effect. The strong forward-linkage effect of services is apparent in most countries, including advanced countries. However, APO member economies show a higher average forward effect than the total world average covered in the analysis. Further specific and theoretical elaboration related to the IO analysis is discussed in a specific chapter later in the report.

#### Labor Productivity in Services

This section provides an overview of sectoral labor productivity trends with a special focus on services in APO member economies. The tertiarization of the economy is one of the main characteristics of the recent changes in global economic conditions. This tertiarization is caused by various factors such as increased demand for services due to improved income levels; deindustrialization due to high-value-added manufacturing; spread of the international division of labor; the development of ICT technology; population aging; and women's participation in economic activities. The servicification of the manufacturing industry, in which the manufacturing industry expands the inputs of services as intermediate goods in the production process or provides services in the form of final goods, is also interpreted as one of the factors of tertiarization.

There are different ways to approach productivity measurement. According to OECD [15], productivity is defined as the ratio between output volume (GDP, value added) and the volume of inputs (employment, hours). In this chapter, labor productivity is calculated as GDP per worker using the APO Productivity Database of 2021, with constant 2017 PPP. In APO member economies, productivity levels in services

**BOX 3: IO ANALYSIS SECTORS**

According to Temursho [43], the input-output linkage analysis sectors can be classified as follows:

**Weak linkages sectors:** These are sectors that are not strongly connected to other industries, both along their input demand and output supply chains, and thus have relative backward and forward linkages that are both less than 1. In the case of net linkages, weak sectors have lower total backward and forward dependence on all industries than the total backward and forward dependence of all industries on these (weak) sectors.

**Strong forward-linkage sectors (dependent on interindustry demand):** These are sectors with relative forward linkages that are greater than the corresponding economy-wide average of forward linkages of all sectors, and with the reverse situation holding for their relative backward linkages. In the case of net linkages, forward-oriented sectors have a larger total forward dependence on all industries than the total forward dependence of all industries on these sectors.

**Strong backward-linkage sectors (dependent on inter-industry supply):** These are sectors with relative backward linkages greater than the corresponding economy-wide average of backward linkages of all sectors, and with the reverse situation holding for their relative forward linkages. In terms of net linkages, backward-oriented sectors have a larger total backward dependence on all industries than the total backward dependence of all industries on these sectors.

**Key sectors or 'leading' sectors:** These are strongly connected to other industries both along their input demand and output supply chains, and thus have both relative backward and forward linkages that are greater than 1. In terms of net linkages, key sectors have larger total backward and forward dependence on all industries than the total backward and forward dependence of all industries on these sectors. Therefore, in terms of linkages, key sectors are considered to be the 'most important.'

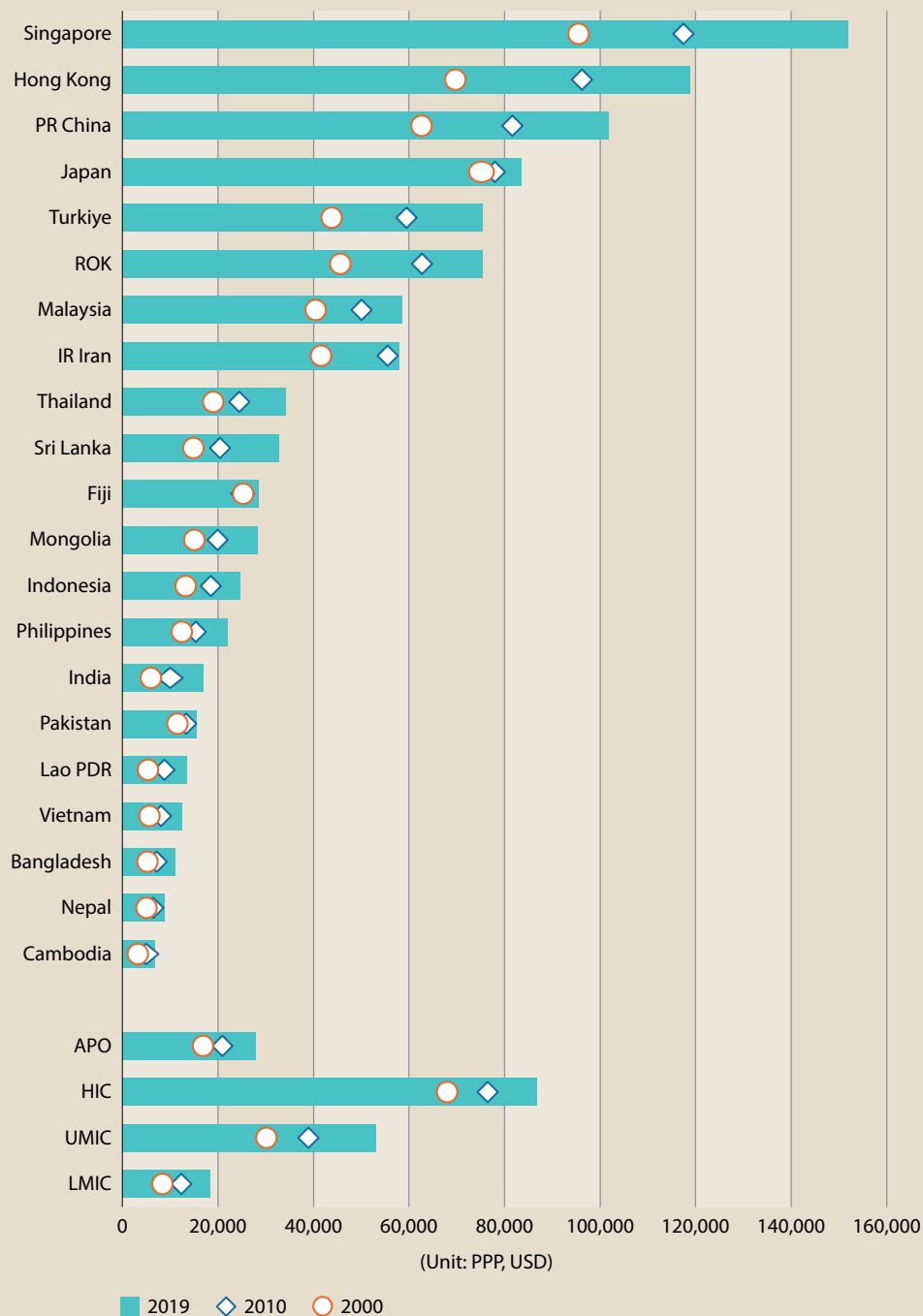
**Source:** Temursho U [44].

are higher than in manufacturing, which is due to the high productivity of financial intermediation, real estate, and business activities. In addition, 21 member economies were classified based on income, as follows: the ROK, Japan, the ROC, Hong Kong, and Singapore were classified as high-income economies; Fiji, Malaysia, Thailand, and Turkiye as upper middle-income countries/economies (UMICs); and Bangladesh, Cambodia, India, Indonesia, IR Iran, Lao PDR, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, and Vietnam as lower middle-income countries/economies (LMICs).

Among APO economies, the labor productivity level in 2019 was found to be the highest in Singapore (USD151,920); Hong Kong (USD118,709); the ROC (USD101,851); Japan (USD81,948); and the ROK (USD64,744); while it was the lowest in Cambodia (USD5,861); Bangladesh (USD15,421); and Vietnam (USD16,493). This may reflect their stages of industrial development. In terms of productivity level, there is a huge productivity gap among APO members. In addition, service productivity has increased rapidly mainly in high-income economies such as Singapore, Hong Kong, and the ROC; as well as in LMICs such as IR Iran, Malaysia, Sri Lanka, and India. In other countries such as Japan and Cambodia, little change was experienced, even though productivity levels decreased compared with previous years. These statistics point to a process of convergence in productivity levels across APO member economies.

FIGURE 15

## ECONOMY-WIDE LABOR PRODUCTIVITY OF APO MEMBER ECONOMIES.



Source: APO Productivity Database, 2021.

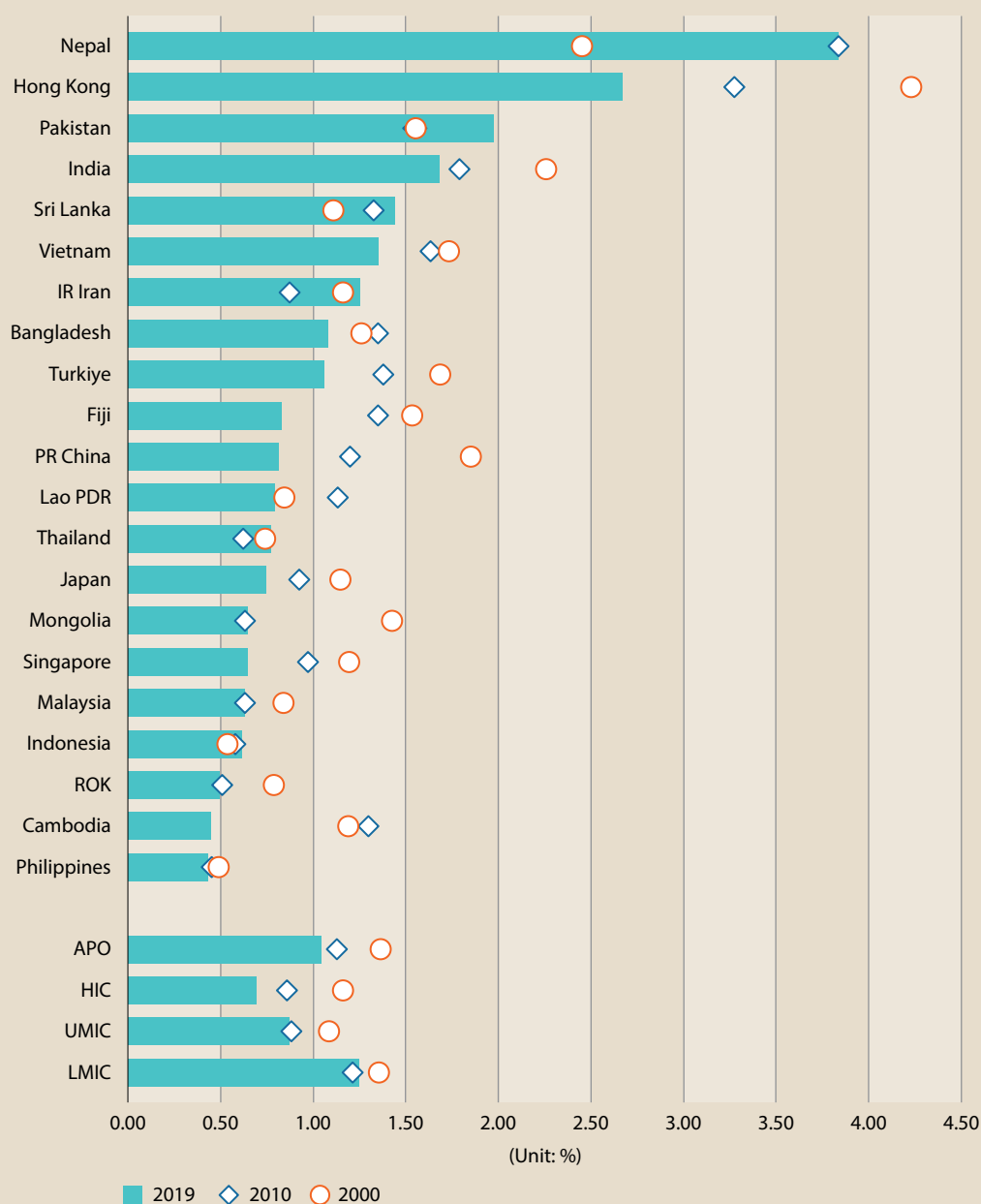
Note: GDP by industry is at constant prices per worker, using 2017 PPP; labor productivity is calculated as GDP per worker.

On the other hand, the productivity gap between manufacturing and services, measured as the relative ratio of the productivity level of the manufacturing sector to the services sector is gradually decreasing, as shown in Figure 16, except for some countries such as Nepal, Pakistan, and Sri Lanka. Additionally, the average productivity gap of APO member economies shows that the

overall level has been decreasing over the past 20 years, and that the productivity of the manufacturing industry in Hong Kong is also rapidly increasing. However, in the case of Nepal, both the manufacturing and service industries are increasing at a low level of productivity, which is notable when comparing the relative size.

FIGURE 16

## RELATIVE PRODUCTIVITY RATIO OF MANUFACTURING AND SERVICES IN APO MEMBER ECONOMIES.

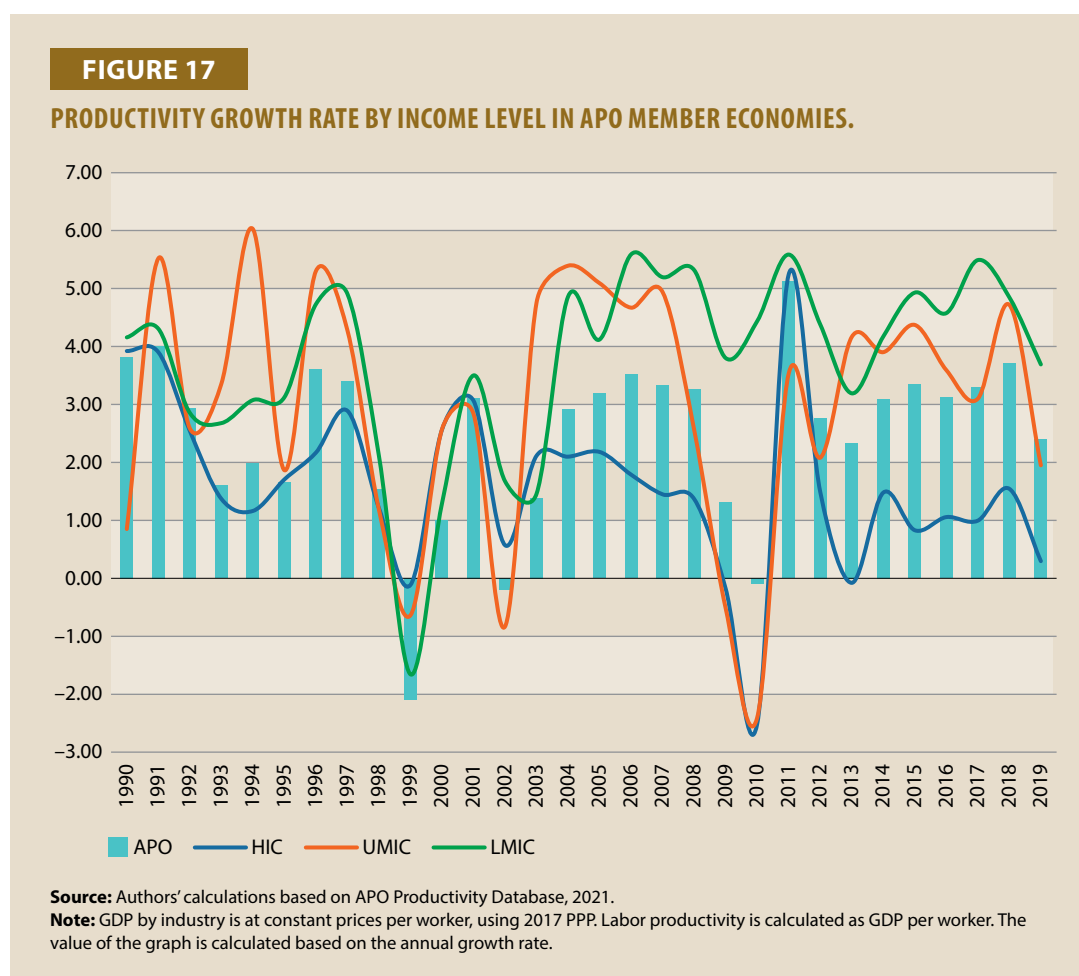


**Source:** Authors' calculations based on APO Productivity Database, 2021.

**Note:** Productivity gap is measured as the relative ratio of the productivity level of the manufacturing sector to the services sector. The value displayed on the y-axis represents the percent ratio of the productivity gap between the industries. For labor productivity, it was calculated as GDP per worker. GDP by industry is at constant prices using 2017 PPP. This graph represents the relative sizes of service productivity and manufacturing productivity. The phenomenon of convergence of manufacturing and services at the national level can be observed.

Figure 17 shows the sectoral labor productivity growth rate in APO member economies and income group levels. After the Asian financial crisis, APO member economies experienced a –2.0% decrease in productivity, and the aftermath of the crisis appeared to have had impacts until 2002. Meanwhile, the 2008 global financial crisis also adversely affected productivity, resulting in –2.5% decrease in productivity in middle- and low-income countries.

After the two financial crises, overall productivity appears to have had a greater impact on developed countries. During the global financial crisis of 2008–09, productivity growth was more strongly affected in high-income economies, especially in the services sector, compared with upper-middle-income and high-income economies. On average, productivity growth rates in UMICs and LMICs were higher than in HICs. In addition, while experiencing the Asian financial crisis, their productivity recovered quickly, but the recovery of HICs appeared to be slow, and there were cases that were hardly affected by the global financial crisis.



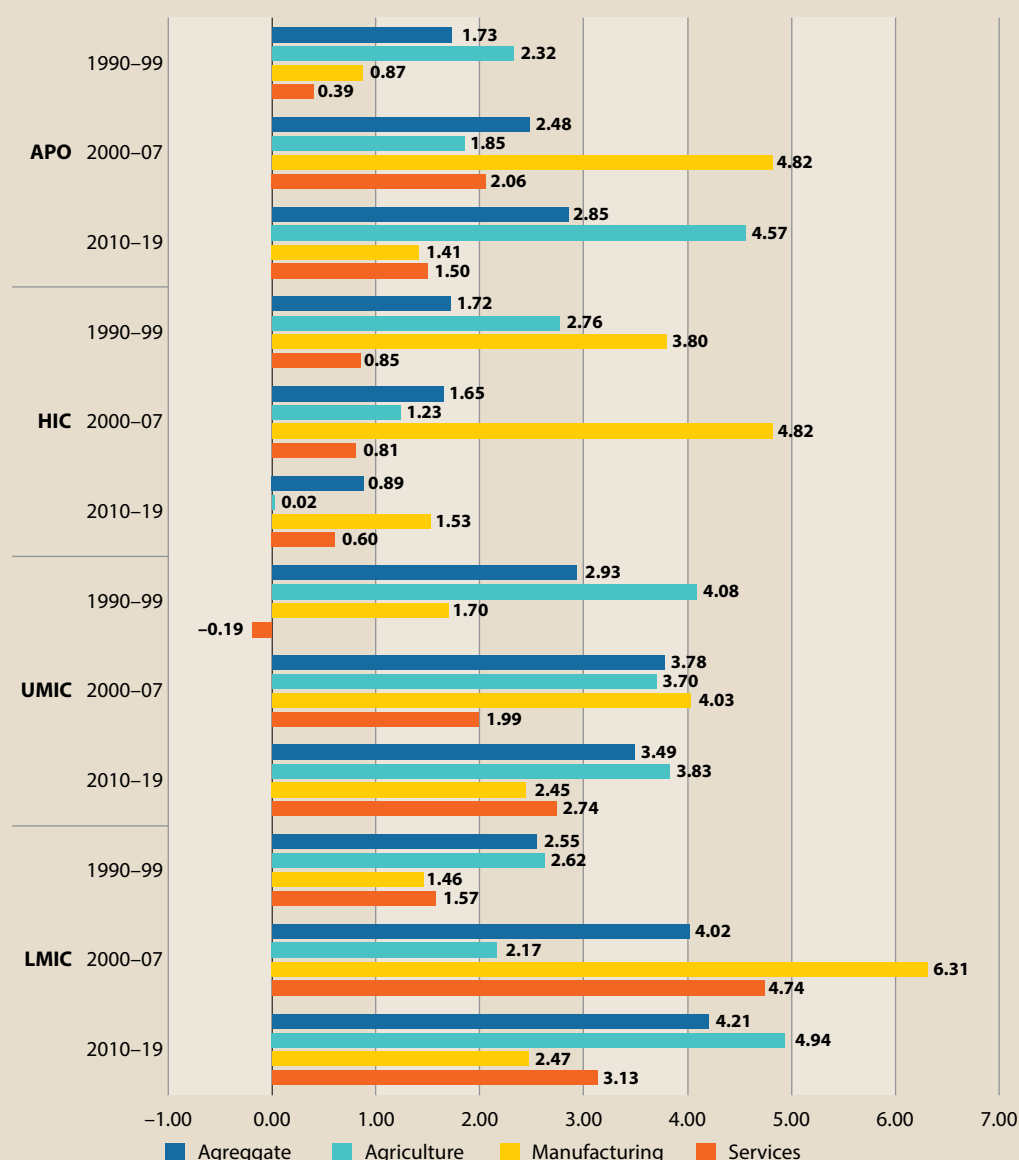
More specifically, the values for labor productivity by sector in Figure 18 show the rate of increase in labor productivity by income group level among APO member economies in three sub-periods of 1990–2000, 2000–07, and 2010–19. Labor productivity is calculated as the average of each period and not the single-year value, to prevent the average from absorbing the shocks that occurred during the 1997 Asian financial crisis and the 2008 global financial crisis. Since the 2008–09 financial crisis, productivity growth has been more strongly affected in HICs than in UMICs and LMICs. HICs have a low growth rate due to their high level of productivity, but the growth rate of

productivity in the services sector has been decreasing on average since 1990. The average growth rate of 0.85% in the 1990s decreased to 0.6% in the 2010s, representing one-third of the manufacturing industry.

On the other hand, services sector's productivity in UMICs and LMICs has been steadily growing over the past 30 years, and the growth rate of the sector's productivity has recently been higher than before. In other words, it can be indirectly confirmed that most of the tertiarization described above is taking place mainly in middle-income countries.

**FIGURE 18**

**SECTORAL LABOR PRODUCTIVITY GROWTH RATES IN APO MEMBER ECONOMIES, 1990–2019.**



**Source:** Authors' calculations based on APO Productivity Database, 2021.

**Note:** GDP by industry is at constant prices per worker, using 2017 PPP. Growth is the compound growth rate. The services sector consists of four subsectors: (1) wholesale and retail trade, repair of vehicles and household goods, hotels, and restaurants; (2) transport, storage, and communications; (3) financial intermediation, real estate, renting, and business activities; and (4) community, social, and personal services.

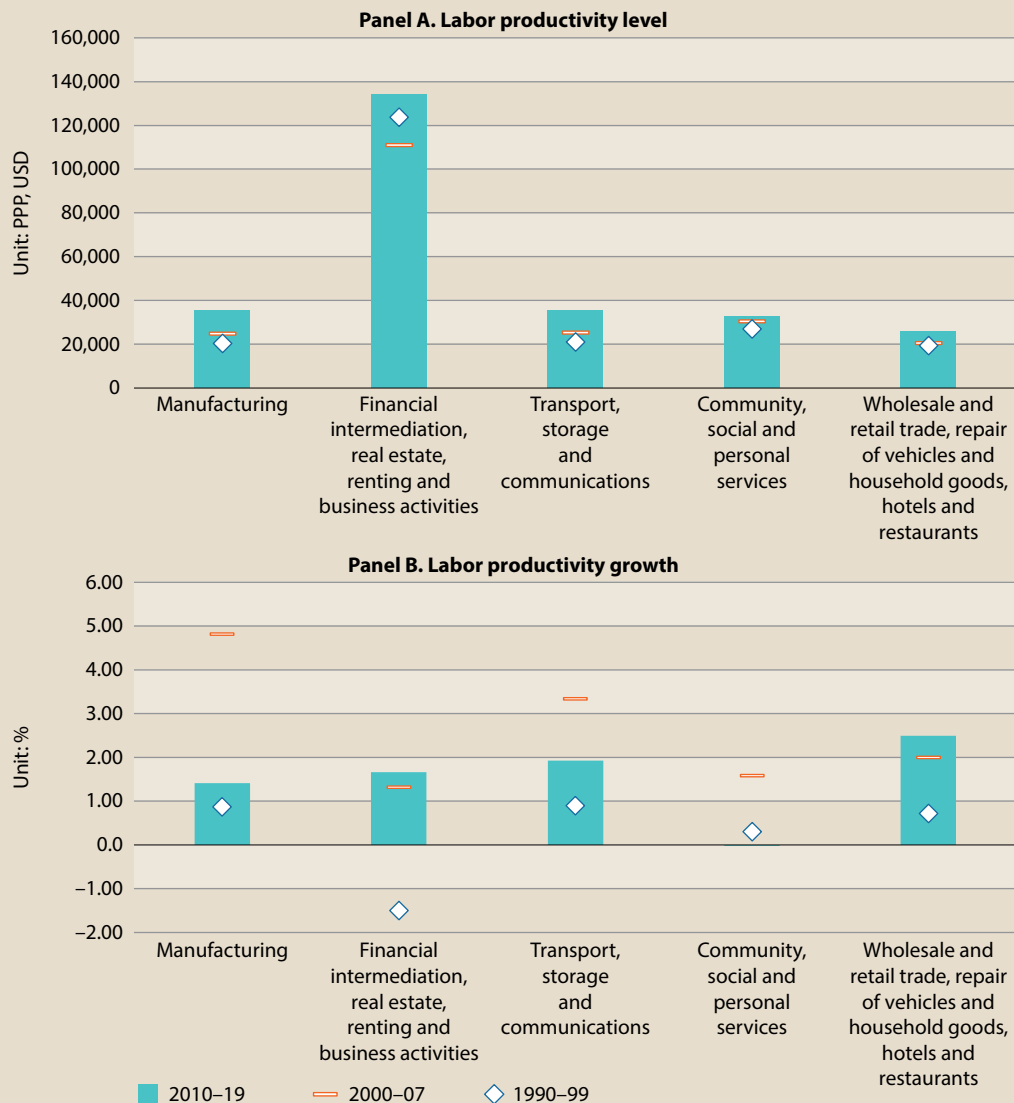
### Services Productivity by Subsector

Within the services sector, huge gaps exist across different service subsectors. Figure 19 shows the average productivity growth by subsector after the 1990s, excluding the global financial crisis period. The labor productivity level from 2010 to 2019 was higher in some service subsectors than that in manufacturing. Even the subsector of financial intermediation, real estate, renting, and business activities showed a productivity level three times higher than that of manufacturing. In addition, the productivity of the transport, storage, and communication subsector appears to have been similar to that of manufacturing; while the productivity levels of other subsectors were lower than that of manufacturing. However, care should be taken when interpreting this data, since real estate is included in financial intermediation. On the other hand, with regard to the labor productivity growth rate, the productivity of the manufacturing industry decreased to a level lower than that before the global financial crisis, while it was higher in most service subsectors except for community, social, and personal services. The growth of the wholesale and retail subsector in the 2010s is believed to be due to changes in consumption patterns such as the expansion of non-face-to-face transactions such as internet shopping and the emergence of large retail companies.

Figure 20 presents data on productivity across subsectors. The subsector of wholesale and retail trade, repair of vehicles and household goods, and hotels and restaurants (Panel A) is the sector with the lowest productivity level among APO member economies. The average productivity level of APO member economies is USD28,744, and the economies having the highest levels are Singapore (USD151,416) and Hong Kong (USD108,332). The average growth rate of APO member economies is 2.5%, and the economies with highest rates are Lao PDR (10.4%); Mongolia (6.1%); and India (6.0%). In other words, the productivity level of high-income economies is higher, but the growth rate of LMICs is higher. In LMICs, although the productivity level is not high due to the low technology accumulation of the sector, it has the potential to increase productivity in future.

In the case of transportation, storage, and communication (Panel B, Figure 20), the productivity level is higher in UMICs, and can be seen as one of the main sources of productivity growth for this group. In the case of financial intermediation, real estate, renting, and business activities, productivity is higher in comparison with other subsectors. The average productivity level of APO member economies is USD37,915 and the economies with the highest levels are Turkiye (USD176,431) and Singapore (USD159,685). The average growth rate of APO members is 2.5%, and the economies with the highest growth rates are Mongolia (10.36%); Lao PDR (8.67%); and Indonesia (7.24%). Turkiye's high transportation productivity is attributed to its function as an air transport hub between Europe and Asia. Singapore's productivity is also traditionally attributed to its role as a gateway between east Asia, India, and Africa. Meanwhile, the productivities of Mongolia and other countries are based on their abundant natural resources. While exports of these resources have steadily been pointed out as a weakness, it is believed that recent efforts to improve poor logistics infrastructure have been reflected.

In the case of financial intermediation, real estate, renting, and business activities (Panel C), the productivity level is higher in HICs, as this has been a major growth subsector in the past and is expected to develop in middle-income countries in future. The average productivity level of APO member economies is USD140,489 and the economies with the highest levels are Singapore (USD650,696) and Japan (USD321,235). The average growth rate of APO member economies is 1.66%, and the economies with the highest growth rates are Pakistan (13.88%); Sri Lanka (8.62%); and India (7.25%). Pakistan's productivity growth rate was found to be quite high. However, the *Monthly Economic Update & Outlook* [45] of Pakistan has revealed that inflation is overheating

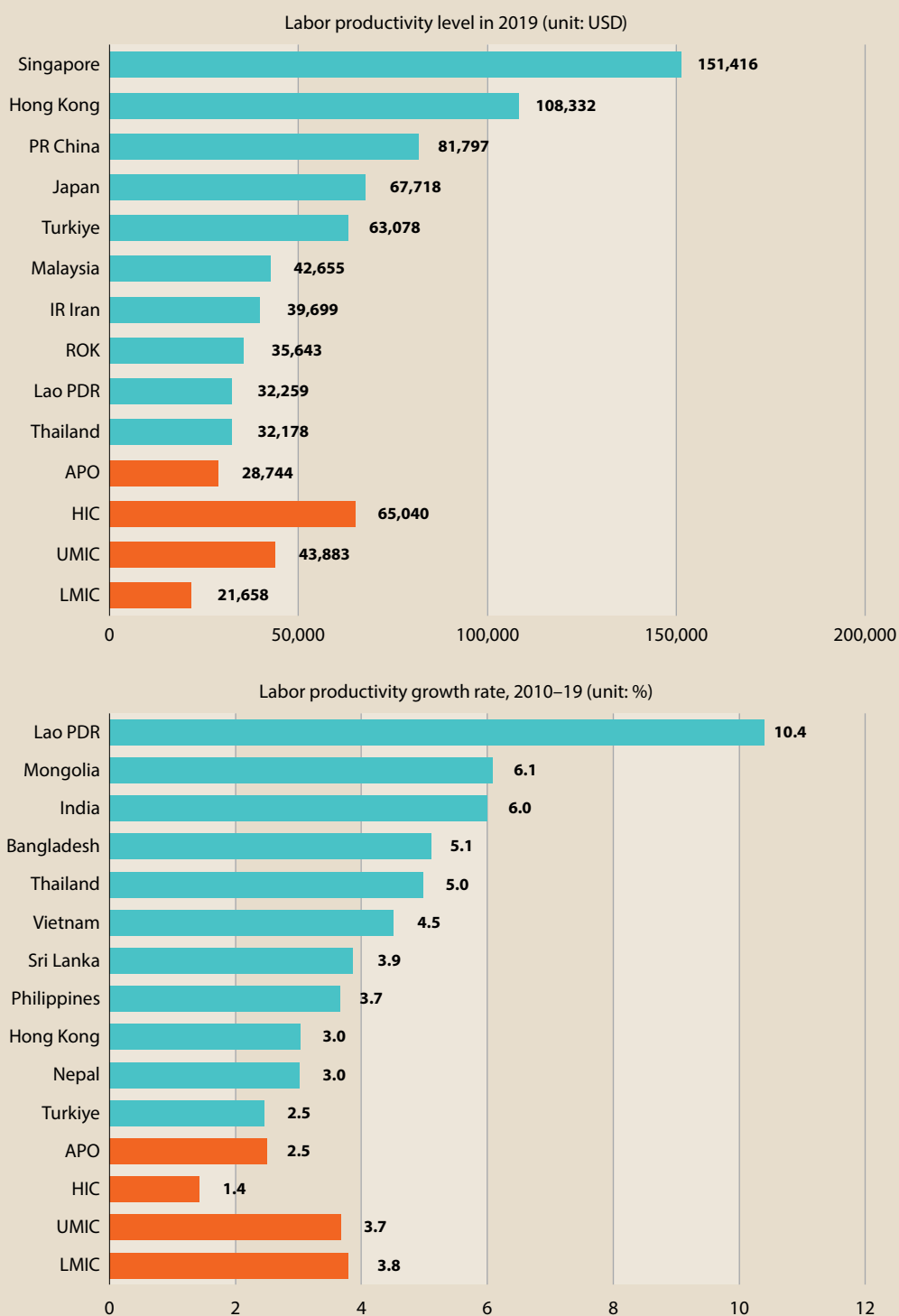
**FIGURE 19****LABOR PRODUCTIVITY OF SERVICE SUBSECTORS IN APO MEMBER ECONOMIES, 1990–2019.**

**Source:** APO Productivity Database, 2021.

**Note:** GDP is by industry at constant prices per worker, using 2017 PPP. Labor productivity is calculated as GDP per worker. Growth rates are annual compound growth rates.

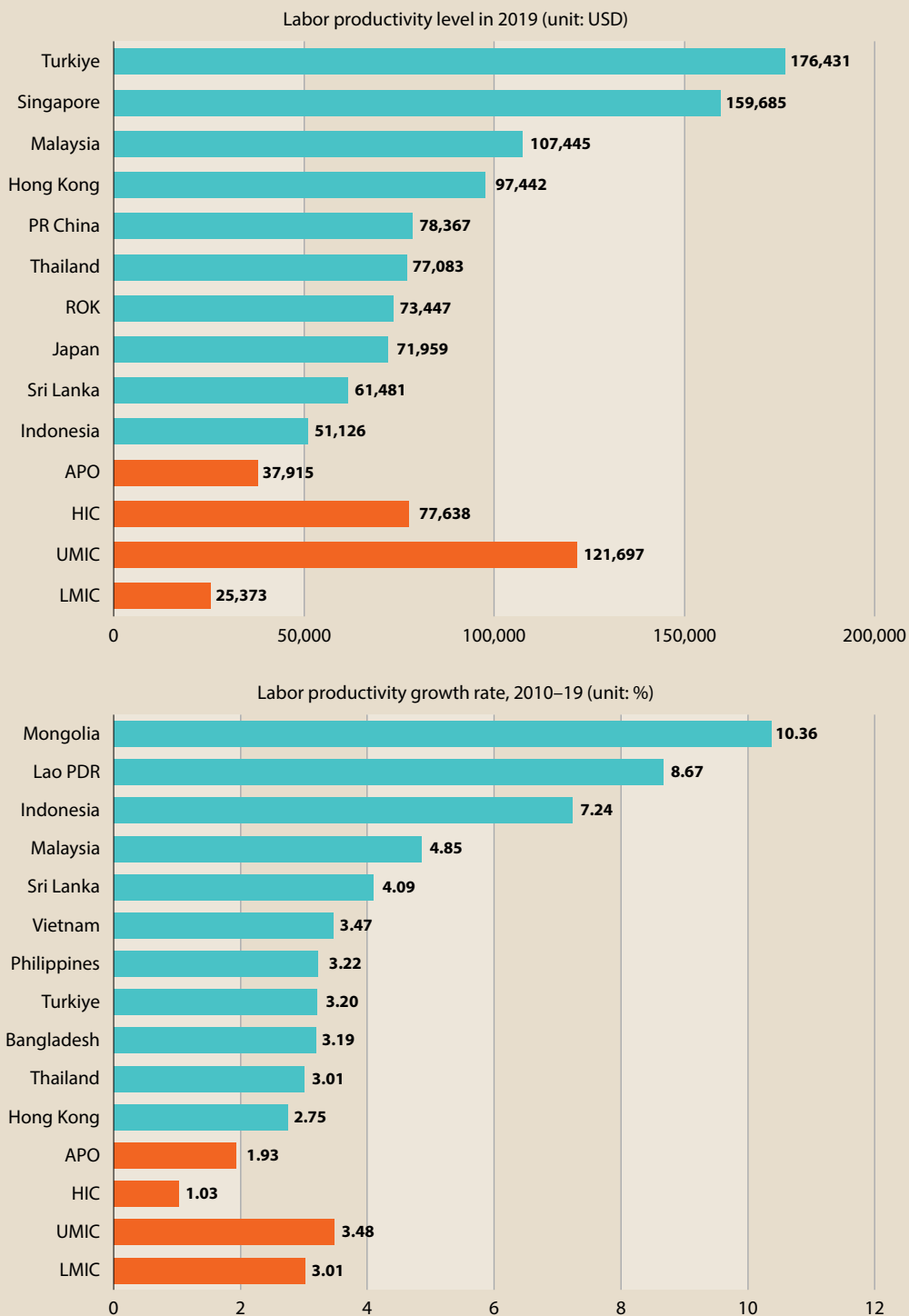
due to supply chain problems, high transportation costs, and rising raw material prices, so it is worth paying attention to the future trend. In case of Sri Lanka, in view of the IMF bailout, it is necessary to pay attention to the distortion caused by the outflow of national wealth. Nevertheless, it can be seen that the productivity level of this subsector is much higher than those of other subsectors, and to achieve this level, creating a market environment through deregulation and reform will be effective.

This difference in labor productivity can be attributed to the difference in performance and essential characteristics across sectors, along with other factors influenced by measurement problems, public policy such as regulatory environment, and enhanced competitive markets. Evidence suggests that the expansion of competition is positively associated with productivity growth in services [46].

**FIGURE 20A****SUBSECTORS' LABOR PRODUCTIVITY LEVELS AND GROWTH RATES.****Panel A: Wholesale and retail trade, repair of vehicles and household goods, hotels and restaurants**

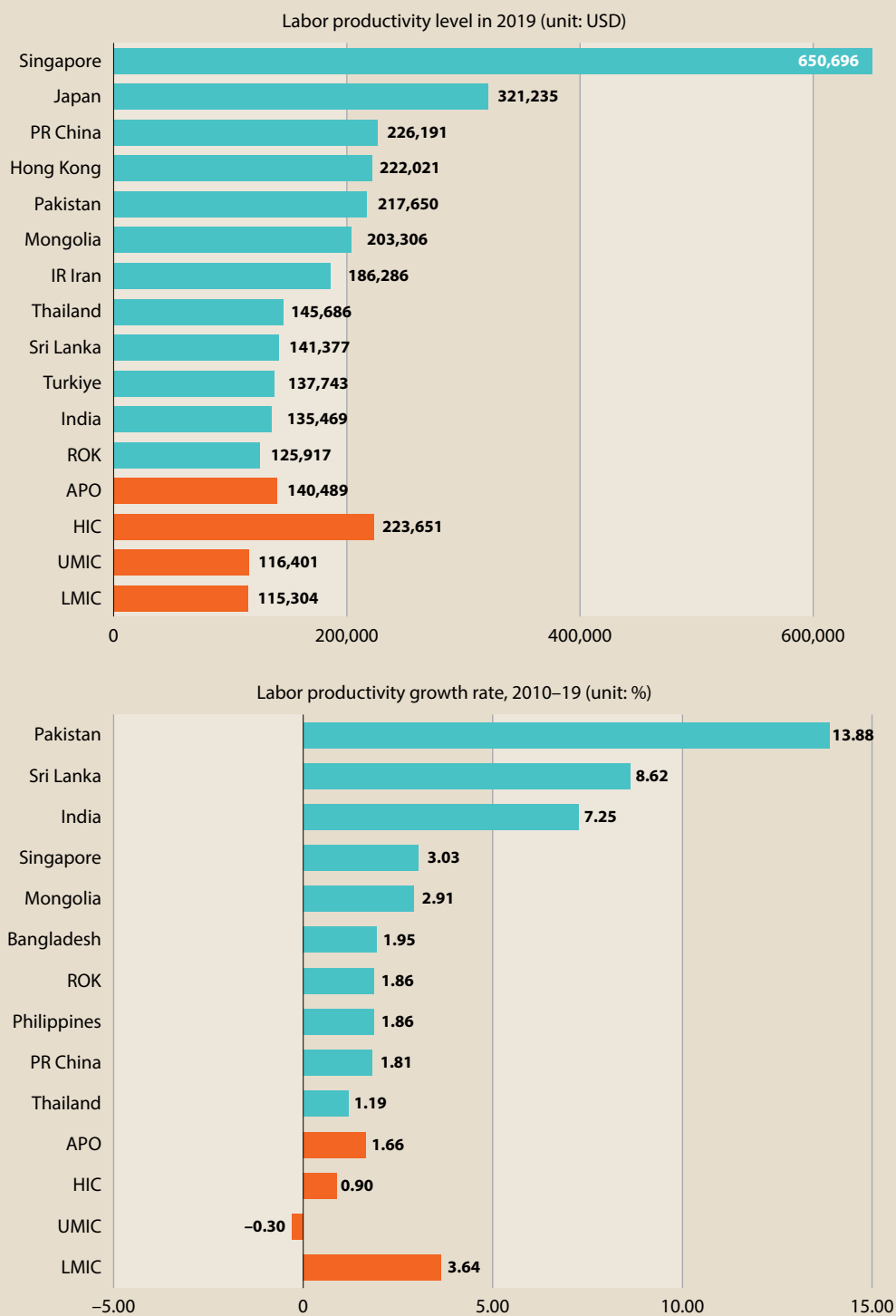
Source: APO Productivity Database, 2021.

Note: GDP is by industry at constant prices per worker, using 2017 PPP. Labor productivity is calculated as GDP per worker. Growth rates are annual compound growth rates.

**FIGURE 20B****SUBSECTORS' LABOR PRODUCTIVITY LEVELS AND GROWTH RATES.****Panel B: Transport, storage, and communications**

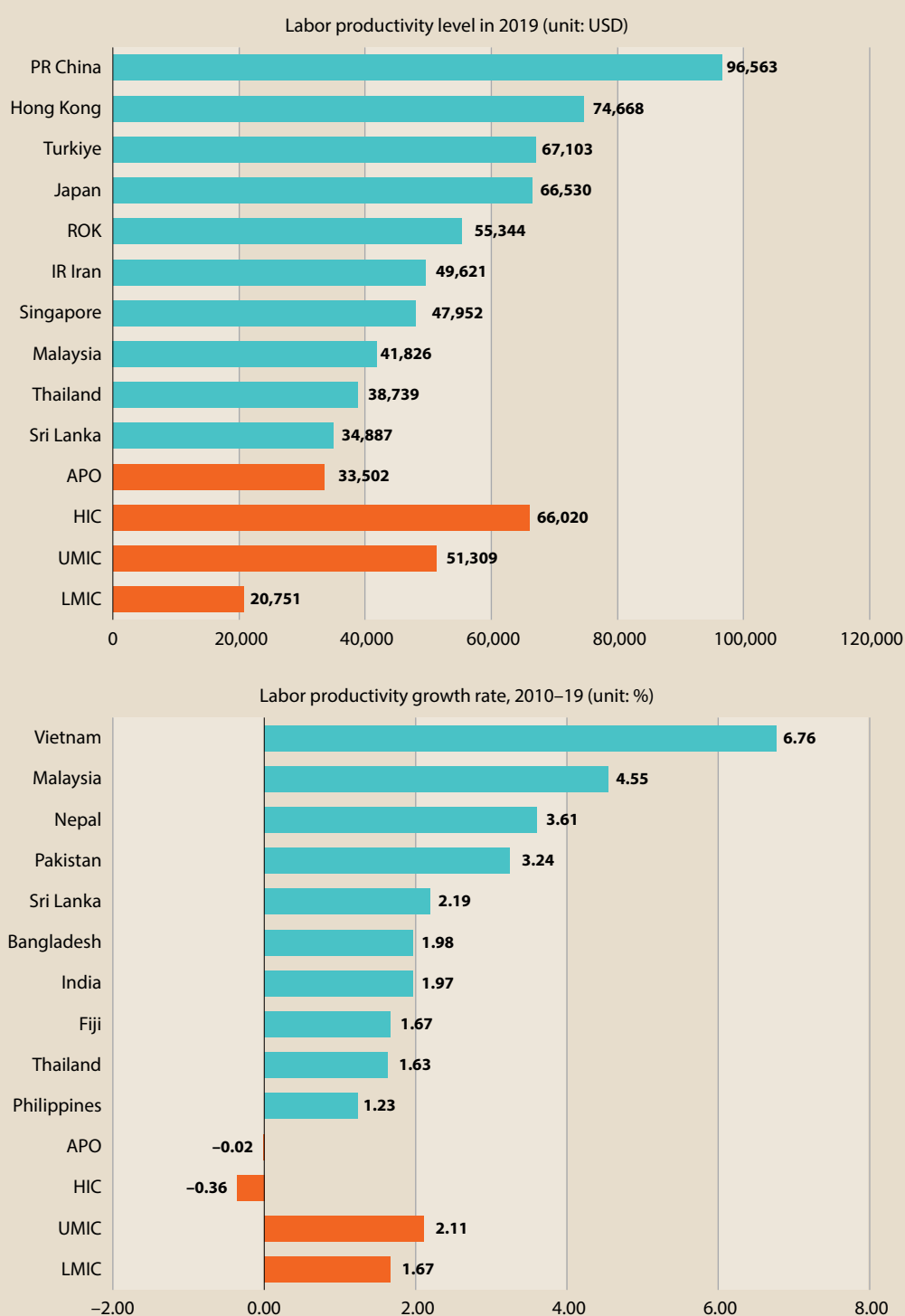
**Source:** APO Productivity Database, 2021.

**Note:** GDP is by industry at constant prices per worker, using 2017 PPP. Labor productivity is calculated as GDP per worker. Growth rates are annual compound growth rates.

**FIGURE 20C****SUBSECTORS' LABOR PRODUCTIVITY LEVELS AND GROWTH RATES.****Panel C: Financial intermediation, real estate, renting, and business activities**

**Source:** APO Productivity Database, 2021.

**Note:** GDP is by industry at constant prices per worker, using 2017 PPP. Labor productivity is calculated as GDP per worker. Growth rates are annual compound growth rates.

**FIGURE 20D****SUBSECTORS' LABOR PRODUCTIVITY LEVELS AND GROWTH RATES.****Panel D: Community, social, and personal services**

**Source:** APO Productivity Database, 2021.

**Note:** GDP is by industry at constant prices per worker, using 2017 PPP. Labor productivity is calculated as GDP per worker. Growth rates are annual compound growth rates.

## Key Issues in the Services Economy and its Contribution to Productivity Growth

### Services Productivity Convergence

Whether the labor productivity of emerging economies is catching up with that of advanced economies is a matter to be empirically examined. The convergence hypothesis states that all economies will eventually converge in terms of income per capita. In this part of the chapter, the convergence hypothesis in income per capita will be tested by examining the labor productivity convergence. This hypothesis means that over time, the productivity gap of countries with lower initial productivity will close with the advanced economies allocated in the frontier. If this hypothesis holds true, larger productivity gaps imply more room and potential for income gains. With regard to the services sector, Gouyette and Perelman [47] argue that countries with lower initial productivity performance have experienced more rapid changes than advanced economies, showing a pattern of homogenization among OECD countries.

In this part of the chapter, the log  $t$  test convergence analysis developed by Phillips and Sul [48] (see Appendix for more details on the methodology) is used to test whether the absolute/conditional convergence hypothesis holds in APO member economies, especially in the services sector.

The trend of labor productivity consists of a common trend component that changes over time and a country-specific component that does not change. The relative transition parameter is set by removing the common trend component from the trend. The relative transition parameter tracks changes in labor productivity over time compared with the average cross-sectional value at the same time in a particular country. The relative transition parameter set in this way is the basic data for the test of the convergence trend.

The graph in Figure 21 shows the convergence trend of labor productivity in the services sector through the relative transition parameter by year. While most countries show a trend of convergence to clubs or groups, Cambodia and Singapore seem to have a very low possibility of convergence and should be considered outliers.

Based on the methodology applied by Phillips and Sul [48], APO member economies can be divided into three different ‘clubs’ of economies following different convergence trajectories and one group of economies having no convergence trends. Table 1 explains how the clubs are classified.

**TABLE 1**

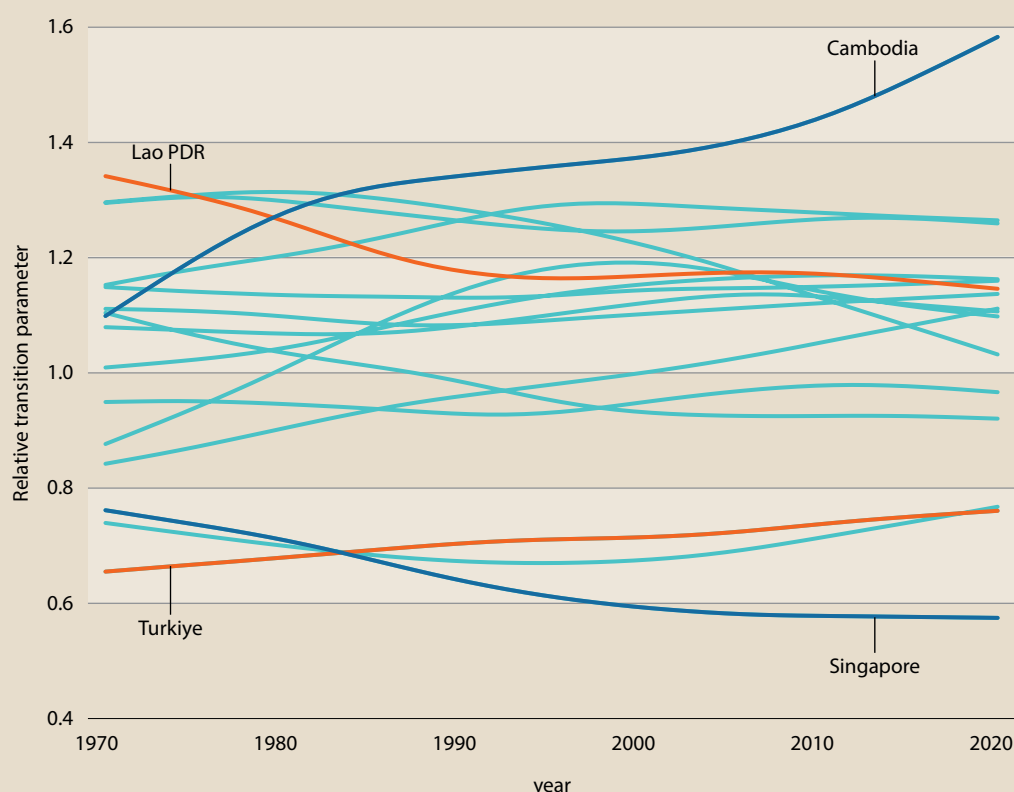
### CLASSIFICATION OF CONVERGENCE CLUBS.

| Club | Number of economies | Economies  |
|------|---------------------|--|
| 1    | 2                   | Hong Kong, ROC   |
| 2    | 9                   | India, IR Iran, Japan, ROK, Malaysia, Nepal, Sri Lanka, Thailand, and Turkiye  |
| 3    | 8                   | Bangladesh, Fiji, Indonesia, Lao PDR, Mongolia, Pakistan, Philippines, Vietnam |
| *    | 2                   | Cambodia, Singapore (countries with no convergence trends)                     |

**Source:** Authors' calculations based on APO Productivity Database 2021.

FIGURE 21

## RELATIVE TRANSITION PARAMETER OF SERVICES IN APO MEMBER ECONOMIES.



**Source:** Authors' calculations based on the APO Productivity Database 2021.

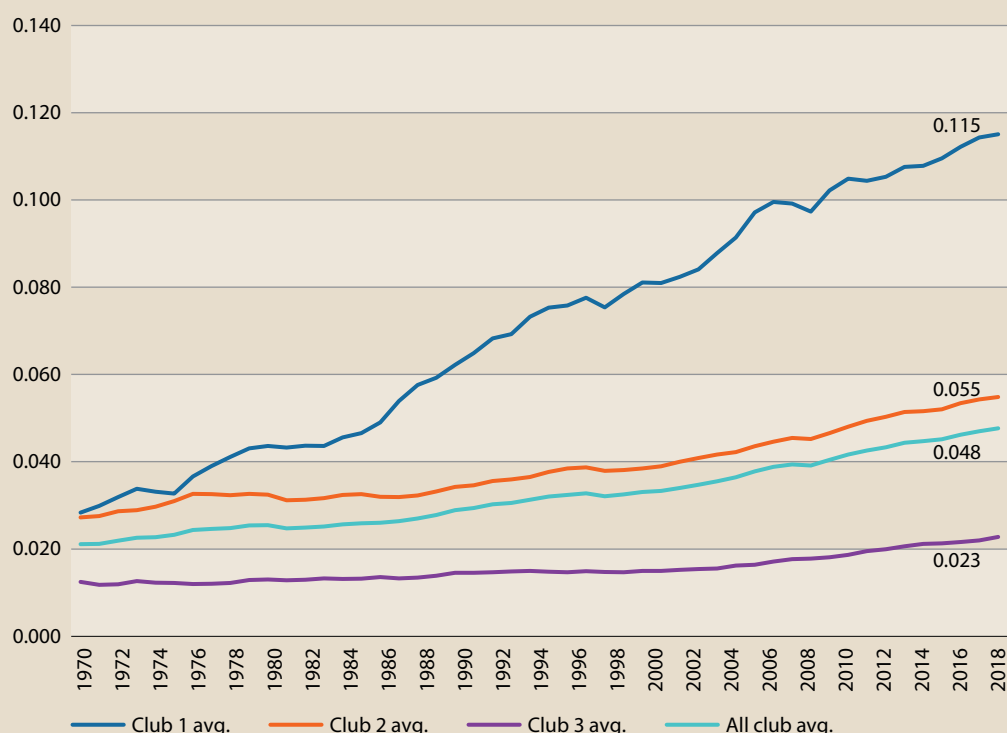
**Note:** The services sector includes the following: (1) wholesale and retail trade, repair of vehicles and household goods, and hotels and restaurants; (2) transport, storage, and communications; (3) financial intermediation, real estate, renting, and business activities; and (4) community, social, and personal services. Labor productivity was calculated by dividing GDP by number of employees. The GDP values are based on GDP by service industry at constant prices, using 2017 PPPs and reference year 2019.

Figure 22 presents the trends based on the convergence size of convergence clubs. The size of convergence is calculated as the average labor productivity of the economies belonging to the convergence club. The first club of economies comprising Hong Kong and the ROC are converging to the largest productivity levels, with an average labor productivity of 0.115 achieved in the year 2019. The average labor productivity of the second club, consisting of nine economies (India, IR Iran, Japan, ROK, Malaysia, Nepal, Sri Lanka, Thailand, and Turkiye), was converging to 0.055 as of 2019. This was larger than 0.048, the average labor productivity of all clubs. In addition, the average labor productivity of the third club, consisting of eight economies (Bangladesh, Fiji, Indonesia, Lao PDR, Mongolia, Pakistan, Philippines, and Vietnam), was converging to the smallest productivity level, with an average labor productivity of 0.023 as of 2019. On the other hand, the two remaining economies, namely Cambodia and Singapore, did not converge as identified through the convergence trend by the relative transition parameter.

Meanwhile, the convergence speed of each club can be compared by the size of the estimate ( $\hat{b}$ ) for coefficient  $b$  of log  $t$  regression equation. Referring to Table A2 (see Appendix), the  $\hat{b}$  of the third club is the largest at 0.564, the  $\hat{b}$  of the second club is the next largest at 0.327, and the  $\hat{b}$  of the first club is the smallest at -0.348. This shows that in terms of labor productivity, the convergence speed

FIGURE 22

## CONVERGENCE TRENDS BASED ON CONVERGENCE CLUBS.



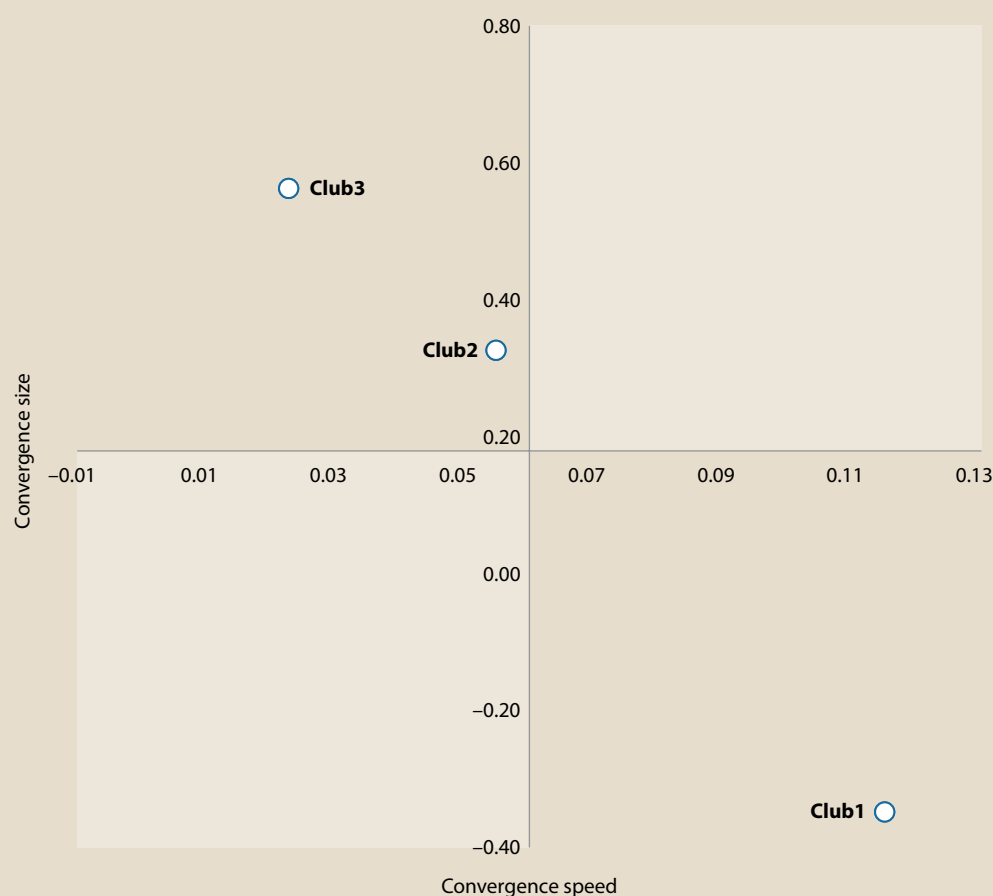
Source: Authors' calculations based on APO Productivity Database 2021.

between countries belonging to the third club is the fastest and the convergence speed between countries belonging to the first club is the slowest.

Figure 23 shows the relationship between the speed and the size of convergence. The convergence rate between countries belonging to the third club is the fastest and the convergence rate between countries belonging to the first club is the slowest. In other words, the labor productivity of countries belonging to the first club converges to a relatively high level of labor productivity compared with the second and third clubs. At the same time, the convergence speed between the affiliated countries is the slowest. It is shown that there was a reverse relationship between the convergence speed and the convergence size.

The convergence of labor productivity in the service industry in APO economies has been shown in the form of conditional club convergence, not absolute convergence. In particular, the speed and size of convergence showed a reverse relationship, with some outliers among APO member economies.

These results suggest two policy implications. First, the characteristics of each country group in terms of convergence of labor productivity in the services industry of APO countries need to be considered as a very important factor in establishing policies for the services industry. The characteristics of various and heterogeneous specific industries belonging to the services industry are also important factors to consider when establishing service industry policies. Second, in order

**FIGURE 23****RELATIONSHIP BETWEEN CONVERGENCE SPEED AND SIZE.**

Source: Authors' calculations based on APO Productivity Database 2021.

to promote economic growth through productivity improvement in the services industry, it is necessary to consider the characteristics of the convergence phenomenon as an important factor in establishing growth strategies for each specific industry sector. In particular, there are significant differences in the level of labor productivity by the services sector among APO member economies, so it is necessary to account for the characteristics of convergence when establishing differentiated growth strategies for specific industry sectors.

#### Decomposition of Productivity Growth

The effects of structural changes in the services sector on economic growth can be empirically analyzed by distinguishing between the effects due to increased productivity in the industry and the increased productivity due to a reallocation of employment among industries. However, many studies on the effect of changes in the proportion of employment across industries on economic growth have not provided a clear consensus. The structural burden hypothesis, which claims that there is a negative effect between economic growth and the shift of employment from high-productivity industries to low-productivity industries, has been at odds with the structural bonus hypothesis, which claims there is a positive effect [3, 16]. This part of the chapter will analyze which hypothesis holds on.

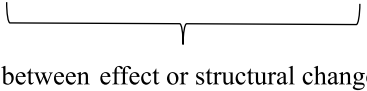
To empirically test whether services contribute to productivity growth, member economies were analyzed by income groups, namely HIC, LMIC, and UMIC, for three time periods, 1990–99, 2000–07, and 2010–19. Through this analysis, we determined which hypothesis (structural burden or bonus) is supported to be true in the process of servitization in APO member economies.

#### Structural Change and Decomposition of Productivity Growth

The increase in labor productivity within a country is made up of two factors. First, productivity can be improved through capital accumulation within the industry, technological innovation, and efficiency of resource allocation across companies. Second, as labor moves from the low-productivity sector to the high-productivity sector, overall productivity can be improved.

As shown in the first part of this chapter, rapid increases in services occurred in APO members. To examine this change more closely, the impact of change of employment in services in APO member economies and change in labor productivity will be explored. For this analysis, the shift-share analysis method updated by De Vries *et al* [49] will be used. This measurement compensates for the limitations of the conventional shift-share analysis developed by McMillan and Rodrik [50].

$$\Delta P_t = \underbrace{\sum_{i=1}^n \theta_{i,t-k} \Delta p_{i,t}}_{\text{within effect}} + \underbrace{\sum_{i=1}^n \Delta \theta_{i,t} p_{i,t-k}}_{\text{static effect}} + \underbrace{\sum_{i=1}^n \Delta \theta_{i,t} \Delta p_{i,t}}_{\text{dynamic effect}} \quad (1)$$


  
 between effect or structural change

The intraindustry effect is the same as the conventional shift-share analysis. The effect of interindustry movement is divided into static effect and dynamic effect. The static effect is a weighted average of the change in the proportion of employment between time  $t-k$  and time  $t$  by labor productivity at time  $t-k$ . This effect is the effect of increasing labor productivity that occurs only by changes in the composition of the industry even though there is no increase in labor productivity in a specific industry. This effect means that the change in the proportion of employment in individual industries is reflected in the change in labor productivity of the entire service industry. This effect has a positive (+) value when employment increases in a highly productive sector. On the other hand, when employment increases in a sector with low productivity, it shows a negative (–) value. The faster the employment moves to more productive sectors, the greater the value; and the faster the employment moves to less productive sectors, the smaller the value. Therefore, the sign and value size of this effect can be a measure of whether the industrial structure is reorganized into a highly productive sector or a low productivity sector. Ultimately, when the sign of this effect indicates a positive value, it means that employment moves from a low-productivity industry to a high-productivity industry, which supports the structural bonus or high-value-added hypothesis [51].

$$\text{Structural bonus hypothesis: } \sum_{i=1}^n \Delta \theta_{i,t} p_{i,t-k} > 0.$$

On the other hand, the dynamic effect is the dynamic change effect caused by the interaction between the change in the proportion of employment by industry and the change in labor productivity. This effect has a positive (+) value when the proportion of employment increases in industries where labor productivity increases and the proportion of employment decreases in industries where labor productivity decreases. In addition, this effect increases as employment moves to an industry where labor productivity increases. On the other hand, when employment

moves to an industry where labor productivity decreases, it has a negative (–) value. It indicates whether the direction of change in labor productivity and employment proportion of individual industries is the same or different, on an average. The increase in labor productivity of all industries can due to (1) the increase in productivity of individual industries (within effect); (2) the increase in the share of industries with high labor productivity or the decrease in the share of low industries (static effect); and (3) the effect of mutual changes in productivity and employment in industries on the entire industry (dynamic effect). Eventually, when the sign of this effect represents a negative (–) value, Baumol’s structural burden hypothesis is established [51].

$$\text{Cost disease hypothesis: } \sum_{i=1}^n \Delta\theta_{i,t} \Delta p_{i,t} < 0.$$

#### Sectoral Reallocation Decomposition

In McMillan and Rodrik [43], it is possible to determine the sectoral reallocation effect by decomposing the ‘between effect.’ Compared with the base industry, the between effect can be decomposed as shown in Equation (2) as the effect of a change in the proportion of labor on productivity in the industry [20]. Through this, it is possible to quantitatively grasp the gains or losses in labor productivity due to changes in the proportion of employment between industries.

$$\sum_{i=1}^n \Delta\theta_{i,t} p_{i,t} = \underbrace{\Delta\theta_{s,t}(p_{s,t}-p_{m,t})}_{\textcircled{1}} + \underbrace{\Delta\theta_{o,t}(p_{o,t}-p_{m,t})}_{\textcircled{2}}. \quad (2)$$

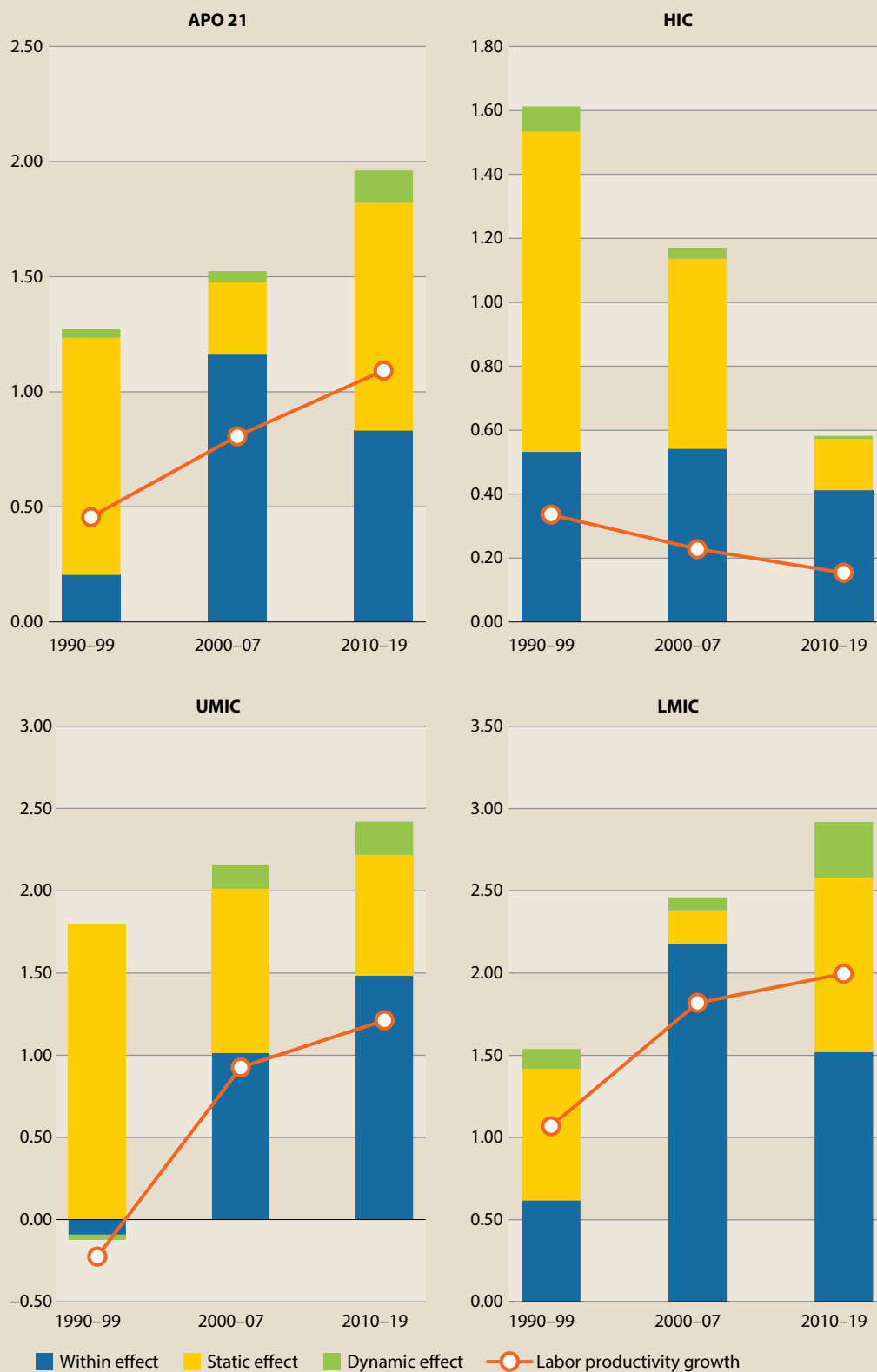
When we indicate manufacturing (*m*) as the reference industry and decompose productivity gain (or loss) for the services industry (*s*) and other industries (*o*),  $p_{s,t}$  is the labor productivity of the service industry at time *t* and  $p_{o,t}$  is the labor productivity of other industries at time *t*. The expression ① refers to the labor productivity gain (or loss) of increasing (or decreasing) services employment relative to manufacturing. Additionally, the expression ② indicates the labor productivity gain (or loss) of increasing (or decreasing) other employment relative to manufacturing.

Figure 24 presents the result of decomposing the results of labor productivity into within effect, static effect, and dynamic effect, based on Equation (2) as a percentage change rate for the service industries of 21 APO member economies. Labor productivity is calculated as GDP divided by the number of employees. Services sector’s GDP is at constant price, using 2017 PPPs, with the reference year being 2019. The total analysis period is 1990–2019, which is subdivided into three periods (1990–99, 2000–07, 2010–19), while excluding 2008–09 in consideration of the impact of the Global Financial Crisis. The growth rate was calculated using the compound annual growth rate, and the 21 APO member economies were divided into HIC, UMIC, and LMIC groups.

Three main characteristics can be examined through the results from the decomposition analysis. First, when looking at all 21 APO member economies, the productivity effect, the employment share effect, and the interaction effect were all positive (+). Even when subdivided into HIC, UMIC, and LMIC groups, they all presented positive (+) effects in all remaining sections, except for the within effect of UMICs during the period 1990–99. Based on this result, the increase in labor productivity in all APO member economies appears to be a positive effect of productivity improvement, employment movement, and interaction between industries. The static effect was positive (+) in all sections and all countries, confirming the structural bonus hypothesis, but the dynamic effect was generally positive (+), confirming that Baumol’s structural burden hypothesis was not supported.

**FIGURE 24**

**STRUCTURAL CHANGE DECOMPOSITION OF PRODUCTIVITY GROWTH IN APO MEMBER ECONOMIES.**



Source: Authors' calculations based on APO Productivity Database.

**FIGURE 25****SECTORAL REALLOCATION DECOMPOSITION OF PRODUCTIVITY GROWTH IN APO MEMBER ECONOMIES.**

Source: Authors' calculations based on the APO Productivity Database.

Second, when classified by country, the composition and proportion of effects differed by economy. In particular, HICs' labor productivity continued to decline, and the size of the static-share effect decreased significantly compared with the within effect or the dynamic effect. This shows that employment has not moved to high-value-added, high-productivity industries or industries where productivity rises rapidly, compared with the effect of improving productivity in the services industry. On the other hand, LMICs' static effect in the period 2010–19 increased more than the increase rate in the section before the financial crisis (1990–99) until recently after the financial crisis. This indicates that employment is being rapidly redistributed by LMICs into the high-productivity sector and labor productivity is being restored.

Figure 25 shows the result of decomposing the results of labor productivity into within effect and productivity gain (loss) through Equation (2) for the service industries of 21 APO member economies. In the decomposition results, when looking at all 21 APO countries, the productivity gain was found to be a small ratio (0.04) in the section (2010–19) until recently after the financial crisis, compared with the previous period. On the other hand, when looking at each specific country, we found a significant difference in productivity gain (or loss). LMICs showed productivity gain, while HICs and UMICs showed productivity losses. This can be interpreted as indicating that the productivity gain, which appears to have relatively increased in the services industry, compared with the manufacturing industry, recovered from the 2010–19 section since the financial crisis in LMICs, but HICs and UMICs have not yet increased productivity in the services industry.

## Conclusion and Policy Implications

The services sector has recently become one of the dominant sectors of the economy, not only globally but also for APO member economies. This has also raised questions regarding its potential to be a driver of economic growth following the manufacturing sector. However, as the COVID-19 pandemic swept the globe, there has been a disruption in daily activities, acceleration in the use of digital technologies, and significant changes in the structure of services, with higher importance on ICT and logistics-related activities. On the other hand, the pandemic also threatened to exacerbate the long-term slowdown in productivity, leading to an uncertain future for productivity growth.

Services are not only demanded as final goods but are also produced as intermediate inputs of production. Consequently, it was found that the decrease in production in manufacturing had significant direct and indirect impacts on services as well. In this chapter, we analyzed structural changes in APO member economies and comprehensively reviewed the existing trends in the services sector, along with key issues with regard to productivity growth.

As shown in the chapter, GDP and employment in services appear to be increasing rapidly, similar to the trend once observed in the manufacturing sector. In particular, in some countries and industries, growth in services has exceeded that in manufacturing. In this context, a task that remains to be achieved is the allocation of resources and labor toward subsectors within the services sector with higher productivity growth. The development of efficient services is fundamental to increasing the competitiveness of the economy and boosting overall productivity.

Based on income groups, in the case of UMICs, focus should be put on financial services and business services, which not only create rapid income growth compared with other services but also allow stable and long-term capital supply for the subsector itself and other industries, and also make important contributions to innovation and competitiveness [52]. On the other hand, in the

case of LMICs, wholesale and retail, distribution, and personal services, which are the basis of the industry, are rapidly increasing. This is confirmed by increase in income and expansion of manufacturing production. Their role as intermediate inputs for other industries, mainly manufacturing, is increasing [8], thereby enhancing the productivity of the sector through spillover effects [53].

Another key characteristic of services is their importance as intermediate inputs used by other industries, thereby increasing overall productivity through spillover effects. The importance of the role of services as intermediate goods in other industries was confirmed through the IO table analysis, which reemphasized the importance of financial and business services.

Financial services include transactions for the acquisition of financial goods. These services promote effective mobilization and allocation of capital, efficient transaction of goods and services, risk management, and innovation, thereby promoting economic growth [54, 55]. Empirical evidence suggests that the development of financial intermediaries is positively associated with economic growth [56, 57]. This relationship is confirmed to increase productivity from the perspective of increasing output.

In the case of business services, they are supplied primarily to organizations, not individuals [52]. These include technical services, computer services, and other professional services that are closely tied with manufactured goods. These services are involved from the initial stages of the design of a product to the final production of output. Particularly so is the case of knowledge-intensive services in businesses. These services are becoming essential for firms since they enable reduction in production costs, serve as producers and carriers of innovation and new technologies, and impact productivity and economic growth [53, 58]. However, business services are often not captured when measuring these activities within the manufacturing sector, because they are accounted as a company's output rather than as a service; and are difficult to identify through statistics [59].

The growth of services and enhancements in productivity growth depends on a combination of factors. The right set of policies needs to be adopted to promote higher productivity in the services sector. Regulatory reforms such as trade reforms, product market reforms, and financial reforms are established with the purpose of reducing or eliminating market distortions and costs, and foster effective competition and allocation of resources across and within sectors and firms [60, 61, 62], which leads to productivity enhancement [63].

The subsequent chapters will present quantitative and qualitative analysis to derive strategic policy options for achieving higher productivity gains from financial services and business services, which possess high potential for spreading growth impulses throughout the economy as a whole. Additionally, the role of regulatory reforms and how they affect productivity growth will be examined and policy implications for APO member economies will be presented as well.

The following are some of our policy recommendations:

First, implementation of the right sets of policies is needed to increase productivity in the services sector. Existing literature has shown that due to the nature and characteristics of services, capital accumulation in this sector is bound to have limitations. Therefore, increasing productivity in the sector depends on the adoption of new technologies and investments in R&D to promote innovation. For example, industrial restructuring policies should include sub-policies such as

those that can restructure businesses identified as zombie companies, remove barriers, promote support for entry in business; and promote support for R&D, vocational education, and training initiatives, among others. Regulatory measurements, financial support for technology development, and human capital development are essential components. They are required to set policy goals that can direct the economy toward the development of higher-value-added services and foster economic growth.

Second, it is necessary to establish detailed productivity growth policies linked with the economic level and unique characteristics of each member country. Enhancement of the services sector's productivity can be attained in different directions, depending on the productivity convergence of each country and its productivity growth composition. A comprehensive set of policy support toward creating a sound services structure should be implemented, rather than providing selective support for specific sectors.

Third, productivity growth in services can generate an overall impact on the economy, due to its linkage with different sectors. The increasing demand for services as intermediate inputs for production promotes specialization and enables economies of scale in services, and thus contributes to an improvement in productivity. As seen in this chapter, the services sector's backward effect is not significant, but the forward effect, which means the demand for services from other industries, is relatively higher. For this reason, the growth of services also relies on the demand from the domestic industrial market. For this reason, macroeconomic policies such as strengthening market competition, improving technology investment, supporting corporate consulting, and other policies related to the support of industries are necessary.

## Appendix

### Convergence Analysis Model

For convergence analysis, we used the log  $t$  convergence test analysis method developed by Phillips and Sul [48] as an analytical quantitative model for convergence. This model does not assume stationarity and uses a general form of the nonlinear time-varying factor model. Therefore, it can be applied even if the time series is a mixture of normal and abnormal time series. The greatest advantage of this methodology over conventional methodologies [64] is that it can select multiple convergence groups that converge to different equilibrium points.

However, the rejection of the null hypothesis that labor productivity converges to a single value by the log  $t$  convergence test does not mean that the time series of all APO countries diverge individually. This is because groups in which labor productivity converges are several, and each group converges to different values. If convergence occurs on several groups, a test should be performed to determine which time series converges on which values [65].

The convergence test is divided into the following steps: convergence test for the whole panel, initial club convergence test of the core group, and club merging. First, the null hypothesis regarding whether the labor productivity ( $\delta_{it}$ ) of APO countries converges at the convergence test for the whole panel stage is set as Equation (A1).

$$H_0 : \delta_i = \delta \text{ and } \alpha \geq 0, \quad (\text{A1})$$

where  $\alpha$  is a coefficient that determines the rate of change.

For the verification of the null hypothesis, a test for  $b$  is performed in the log regression equation as shown in Equation (A2).

$$\log\left(\frac{H_1}{H_t}\right) - 2\log L(t) = \hat{a} + \hat{b}\log t + \hat{u}_t, \quad (\text{A2})$$

where  $t = [rT], [rT]+1, [rT]+2, \dots, T$ ,

with  $r > 0$ ,  $L(t) = \log(t+1)$  and  $\hat{b} = 2\hat{a}$ .

As a result, in the range of the significance level of 5%, in the case of  $t_{\hat{b}} < -1.65$ , the  $H_0$  that converges to one value can be rejected. Second, in the initial club convergence test of core group step, first, in Equation (A3), the core group is composed of the top  $k$  members that maximize  $t_k$ .

$$k^* = \arg \max_k \{t_k\} \text{ subject to } \min t_k > -1.65. \quad (\text{A3})$$

Also, a log test is performed on members who are not included in the core group, one by one. Through this, the converging clubs are verified. Finally, it is verified whether the convergence level converges between nearby clubs with similar convergence levels, through a subgroup merge test. Subgroup merge test is a robustness test that verifies whether the algorithm for selecting subgroups in the initial club convergence is too granular.

## Results

Table A1 shows the results of the log  $t$  convergence test of the first step, the convergence test for the whole panel. The verification results showed that in the range of the significance level of 5%, the  $t_{\hat{b}}$  value was  $-58.14$ , significantly smaller than  $-1.65$ , rejecting the null hypothesis that the service industry's labor productivity of APO countries converges as a whole.

**TABLE A1**

### FIRST STEP OF THE CONVERGENCE TEST (RESULT OF THE CONVERGENCE TEST FOR THE WHOLE PANEL).

| Variable  | Coefficient | S.E.     | t-stat.    |
|-----------|-------------|----------|------------|
| $\log(t)$ | $-0.8298$   | $0.0143$ | $-58.1385$ |

Table A2 shows the results of verifying the convergence of labor productivity by country in 21 APO economies by group in the second stage, the initial club convergence test of the core group. Looking at the verification results, we found that all 21 APO economies were divided into three clubs and converged. First, countries corresponding to the first club show that the labor productivity of countries corresponding to the first club is converging because the  $t$  value for  $b$  is  $-1.218$  and greater than  $-1.65$ . The  $t$  values for  $b$  of countries corresponding to the second and third clubs are  $6.868$  and  $15.625$ , respectively, indicating that labor productivity of both countries is converging. However, countries corresponding to the fourth group show that the  $t$  value for  $b$  in the log transmission equation is  $-239.652$ , which is much smaller than  $-1.65$ , and the labor productivity of countries corresponding to the fourth group does not converge.

**TABLE A2**

### SECOND STEP (RESULT OF THE INITIAL CLUB CONVERGENCE TEST OF THE CORE GROUP).

| $\log(t)$   | Club 1   | Club 2  | Club 3   | Group 4    |
|-------------|----------|---------|----------|------------|
| Coefficient | $-0.348$ | $0.327$ | $0.564$  | $-1.175$   |
| t-stat.     | $-1.218$ | $6.868$ | $12.625$ | $-239.652$ |

The last step, the subgroup merge test, is a verification step to find the three previously identified convergence clubs and then verify that convergence is achieved between adjacent clubs with similar convergence levels. Verification of convergence between adjacent clubs is a robustness test that verifies whether adjacent groups converge. Table A3 shows the results of verifying the convergence between adjacent clubs. In the verification of convergence between the first and second clubs and between the second and third clubs,  $t$  values for  $b$  are  $-3.361$  and  $-24.778$ , respectively, and are less than  $-1.65$ , which can be interpreted as diverging rather than converging, and can be interpreted to be stronger than the second and third clubs.

**TABLE A3****THIRD STEP (RESULT OF SUBGROUP MERGING).**

| $\log(t)$   | Club 1+2 | Club 2+3  |
|-------------|----------|-----------|
| Coefficient | $-0.137$ | $-0.357$  |
| $t$ -stat.  | $-3.361$ | $-24.778$ |

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## SECTOR-SPECIFIC ISSUE 1

# FINANCIAL DEVELOPMENT AND PRODUCTIVITY

### Introduction

Many factors promote the advancement of productivity. Internal factors such as labor growth, human capital, improvements in the legal system, capital accumulation, and technological advances play an essential role in increasing productivity [1]. External forces include foreign direct investment, foreign portfolio investment, and international aid. Among all, this study uses the factor of financial development. Although many sources encourage development in the financial system and sectors, this chapter uses indicators that represent the level of development across three categories (discussed later).

Most of the literature studies the link between financial development and economic growth instead of productivity. This chapter explains the role of financial development in increasing different types of productivity for countries with varying income levels. Developing domestic financial services generally promotes innovation, drives economic growth, and boosts productivity. Studies have shown mixed results using various samples from all over the world and with different levels of income.

Advocates of financial development state that a stronger financial system allocates funds efficiently from the providers to the ones in need. With more credit and other channels through which funds can travel, enterprises face lower constraints when seeking external finances. However, low- and middle-income economies face relatively more financial constraints than high-income countries. Furthermore, firms in developing countries are more likely to face difficulties when attempting to avail external finances. As the financial market is liberalized and becomes readily available for firms, thereby relieving financial constraints, low- and middle-income countries can gain financial access and stabilize their economies.

Naceur *et al* [2] have found evidence that financial development destabilizes advanced economies while stabilizing emerging and low-income economies. Sahay *et al* [3] find that financial development influences economic growth nonlinearly. IMF reports that the relationship between the two variables resembles an inverted U shape. This indicates that countries with already lower financial development can largely benefit from additional improvements but the effect peaks at some threshold. After that, overdevelopment in the finance sector (too much finance) hinders economic growth. IMF adds that the threshold of “too much finance” varies by each country. Excessive finance does not impede capital accumulation but contributes to inefficient investments and thus lowers productivity.

Fonseca and Van Doornik [4] show that availability of bank credit increases skilled workers’ employment and earnings. Relaxing financial frictions is found to have a positive impact on firms’ performance through the labor market. As financial markets develop, there is a labor market reallocation of unskilled and skilled workers, and productivity increases as firms can afford skilled labor.

Ibrahim and Alagidede [5] show that financial development and credit growth help economies grow but at a cost. Rapid and uncontrolled increases in credit can fuel unsustainable investments and inefficient decisions. In other words, due to their characteristics, some countries may suffer in terms of growth and productivity when the financial system is overdeveloped.

It is crucial to select appropriate measures to represent the level of financial development in the analysis. This chapter evaluates three channels through which financial development influences productivity for different income levels. The three channels are credit channel, equity channel, and fiscal channel. The amount of credit, the equity market, and fiscal intervention are selected to account for the three channels.

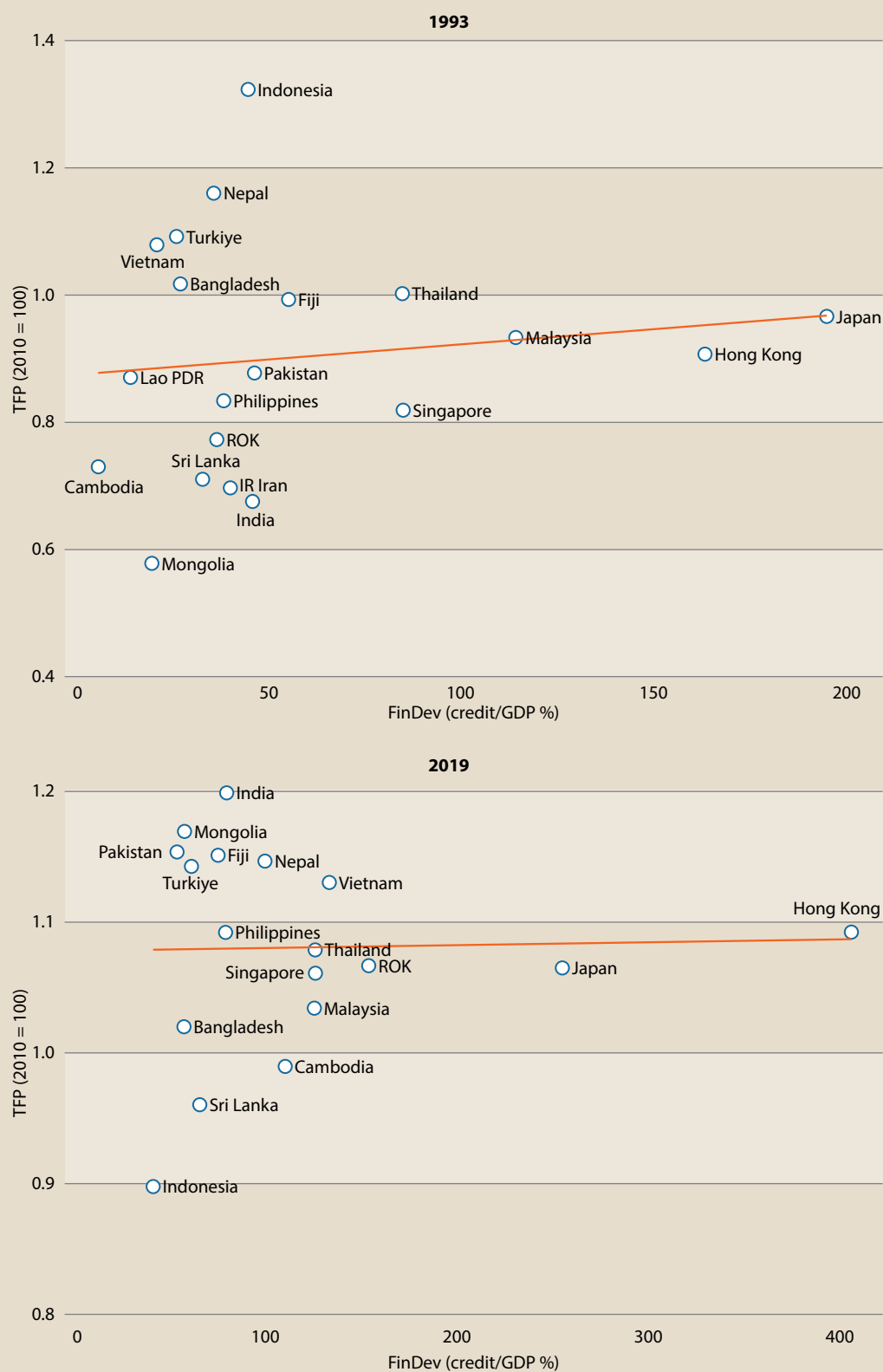
Additionally, three different types of productivity are evaluated. These are total factor productivity (TFP), capital productivity, and labor productivity, provided by APO database. Using this method, it was revealed that the effect of financial development varies by channel and by the productivity measure that is used.

This chapter is organized as follows: first, the relationship between financial development and productivity is discussed for APO member economies. Next, the trend of productivity and how that trend differs by country are considered. The subsequent section provides the results from empirical analyses. This is followed by a discussion on policy implications, based on the results.

## Financial Development and Productivity

Figure 1 shows the relationship between financial development and TFP. FinDev is the proportion of domestic credit in the private sector to GDP, expressed as percentage. This measure is used as a representative indicator because it presents the most observations for APO member economies. While APO productivity data is provided for all APO member economies, World Development Indicators' (WDI) financial development indicators contain missing values. It is essential that the credit market is of sufficient size, as it provides opportunities for innovators to acquire the necessary funding with less financial friction. Financial constraints are relieved with financial development, which could have a positive influence on productivity. APO's TFP measures change through the years for each country on a scale of 100, with 2010 as the base year.

Over the years, the Asia-Pacific region has undergone many changes in terms of financial development and productivity. Numerous countries in the region were comparably undeveloped in the finance sector and had low productivity measures. Only four countries had credit market large enough to exceed the domestic output in 1993. However, the credit market in the region has grown significantly in the past three decades. In 2019, nearly half of the economies had a credit market that was as big as the corresponding GDP. Hong Kong's finance market has grown so big that it has quadrupled the national output. Except for Indonesia, Sri Lanka, and Cambodia, TFP has increased since 2010 for all other countries. In both the scatterplots of Figure 1, the fitted line is sloped positively. Although financial development and productivity have a positive association in general, the relationship may differ based on country/economy-specific heterogeneity, such as income. This chapter tests if there is a statistically significant relationship between financial development and different types of productivity, i.e., TFP, labor productivity, and capital productivity, separately.

**FIGURE 1****TRENDS OF TFP AND FINDEV.**

Source: APO Database and World Development Indicators from the World Bank.

## Productivity Trend for the Asia–Pacific Region

Figure 2 (Panels A and B) shows trends for Japan and Vietnam. These countries are selected because they represent different trends with regard to productivity and financial development. Japan has the highest GDP in Asia–Pacific. Vietnam is a country that began attracting much foreign direct investment and started endeavors to strengthen and broaden its financial markets only recently. Throughout the sample period selected for this study, it is seen that the patterns between the two are clearly different. The first scatterplot for each country shows how TFP has changed through the years. While Japan shows a steady increase in productivity, except during periods of financial crises, Vietnam shows an odd pattern. After the Vietnam War ended, productivity in the country declined continuously until 1990. There was a decade of increase followed by stagnation. Subsequently, Vietnam’s productivity fell drastically during the global financial crisis of 2007–08. After that, productivity increased in recent years, possibly due to the spillover effects of foreign direct investment.

Figure 2 also shows how different the patterns are for the two countries, considering the relationship between the financial development indicator and TFP. Japan takes complete advantage of financial development and utilizes the decreases in financial constraints to innovate and increase productivity. However, Vietnam’s productivity has remained flat until recently.

Financial development could alleviate information asymmetry between investors and enterprises. In addition, a stronger financial system can promote economic growth and increase productivity. When a financial market is developed and functional, funds are well allocated, savings are mobilized, trades are facilitated, corporate governance is improved, and risks are diversified. Furthermore, those in need of financing can obtain external funds through debt or equity. However, external funds could drive financial decisions from the optimal point [6] and hinder growth and productivity enhancements. Figures 1 and 2 corroborate these arguments. While Japan facilitates financial services and channels the funds into promising sectors to increase productivity, Vietnam does not follow this approach. Some countries benefit from growing financial markets, but some do not. Depending on the income level of a country or some other country-specific characteristic, the impact of financial development on productivity may differ. This chapter explores the types of countries and the types of productivity that benefit from financial liberalization.

## Contribution of Financial Development to Productivity

The indicators of financial development are obtained from the World Bank’s World Development Indicators (WDI) database. Required data for all APO member economies are available except for the Republic of China (ROC). The ROC is therefore exempted from this empirical analysis. Thus, the sample contains data from 20 APO member economies. The observations obtained for financial development indicators vary. Some countries do not have a public stock market. The sample period used for this study is from 1971 to 2020, so there are country-level data that do not date back to the early 70s.

APO database provides complete and balanced data for all its member economies, while the World Bank’s database does not. Thus, some observations are naturally lost when the two datasets are merged.

APO database provides productivity measurements, including TFP, labor productivity, and capital productivity. All three productivity measures have the year 2010 as the base. As an additional analysis, sectoral productivity data of finance and real estate industries are also utilized. The productivity data for finance and real estate industries are used in the regressions, and the results are provided in the following sections. However, this study emphasizes the financial development indicators obtained from WDI. GDP is obtained from APO database.

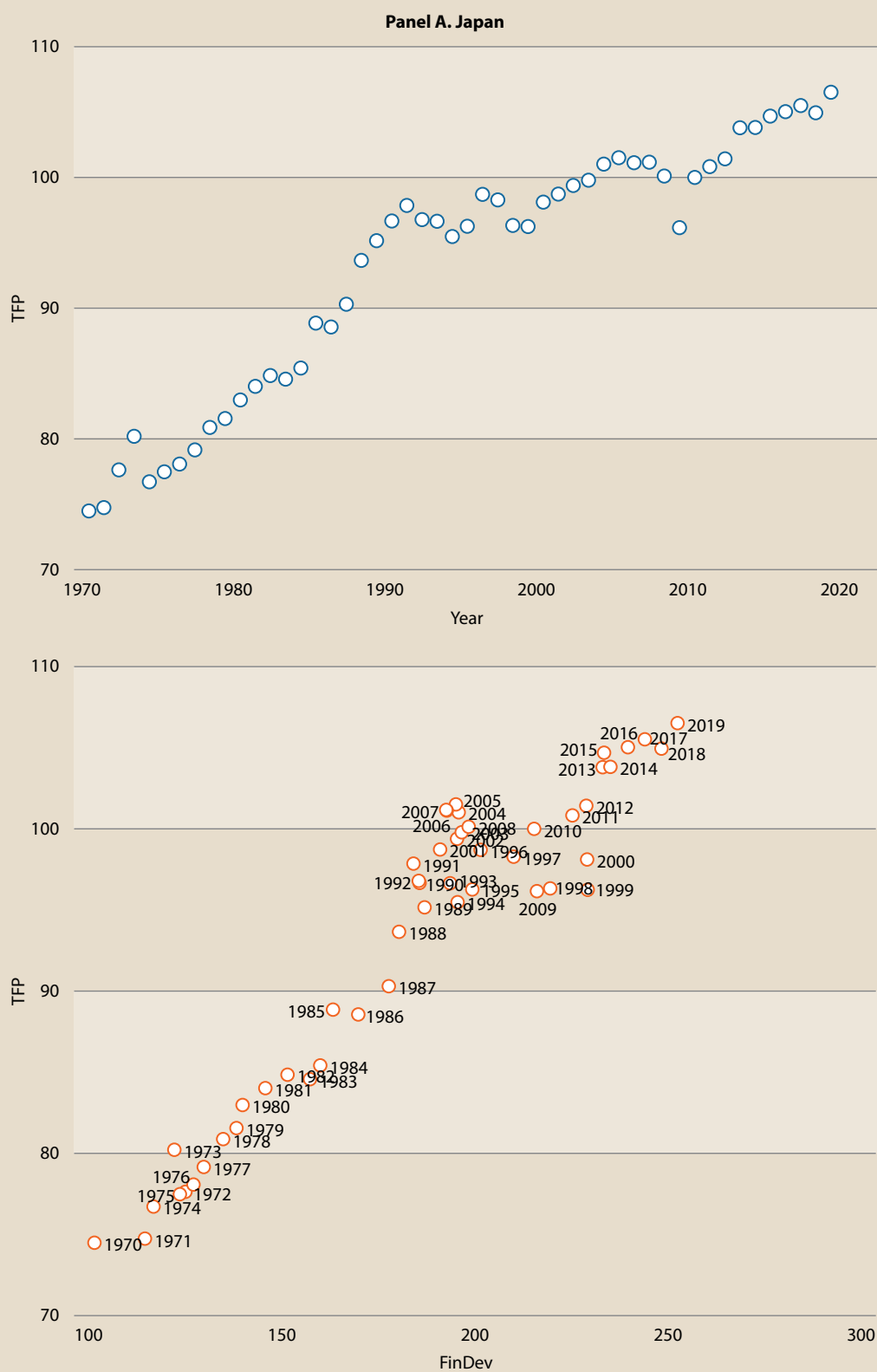
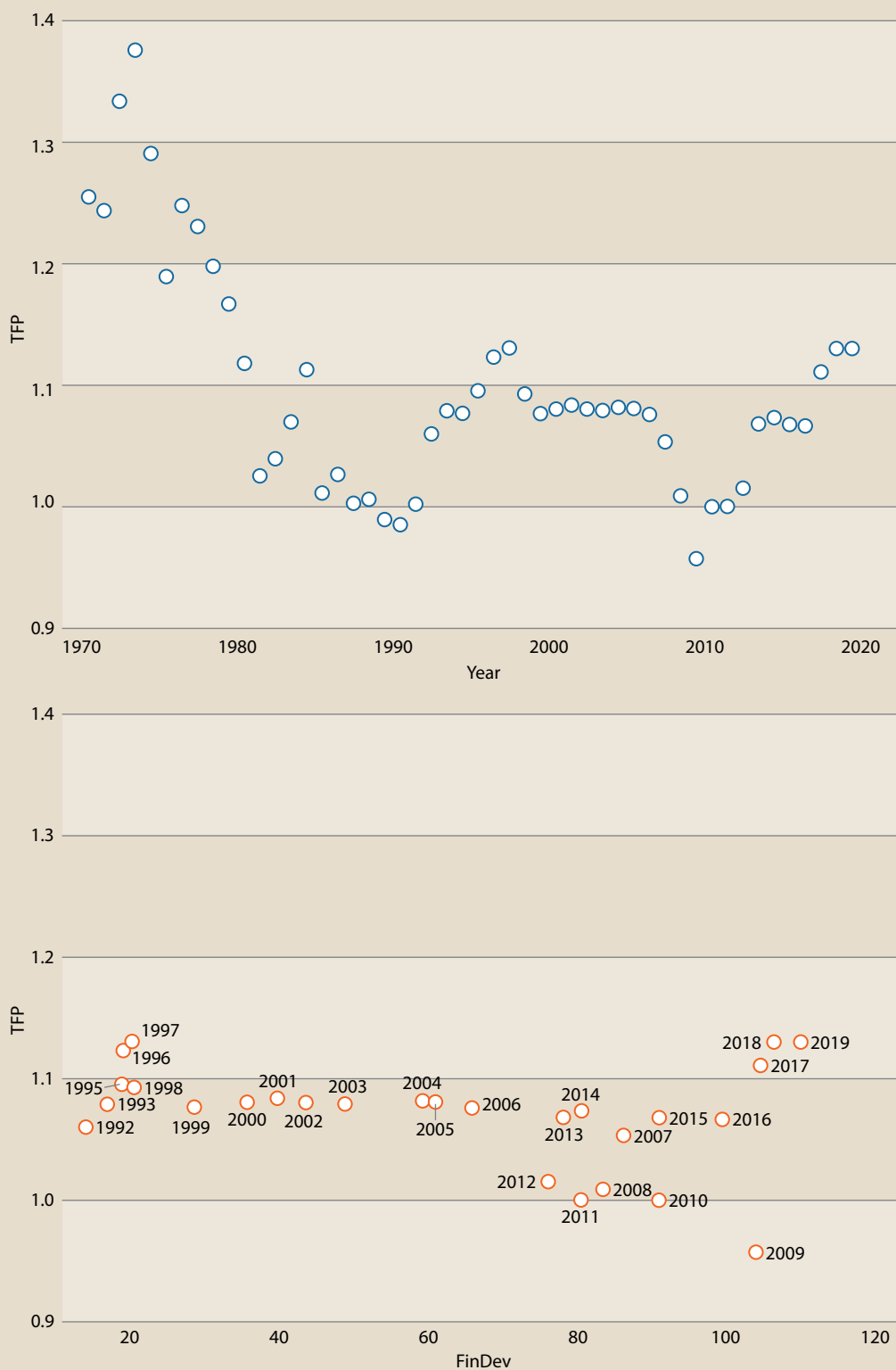
**FIGURE 2A****TRENDS OF TFP AND FINDEV.**

FIGURE 2B

TRENDS OF TFP AND FINDEV.

Panel B. Vietnam



Source: Authors' calculations based on APO Productivity Database 2021.

**TABLE 1**  
**SUMMARY STATISTICS.**

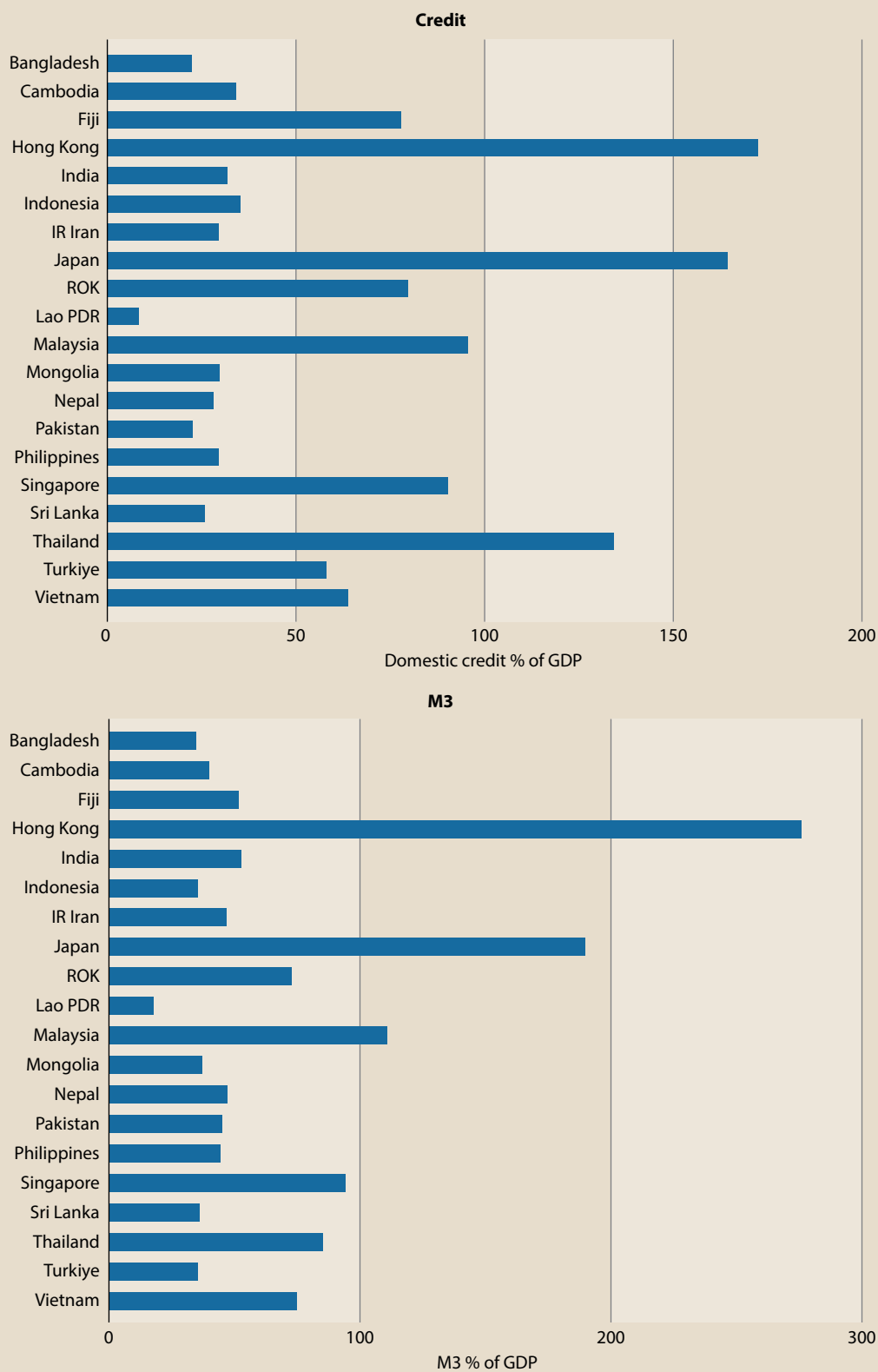
|  | (1)   | (2)    | (3)                | (4)      | (5)     |
|--|-------|--------|--------------------|----------|---------|
| Variables                              | N     | Mean   | Standard deviation | Minimum  | Maximum |
| GDP                                    | 1,050 | 884.9  | 2,026              | 2.690    | 21,305  |
| TFP                                    | 1,050 | 93.86  | 18.58              | 49.87    | 154.23  |
| Labor productivity                     | 1,050 | 707.3  | 315.5              | 104.4    | 1,864   |
| Capital productivity                   | 1,050 | 1.077  | 0.297              | 0.459    | 2.649   |
| Trade (% of GDP)                       | 965   | 86.08  | 88.14              | 4.921    | 442.6   |
| Exchange rate                          | 1,026 | 1,551  | 4,769              | 1.13e-05 | 42,000  |
| Inflation rate                         | 952   | 9.374  | 15.42              | -7.634   | 268.2   |
| Domestic credit to private sector      | 793   | 61.85  | 52.54              | 0.963    | 258.9   |
| Broad money (also called M3)           | 935   | 71.62  | 62.19              | 4.894    | 454.8   |
| Total value of stocks traded           | 514   | 57.83  | 109.3              | 0.0446   | 952.7   |
| Market capitalization of listed stocks | 475   | 107.8  | 202.0              | 1.399    | 1,778   |
| Government expenditure                 | 946   | 11.60  | 3.956              | 3.164    | 26.30   |
| Growth of GDP per capita               | 1,029 | 0.0328 | 0.0439             | -0.191   | 0.161   |

The five main variables to represent financial development are: domestic credit to private sectors, broad money, stocks traded, market capitalization of listed stocks, government expenditure, and productivity data of financial and real estate sectors provided by the APO. The last measure of financial development is included in the results for comparison with the main WDI explanatory variables. There are three channels through which financial development affects productivity. The first is the credit channel. Domestic credit to private sectors and broad money are used to test the credit channel. The credit channel captures how easily firms are able to finance externally. As more credit is available to the private sector, more innovations occur, leading to increased productivity. The second is the equity channel. Data on stocks traded and market capitalization of listed stocks are employed for testing the equity channel. These indicators serve as proxy for how liquid the equity markets are and how well funds circulate between users and suppliers. The third factor is the fiscal channel. Government expenditure is used to represent the fiscal channel. Government expenditure on national defense or education helps increase human capital and promotes technological innovation. Figure 3 shows the averages of financial development indicators for each country.

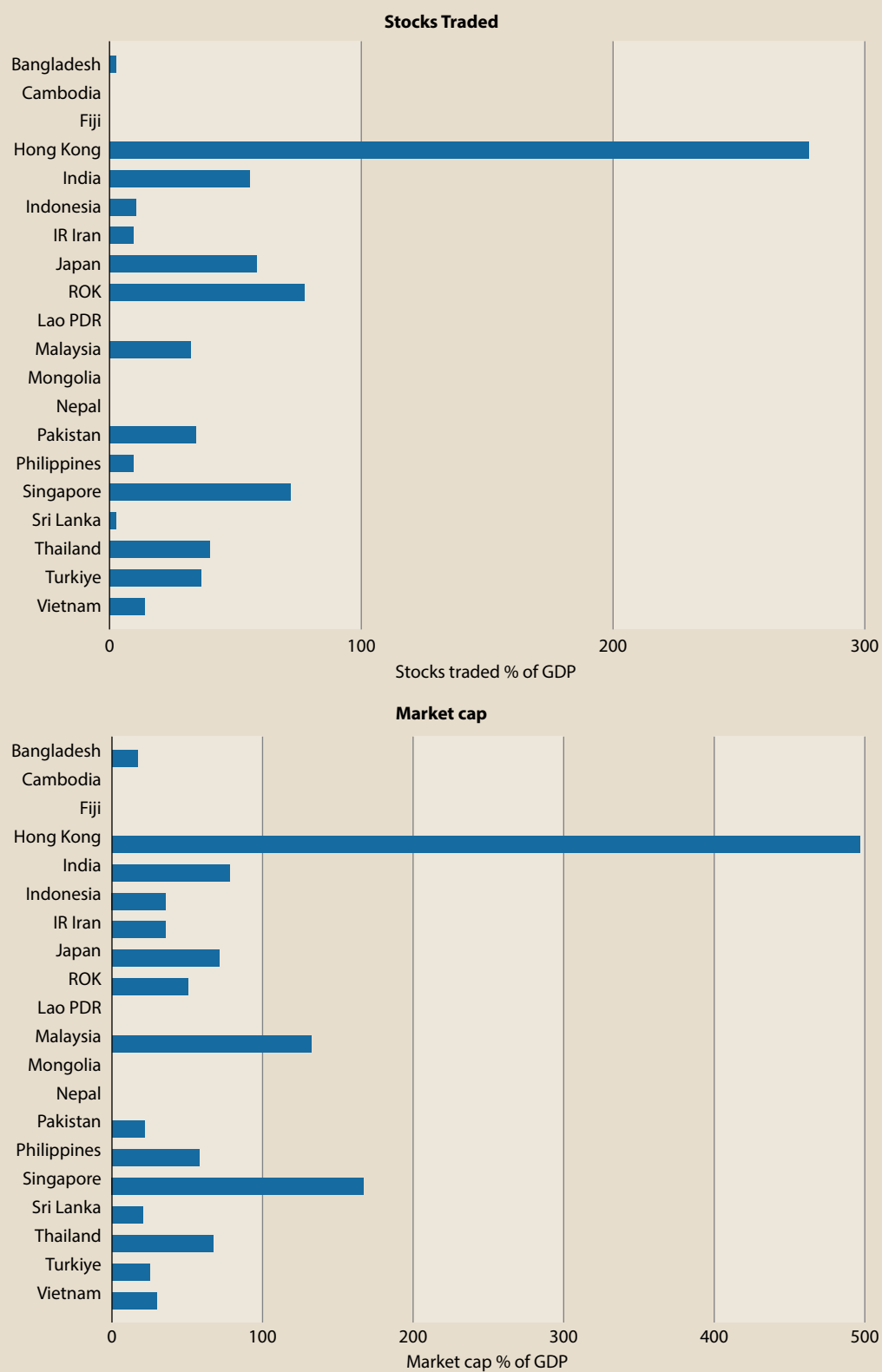
For the main empirical analysis, this study uses panel regression specifications as follows:

$$\begin{aligned}
 &Productivity_{c,t} \\
 &= \alpha + \beta_1 FinDev_{c,t} + \beta_2 High_{c,t} + \beta_3 FinDev_{c,t} * High_{c,t} \\
 &+ \beta_4 Controls_{c,t} + \delta_c + \gamma_t + \varepsilon_{c,t}
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 &Productivity_{c,t} \\
 &= \alpha + \beta_1 FinDev_{c,t} + \beta_3 Middle_{c,t} + \beta_3 High_{c,t} + \beta_4 FinDev_{c,t} \\
 &* Middle_{c,t} + \beta_5 FinDev_{c,t} * High_{c,t} + \beta_6 Controls_{c,t} + \delta_c + \gamma_t + \varepsilon_{c,t}
 \end{aligned} \tag{2}$$

**FIGURE 3A****FINANCIAL DEVELOPMENT BY COUNTRY.**

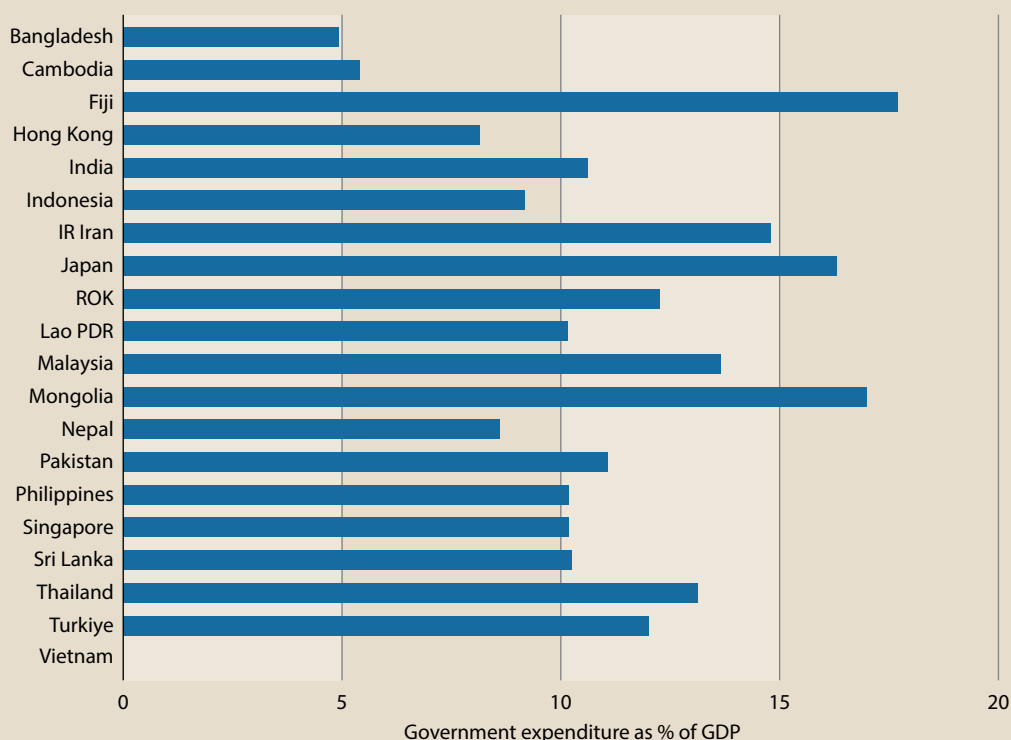
Source: Authors' calculations based on WDI Database and APO Database.

**FIGURE 3B****FINANCIAL DEVELOPMENT BY COUNTRY.**

**Source:** Authors' calculations based on WDI Database and APO Database.

FIGURE 3C

## FINANCIAL DEVELOPMENT BY COUNTRY.



Source: Authors' calculations based on WDI Database and APO Database.

In Equations (1) and (2),  $Productivity_{c,t}$  is the measure of productivity for country  $c$  in year  $t$ . This chapter uses three measures of productivity: TFP, labor productivity, and capital productivity.  $FinDev_{c,t}$  is the financial development indicator provided by the World Bank, as mentioned earlier.  $High_{c,t}$  is an indicator variable that takes on a value of 1 if a country is classified as a high-income or upper-middle-income country according to the World Bank's historical classification information.  $High_{c,t}$  is zero for countries with low- or lower-middle-income classification. Control variables include local currency exchange rate, inflation rate, and total trade as a percentage of GDP. While Yang [7] uses more control variables such as legal rights, there were many missing values in the sample used for the present study. Thus, only the control variables with reasonable observations are included in the specifications used in this study.

The variable of interest in this study is the interaction term of the financial development indicator and the income level indicator. In Equation (1), the coefficient to observe is  $\beta_3$ . If  $\beta_3$  is positive, it suggests that productivity increases more as financial markets develop in high-income countries. If negative, the ability of a country to utilize financial systems to increase productivity declines as the income level rises. This chapter also looks at three channels that connect financial development and productivity, i.e., credit, equity, and fiscal. The signs related to  $\beta_3$  are expected to vary depending on the channel considered.

This study uses the historical classification provided by the World Bank. When the sample is divided into two, Equation (1) is used. Equation (2) is used when the sample is divided into

three. Low-income countries have incomes lower than USD1,085. Lower-middle-income countries have per capita GNI that ranges from USD1,086 to USD4,255. Upper-middle-income countries have incomes ranging between USD4,256 and USD13,205, and high-income countries have incomes higher than USD13,205 [9]. When the sample is divided into two groups, then low- and lower-middle-income countries are grouped separately from upper-middle- and high-income countries. When the sample is divided into three groups, then low-, middle-, and high-income classifications are used.

Additionally, this study tests if there is a nonlinear relationship between financial development indicators and productivity measures. The IMF has pointed out that GDP growth and financial development have an inverse-U relationship. Although this study does not evaluate thresholds because various indicators are used, it is found that a nonlinear relationship exists. To analyze the linkage, this study uses the following panel regression specification:

$$Productivity_{c,t} = \alpha + \beta_1 FinDev_{c,t} + \beta_2 FinDev_{c,t}^2 + \beta_3 Controls_{c,t} + \delta_c + \gamma_t + \varepsilon_{c,t} \quad (3)$$

Table 2 presents the baseline results from panel regressions. Tables 2 and 3 use TFP as the key dependent variable. Each column uses a different financial development indicator. Columns 1–6 use data on domestic credit, broad money, total stocks traded, market capitalization of listed stocks, government expenditure, and finance sector's productivity as per the APO, respectively. Countries without public stock markets are excluded in columns 3 and 4. Coefficients from columns 1 and 2 represent the credit channel. It is observed that high-income economies benefit more from financial development in improving TFP, as shown by the positive coefficient of the interaction term. However, columns 4 and 5 suggest that productivity declines through equity and fiscal channels as financial development indicators increase for high-income economies. The results indicate that developments of debt financing and equity financing have different impacts on TFP.

TABLE 2

## TFP AND FINDEV SAMPLE DIVIDED INTO LOW- AND HIGH-INCOME LEVELS.

| Variables   | (1)<br>Domestic credit | (2)<br>M3            | (3)<br>Stocks traded | (4)<br>Market cap.  | (5)<br>Government expenditure | (6)<br>Finance sector's productivity |
|-------------|------------------------|----------------------|----------------------|---------------------|-------------------------------|--------------------------------------|
| High        | -7.787***<br>(-2.80)   | -6.949***<br>(-2.77) | 3.608**<br>(2.45)    | 4.482***<br>(2.65)  | 13.902***<br>(2.78)           | 3.071*<br>(1.90)                     |
| FinDev      | -0.078**<br>(-2.55)    | -0.063*<br>(-1.95)   | 0.018<br>(0.74)      | 0.059***<br>(3.28)  | 0.493**<br>(2.19)             | -0.000<br>(-0.42)                    |
| High FinDev | 0.111***<br>(4.31)     | 0.104***<br>(4.55)   | 0.007<br>(0.29)      | -0.044**<br>(-2.55) | -0.854**<br>(-2.39)           | 0.001<br>(0.58)                      |
| Trade       | 0.002<br>(0.14)        | -0.012<br>(-0.58)    | -0.028*<br>(-1.66)   | -0.014<br>(-0.74)   | 0.011<br>(0.63)               | 0.019<br>(1.08)                      |
| Inflation   | -0.120***<br>(-3.95)   | -0.080***<br>(-2.68) | 0.050<br>(1.31)      | 0.049<br>(1.28)     | -0.088***<br>(-2.76)          | -0.066**<br>(-2.16)                  |

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|                     | (1)                  | (2)                  | (3)                  | (4)                  | (5)                    | (6)                           |
|---------------------|----------------------|----------------------|----------------------|----------------------|------------------------|-------------------------------|
| Variables           | Domestic credit      | M3                   | Stocks traded        | Market cap.          | Government expenditure | Finance sector's productivity |
| Exchange rate       | 0.000<br>(0.04)      | -0.001***<br>(-6.34) | -0.001***<br>(-5.54) | -0.001***<br>(-4.96) | -0.001***<br>(-5.93)   | -0.001***<br>(-5.34)          |
| Constant            | 80.702***<br>(23.94) | 90.022***<br>(26.57) | 91.962***<br>(17.16) | 88.747***<br>(17.33) | 78.265***<br>(18.64)   | 86.253***<br>(25.44)          |
| Observations        | 709                  | 842                  | 482                  | 441                  | 840                    | 856                           |
| R-squared           | 0.4981               | 0.3139               | 0.5266               | 0.5937               | 0.3247                 | 0.2944                        |
| Number of countries | 20                   | 20                   | 15                   | 15                   | 20                     | 20                            |

Note: \*significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%; standard errors are in parentheses.

Table 3 presents the estimates from panel regression when the sample is divided into low-, middle-, and high-income economies. The results are similar to Table 2 for the credit channel. High-income economies benefit from the growth of the credit market with statistical significance through credit channels. On the other hand, equity and fiscal channels show negative estimates for the interaction terms but lack significance for high-income economies. Middle-income economies show mixed results in columns 3 and 4. The results suggest that lower-income economies do not exploit financial development through the development of the credit market as well as middle- or high-income economies in enhancing TFP.

TABLE 3

TFP AND FINDEV SAMPLES DIVIDED INTO LOW-, MEDIUM-, AND HIGH-INCOME LEVELS.

|            | (1)                  | (2)                  | (3)                 | (4)                 | (5)                    | (6)                           |
|------------|----------------------|----------------------|---------------------|---------------------|------------------------|-------------------------------|
| Variables  | Domestic credit      | Broad money (M3)     | Stocks traded       | Market cap.         | Government expenditure | Finance sector's productivity |
| MID        | 7.063***<br>(3.35)   | -0.25<br>(-0.10)     | 1.34<br>(0.77)      | -1.39<br>(-0.75)    | -0.70<br>(-0.20)       | 0.81<br>(0.52)                |
| HI         | 4.98<br>(1.14)       | 9.706**<br>(2.39)    | 15.256***<br>(5.64) | 12.049***<br>(4.46) | 18.022***<br>(3.10)    | 18.923***<br>(7.31)           |
| FinDev     | -0.088**<br>(-2.54)  | -0.118***<br>(-3.20) | -0.02<br>(-0.65)    | 0.03<br>(1.45)      | 0.02<br>(0.11)         | 0.00<br>(-0.60)               |
| MID_FinDev | 0.01<br>(0.15)       | 0.074**<br>(2.41)    | 0.072**<br>(2.02)   | -0.01<br>(-0.20)    | 0.30<br>(1.07)         | 0.002***<br>(5.25)            |
| HI_FinDev  | 0.094***<br>(2.76)   | 0.095***<br>(3.08)   | 0.04<br>(1.09)      | -0.02<br>(-0.89)    | -0.10<br>(-0.22)       | -0.00<br>(-0.36)              |
| Trade      | 0.02<br>(1.07)       | 0.02<br>(0.85)       | 0.00<br>(0.08)      | (0.00)<br>(-0.14)   | 0.01<br>(0.85)         | 0.038**<br>(2.19)             |
| Inflation  | -0.110***<br>(-3.71) | -0.068**<br>(-2.34)  | 0.02<br>(0.46)      | 0.02<br>(0.66)      | -0.082***<br>(-2.67)   | -0.077***<br>(-2.67)          |

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| Variables           | (1)<br>Domestic credit | (2)<br>Broad money (M3) | (3)<br>Stocks traded | (4)<br>Market cap.   | (5)<br>Government expenditure | (6)<br>Finance sector's productivity |
|---------------------|------------------------|-------------------------|----------------------|----------------------|-------------------------------|--------------------------------------|
| Exchange rate       | 0.00<br>(-0.03)        | -0.001***<br>(-6.17)    | -0.000***<br>(-4.41) | -0.000***<br>(-3.92) | -0.001***<br>(-5.52)          | -0.001***<br>(-5.16)                 |
| Constant            | 80.511***<br>(24.29)   | 90.708***<br>(26.96)    | 91.223***<br>(18.03) | 90.234***<br>(18.54) | 83.880***<br>(20.11)          | 86.095***<br>(26.85)                 |
| Observations        | 709                    | 842                     | 482                  | 441                  | 840                           | 856                                  |
| R-squared           | 0.5253                 | 0.3529                  | 0.583                | 0.6335               | 0.3668                        | 0.3701                               |
| Number of countries | 20                     | 20                      | 15                   | 15                   | 20                            | 20                                   |

Note: \*significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%; standard errors are in parentheses.

Instead of TFP, this study uses a decomposed measure of capital productivity provided by the APO. This measure is comparable with labor productivity used in Table 5. While labor productivity is more common, financial development is observed to have a significant influence on different types of productivity. It is important to look at labor and capital productivity separately because the relationship between them varies by each country's characteristics. Many factors, such as demographics, geographic features, industry concentration, and culture determine the heterogeneity. Figure 4 shows the heterogeneity among some APO member economies through time. While Hong Kong shows an upward labor and capital productivity trend, Japan and Vietnam show a negative correlation. The Philippines shows a U-shaped relationship.

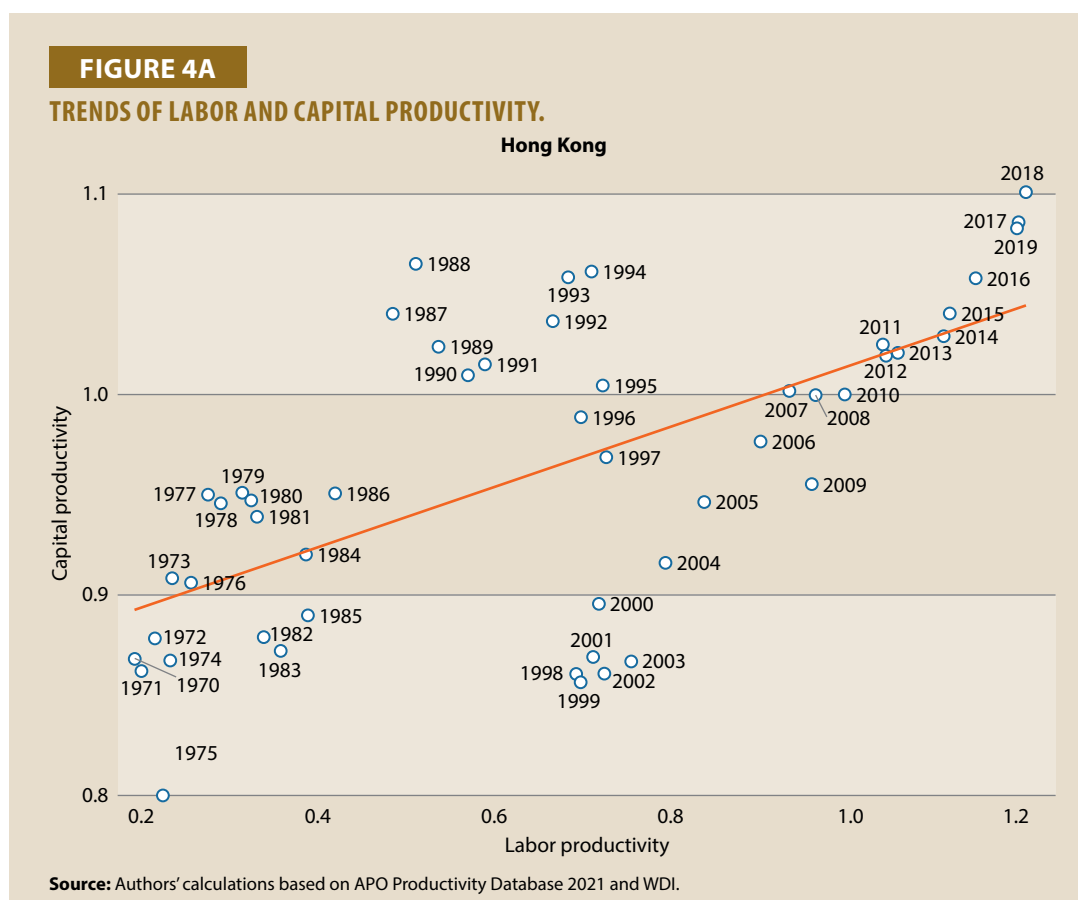
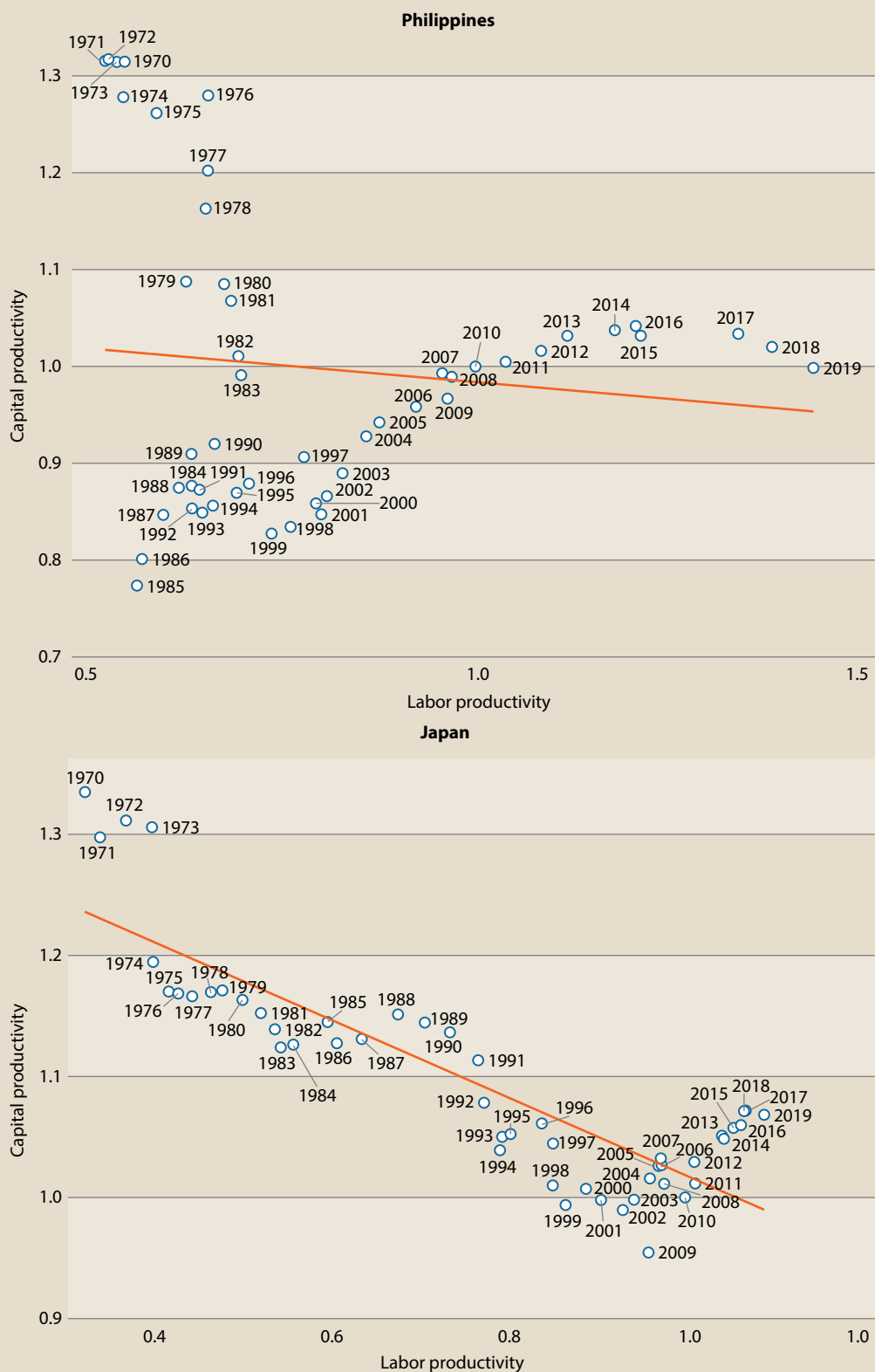


FIGURE 4B

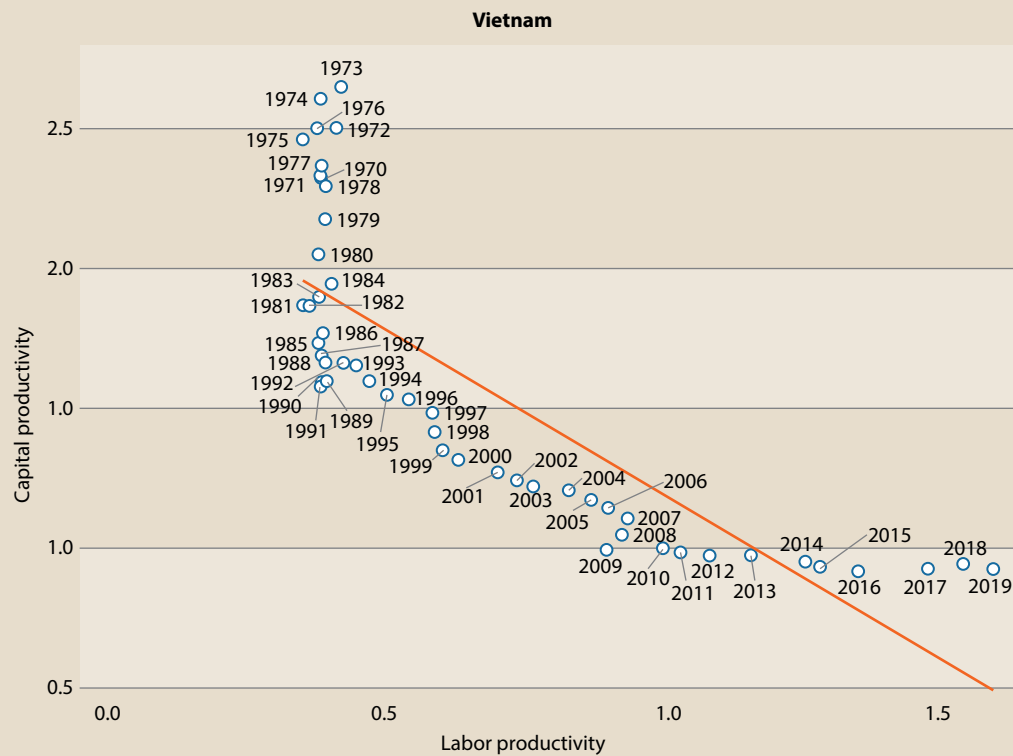
TREND OF LABOR AND CAPITAL PRODUCTIVITY.



Source: Authors' calculations based on APO Productivity Database 2021 and WDI.

FIGURE 4C

## TREND OF LABOR AND CAPITAL PRODUCTIVITY.



Source: Authors' calculations based on APO Productivity Database 2021 and WDI.

Table 4 reports the regression results when capital productivity is used as the dependent variable. It is observed that high-income economies experience increases in capital productivity in line with increases in financial development indicators, except for government expenditure. Middle-income economies show mixed results. Among channels of financial development, credit channels have a decreasing impact on capital productivity, but equity and fiscal channels have an increasing impact.

TABLE 4

## CAPITAL PRODUCTIVITY AND FINDEV.

| Variables | (1)                  | (2)                  | (3)                  | (4)                  | (5)                    | (6)                           |
|-----------|----------------------|----------------------|----------------------|----------------------|------------------------|-------------------------------|
|           | Domestic credit      | Broad money (M3)     | Stocks traded        | Market cap.          | Government expenditure | Finance sector's productivity |
| MID       | 0.186***<br>(6.45)   | 0.072**<br>(2.47)    | -0.098***<br>(-3.64) | -0.149***<br>(-5.61) | -0.196***<br>(-4.40)   | -0.073***<br>(-3.79)          |
| HI        | -0.01<br>(-0.13)     | -0.104**<br>(-2.10)  | -0.214***<br>(-5.08) | -0.215***<br>(-5.55) | 0.186**<br>(2.45)      | -0.03<br>(-0.80)              |
| FinDev    | -0.001***<br>(-3.12) | -0.004***<br>(-8.41) | -0.001*<br>(-1.76)   | -0.001***<br>(-3.93) | -0.009***<br>(-3.01)   | 0.00<br>(1.23)                |

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|                     | (1)                  | (2)                  | (3)                 | (4)                 | (5)                    | (6)                           |
|---------------------|----------------------|----------------------|---------------------|---------------------|------------------------|-------------------------------|
| Variables           | Domestic credit      | Broad money (M3)     | Stocks traded       | Market cap.         | Government expenditure | Finance sector's productivity |
| MID_FinDev          | −0.003***<br>(−6.48) | −0.001**<br>(−2.23)  | −0.00<br>(−1.00)    | 0.001***<br>(3.42)  | 0.016***<br>(4.36)     | 0.000***<br>(10.41)           |
| HI_FinDev           | 0.00<br>(1.13)       | 0.002***<br>(5.11)   | 0.001*<br>(1.93)    | 0.001***<br>(4.69)  | −0.013**<br>(−2.23)    | 0.000***<br>(2.86)            |
| Trade               | 0.001***<br>(2.83)   | 0.001***<br>(5.43)   | 0.00<br>(−0.97)     | −0.001*<br>(−1.95)  | 0.00<br>(0.39)         | 0.000**<br>(2.21)             |
| Inflation           | −0.001***<br>(−3.11) | −0.001***<br>(−2.85) | 0.00<br>(−0.29)     | 0.00<br>(0.38)      | −0.001**<br>(−2.24)    | −0.001***<br>(−3.42)          |
| Exchange rate       | 0.000***<br>(6.07)   | −0.000*<br>(−1.91)   | 0.00<br>(0.85)      | 0.000*<br>(1.74)    | 0.00<br>(0.45)         | 0.00<br>(1.36)                |
| Constant            | 1.128***<br>(24.82)  | 1.208***<br>(29.37)  | 1.105***<br>(14.05) | 1.127***<br>(16.15) | 1.222***<br>(22.41)    | 1.120***<br>(28.06)           |
| Observations        | 709                  | 842                  | 482                 | 441                 | 840                    | 856                           |
| R-squared           | 0.2987               | 0.2998               | 0.2338              | 0.2539              | 0.1852                 | 0.28                          |
| Number of countries | 20                   | 20                   | 15                  | 15                  | 20                     | 20                            |

Note: \*significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%; standard errors are in parentheses.

Comparable to the results with regard to capital productivity, regression results using labor productivity show more consistent results for all three channels. Table 5 shows the results when labor productivity is used. The results are different from previous findings. It is observed that high-income economies actually experience a decrease in labor productivity as financial markets develop. Meanwhile, labor productivities of lower- and middle-income economies increase in line with an increase in the indicators. This finding may be due to the differences in the distribution of factor intensities. Some sectors are heavily labor-dependent, while others are more capital-intensive. It is reasonable to assume that low-income economies have less capital-intensive industries and thus do not benefit from financial development in those sectors. On the other hand, labor-intensive industries must be concentrated in developing countries. Therefore, financial development enhances productivity in labor-intensive sectors for lower-income countries, while the increases in capital productivity are more pronounced in higher-income economies.

When considering labor productivity, middle-income economies benefit the most from financial development. The development of financial markets positively influences labor productivity in lower-income countries. The results are consistent for most columns. Tables 4 and 5 provide insights into how financial development increases productivity for different countries. Low- and middle-income economies that have a higher concentration of labor-intensive industries benefit through labor-specific productivity advances from financial liberalization. In contrast, high-income economies do so through capital productivity.

Additionally, a significant increase in R-squared values is observed when labor productivity is used. Previous regressions showed R-squared values that ranged from 0.19 to 0.63, but values from Table 5 exceed 0.9. This suggests that the linear relationship between the explanatory variables used in this study and labor productivity is more robust than when the capital or TFP is used instead.

**TABLE 5**  
**LABOR PRODUCTIVITY AND FINDEV.**

| Variables           | (1)<br>Domestic credit | (2)<br>Broad money (M3) | (3)<br>Stocks traded | (4)<br>Market cap.   | (5)<br>Government expenditure | (6)<br>Financial productivity |
|---------------------|------------------------|-------------------------|----------------------|----------------------|-------------------------------|-------------------------------|
| MID                 | −0.068***<br>(−3.07)   | −0.056**<br>(−2.56)     | 0.048**<br>(2.03)    | 0.03<br>(1.04)       | 0.102***<br>(3.04)            | 0.091***<br>(6.00)            |
| HI                  | 0.163***<br>(3.58)     | 0.288***<br>(7.66)      | 0.283***<br>(7.69)   | 0.219***<br>(5.60)   | 0.351***<br>(6.11)            | 0.132***<br>(5.22)            |
| FinDev              | 0.001***<br>(3.20)     | 0.001***<br>(2.94)      | 0.001*<br>(1.81)     | 0.00<br>(0.09)       | 0.009***<br>(4.12)            | −0.000**<br>(−1.97)           |
| MID_FinDev          | 0.002***<br>(6.08)     | 0.002***<br>(5.45)      | 0.001***<br>(3.05)   | 0.001*<br>(1.80)     | −0.00<br>(−1.50)              | −0.000***<br>(−5.56)          |
| HI_FinDev           | −0.001*<br>(−1.81)     | −0.001***<br>(−5.23)    | −0.001**<br>(−2.26)  | 0.00<br>(−0.76)      | −0.020***<br>(−4.60)          | 0.00<br>(−0.73)               |
| Trade               | 0.00<br>(−1.09)        | 0.000**<br>(1.99)       | 0.001***<br>(3.38)   | 0.001***<br>(3.54)   | 0.000***<br>(2.92)            | 0.000**<br>(2.50)             |
| Inflation           | −0.001*<br>(−1.72)     | −0.001**<br>(−2.41)     | (0.00)<br>(−1.43)    | −0.001***<br>(−2.59) | −0.001***<br>(−3.27)          | −0.001**<br>(−2.05)           |
| Exchange rate       | −0.000***<br>(−6.62)   | −0.000***<br>(−3.29)    | −0.000***<br>(−6.92) | −0.000***<br>(−7.25) | −0.000***<br>(−7.32)          | −0.000***<br>(−7.45)          |
| Constant            | 0.320***<br>(9.22)     | 0.287***<br>(9.21)      | 0.495***<br>(7.21)   | 0.499***<br>(7.07)   | 0.198***<br>(4.82)            | 0.324***<br>(10.31)           |
| Observations        | 709                    | 842                     | 482                  | 441                  | 840                           | 856                           |
| R-squared           | 0.9032                 | 0.9014                  | 0.9129               | 0.9033               | 0.8919                        | 0.8915                        |
| Number of countries | 20                     | 20                      | 15                   | 15                   | 20                            | 20                            |

**Note:** \*significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%; standard errors are in parentheses.

### Nonlinearity between Productivity and Financial Development

Tables 6 and 7 present the estimates from the regressions using Equation (3). The empirical specification applied is to test if there is a nonlinearity between financial development and productivity. It is known that financial development and economic growth have a nonlinear relationship [3]. This study tests if productivities show similar patterns.

First, this study uses TFP in Table 6. The results show a nonlinear relationship since the directions are different by channels. Through the credit channels, columns 1 and 2 show negative coefficients

for the first-degree FinDev and positive coefficients for the squared term of FinDev. These estimates suggest that the marginal impact of FinDev increases as the financial system develops. In other words, financially developed economies benefit more from further development than those that are less developed. These results apply only to the credit channel.

The results are the opposite when considering the equity channel, as shown in columns 3 and 4. Economies with lower market capitalizations and lower volumes of stocks traded experience greater increase in TFP than those with higher market capitalization. This channel is more consistent with the findings of Sahay *et al* [3], who show an inverse-U relationship between financial development and economic growth. Based on the results from Table 6, it can be confirmed that TFP and growth behave in a similar fashion as that of the financial development when considering the equity channel but behave oppositely through the credit channel. The fiscal channel showed no significant findings.

**TABLE 6**  
**NONLINEARITY BETWEEN TFP AND FINDEV.**

| Variables           | (1)<br>Domestic credit  | (2)<br>Broad money (M3) | (3)<br>Stocks traded    | (4)<br>Market cap.      | (5)<br>Government expenditure | (6)<br>Financial productivity |
|---------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------------|-------------------------------|
| FinDev              | -17.045***<br>(-3.94)   | -4.687<br>(-1.17)       | 6.110***<br>(4.60)      | 3.706***<br>(3.12)      | 3.478<br>(0.04)               | 0.130***<br>(6.94)            |
| FinDev2             | 0.088***<br>(4.96)      | 0.025***<br>(2.80)      | -0.005***<br>(-3.03)    | -0.002**<br>(-2.12)     | 0.999<br>(0.30)               | -0.000***<br>(-7.08)          |
| Trade               | -1.406<br>(-0.79)       | -2.980<br>(-1.38)       | -3.587**<br>(-2.16)     | -1.824<br>(-0.95)       | 1.995<br>(1.19)               | 2.739*<br>(1.65)              |
| Inflation           | -12.037***<br>(-3.98)   | -7.480**<br>(-2.50)     | 2.813<br>(0.76)         | 2.216<br>(0.60)         | -9.721***<br>(-3.03)          | -8.000***<br>(-2.72)          |
| Exchange rate       | -0.007<br>(-0.39)       | -0.123***<br>(-6.64)    | -0.053***<br>(-4.95)    | -0.045***<br>(-4.45)    | -0.081***<br>(-5.85)          | -0.078***<br>(-5.84)          |
| Constant            | 8,277.429***<br>(24.08) | 8,981.080***<br>(25.47) | 9,231.859***<br>(17.31) | 8,968.371***<br>(17.52) | 8,141.223***<br>(11.75)       | 7,454.383***<br>(20.39)       |
| Observations        | 709                     | 842                     | 482                     | 441                     | 840                           | 856                           |
| R-squared           | 0.5010                  | 0.3001                  | 0.5274                  | 0.5891                  | 0.3171                        | 0.3316                        |
| Number of countries | 20                      | 20                      | 15                      | 15                      | 20                            | 20                            |

**Note:** \*significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%; standard errors are in parentheses.

The nonlinearity of the relationship between financial development and labor productivity is tested using the specifications of Equation (3). Table 7 provides the estimates from the panel regression. When labor productivity is used instead of TFP, the relationship is consistent for credit and equity channels. The fiscal channel (column 5 of Table 7) showed similar results to the credit channel when TFP was the dependent variable (columns 1 and 2 of Table 7). Columns 1, 2, 3, and 4 show that the marginal effect of financial development declines as the system grows. The findings suggest that labor productivity, through credit and equity channels, behaves analogously as economic growth to the development of financial systems. It is noteworthy that labor productivity and economic growth react similarly to financial development, while capital productivity and TFP do not.

TABLE 7

## NONLINEARITY BETWEEN LABOR PRODUCTIVITY AND FINDEV.

| Variables           | (1)<br>Domestic credit | (2)<br>Broad money (M3) | (3)<br>Stocks traded | (4)<br>Market cap.   | (5)<br>Government expenditure | (6)<br>Financial productivity |
|---------------------|------------------------|-------------------------|----------------------|----------------------|-------------------------------|-------------------------------|
| FinDev              | 2.345***<br>(5.06)     | 3.056***<br>(8.12)      | 0.848***<br>(4.26)   | 0.201<br>(1.18)      | -23.886***<br>(-2.63)         | 0.003*<br>(1.67)              |
| FinDev2             | -0.001<br>(-0.40)      | -0.006***<br>(-7.39)    | -0.001***<br>(-4.41) | -0.000**<br>(-2.53)  | 1.047***<br>(3.26)            | -0.000**<br>(-1.99)           |
| Trade               | -0.173<br>(-0.91)      | 0.532***<br>(2.63)      | -0.026<br>(-0.11)    | 0.809***<br>(2.92)   | 0.612***<br>(3.76)            | 0.613***<br>(3.75)            |
| Inflation           | -0.582*<br>(-1.79)     | -0.676**<br>(-2.40)     | -0.815<br>(-1.48)    | -1.307**<br>(-2.47)  | -1.211***<br>(-3.87)          | -0.797***<br>(-2.74)          |
| Exchange rate       | -0.012***<br>(-6.18)   | -0.006***<br>(-3.45)    | -0.011***<br>(-6.81) | -0.011***<br>(-7.50) | -0.010***<br>(-7.49)          | -0.011***<br>(-7.99)          |
| Constant            | 286.262***<br>(7.77)   | 217.021***<br>(6.55)    | 566.640***<br>(7.10) | 484.562***<br>(6.58) | 416.593***<br>(6.17)          | 281.699***<br>(7.81)          |
| Observations        | 709                    | 842                     | 482                  | 441                  | 840                           | 856                           |
| R-squared           | 0.8932                 | 0.8899                  | 0.8802               | 0.8931               | 0.8864                        | 0.8830                        |
| Number of countries | 20                     | 20                      | 15                   | 15                   | 20                            | 20                            |

Note: \*significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%; standard errors are in parentheses.

## Policy Implications

The disparity in income levels is a major factor determining how financial development affects different types of productivity. Low- or middle-income economies experience increases in labor productivity as financial frictions decrease. Meanwhile, high-income economies benefit from relieving financial constraints by improving capital productivity and aggregate productivity. The results derived in this study suggest that financial development impacts productivity, but the type of productivity affected differs based on income levels and the heterogeneity of each country. Country characteristics, such as the distribution of industry concentration and the degree to which the country relies on specific industries, are important factors for policymaking. These factors, along with the income level, decide whether enhancements of the financial system support overall productivity or a particular type of productivity.

During COVID-19, there was a massive increase in the money circulating in economies worldwide. Many governments implemented quantitative easing to ensure that economies, and people, are not distressed by the pandemic. In the aftermath, inflation surged, and the central banks responded by increasing interest rates at an unprecedented rate, taking multiple ‘giant steps.’ Government policies are imperative in keeping economies stable.

## Policies for Lower- and Middle-income Economies

Although the data used in this study does not cover the period of the recent pandemic, the findings show that labor productivity is enhanced for lower-income countries while capital and TFP increase

for higher-income countries as the financial system becomes liberalized. Because countries with lower incomes are more concentrated in industries with labor-intensive characteristics, their policies should focus more on the labor force.

First, the policies should ensure job security. As firms go through hard times, they are inclined to let go of workers. As more workers lose jobs, uncertainty increases, and the morale and productivity of the labor force decline.

Second, it is necessary to strengthen educational and skill-developing programs for those looking for jobs to increase the job-finding rate. Given that lower-income economies rely primarily on labor, policies that direct the labor force to maintain their productivity during recessions are important.

Third, tightening the monetary policy makes it more difficult for developing economies to raise funds even for promising projects and investments. Additionally, the cost of financing has risen immensely in the second half of 2022. The government should intervene and provide the private sector with needed borrowing so that the overall expectations of the economy do not crumble.

### **Policies for Higher-income Economies**

In times of monetary tightening, capital productivity declines in high-income countries whereas labor productivity is affected adversely in lower-income countries. Hence, the policies need to be directed at the right sectors. Given that capital productivity is improved with more credit and funds available for high-income countries, policies should ensure research and development endeavors that help economies through innovations and capital accumulation. Many technology companies in developed economies suffered considerable losses in market capitalization recently. Promising attempts at innovation must not be discontinued during periods of recession.

Policies for high-income economies should not only be focused on firms or labor but on research institutions as well. Research institutes can contribute by guiding the private sector to overcome economic difficulties. The government should help establish linkages between the private sector and research institutes and universities so that interdisciplinary innovations continue advancing. Technological development can improve capital and TFP in the long run.

## **Conclusion**

This study confirmed that financial development indicators and different measures of productivity are linked among APO member economies. The findings provide insights into how financial liberalization could be used to help economies with different income levels. While low- or middle-income economies are more likely to have a higher concentration of industries that are more labor-intensive (more specifically unskilled), high-income economies have a relatively higher concentration of capital- or skilled-labor-intensive industries. Thus, this chapter suggests that policy outcomes occur in different dimensions.

Using three different types of productivity, this chapter finds that the link between financial development and productivity differs based on the measure used. The fundamental reason is that different economies have comparative advantages in different industries that use varying skillsets. In addition, this study considered three channels through which financial systems help improve productivity: the credit channel, the equity channel, and the fiscal channel. Labor productivity was influenced by financial development consistently through the three channels. This study confirmed

that financial development positively impacts labor productivity in lower- or middle-income countries than in rich economies. On the other hand, capital and TFP showed similar patterns but were inconsistent throughout channels.

Lastly, this chapter reveals the differences between APO member economies and OECD countries. Bergeaud *et al* [8] show that capital and labor productivity are positively correlated in advanced economies. However, the productivity measures of APO members did not show similar patterns, especially for Japan. The methods used to construct decomposed productivities may drive these differences and need to be examined in detail for further analysis.

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## SECTOR-SPECIFIC ISSUE 2

# BUSINESS SERVICES AND PRODUCTIVITY

### Introduction

As the level of GDP increases, the proportion of the services industry tends to deviate from the production structure centered on the primary and secondary industries. This is common not only in advanced countries but also in APO member economies.

One of the changes in the industrial structure of APO member economies since the 1990s has been a relative increase of the services sector in terms of share of GDP and employment compared with other industries. In particular, among service subsectors, the proportion of real value added and employment in business services showed a remarkable increase within the services sector. Although the proportion of real value added decreased by 3% from 1990 to 2018, the proportion of business services increased by 5% and employment by 2%.

From the perspective of the national economy, the two main tasks facing the services industry are: (1) flexible labor absorption in the manufacturing industry due to the introduction of labor-saving methods; and (2) preventing the decline in the services sector's productivity due to the stagnation of real value added, and providing high-value-added technology services required by manufacturing [1].

As an alternative to solving the above two problems facing the services industry, the business services sector contributes directly as well as indirectly to the economic growth of a nation. Business services account for a large proportion within the services sector, and are also expanding, directly contributing to productivity improvement and economic growth through changes in the industrial structure of APO member economies. In addition, since business services are an intermediate goods industry rather than a final goods industry, they indirectly contribute to economic growth due to their large linkage effect and the large dissemination effect of knowledge among industries.

Under business services, knowledge-intensive business services (KIBS) and operational services are included. In the case of KIBS, these services include product concepts, innovation activities, and jobs that provide consulting necessary for technological development and management of high-value-added production processes [2]. On the other hand, operational services include customer support services and maintenance services that are mostly routine based. For this chapter, KIBS will be covered in more detail since these services are used both in companies and the entire economy, and have the potential to become 'crucial drivers' that can improve real value added and productivity [3]. This subsector has been drawing special attention and support in developed countries, OECD countries, and APO member economies.

KIBS is attracting much attention for its catalytic role in facilitating innovation [4, 5], and until recently, many studies have been conducted along with business services [6, 7, 8]. However, empirical research on business services is limited by measurement errors as intermediate goods

deflators cannot be accurately estimated due to the varying industrial structures (which is a characteristic of the service industry) and external effects such as knowledge dissemination of KIBS, in particular. In order to understand the relationship between business services and productivity in more detail, it is necessary to understand the case studies that include interviews with related practical experts and analysis of related literature.

This chapter examines the relationship between business services and productivity through case studies of two APO member economies, Vietnam and the Philippines.

Business service firms are mostly dependent on other industries, especially manufacturing, as their customers. These characteristics are more apparent in small- and medium-sized businesses in manufacturing. In most cases, the demand for the business services industry also increases. This is because the need for external services to advance corporate management and accelerate product development increases after the manufacturing industry grows first.

Among APO economies, Vietnam is a representative case, which expanded its manufacturing base in the initial distribution-oriented industrial structure and then began to produce smartphones by attracting FSI and advanced manufacturing. In this process, R&D investment and support for domestic companies are being increased to expand their capabilities and upgrade their industries. R&D services are representative areas of the business services industry, and they provide services based on professional manpower and technology to small- and medium-sized companies that have limited R&D capabilities and find it difficult to develop their own products and services. This chapter will explore the current status and related policies in more detail through case studies on Vietnam.

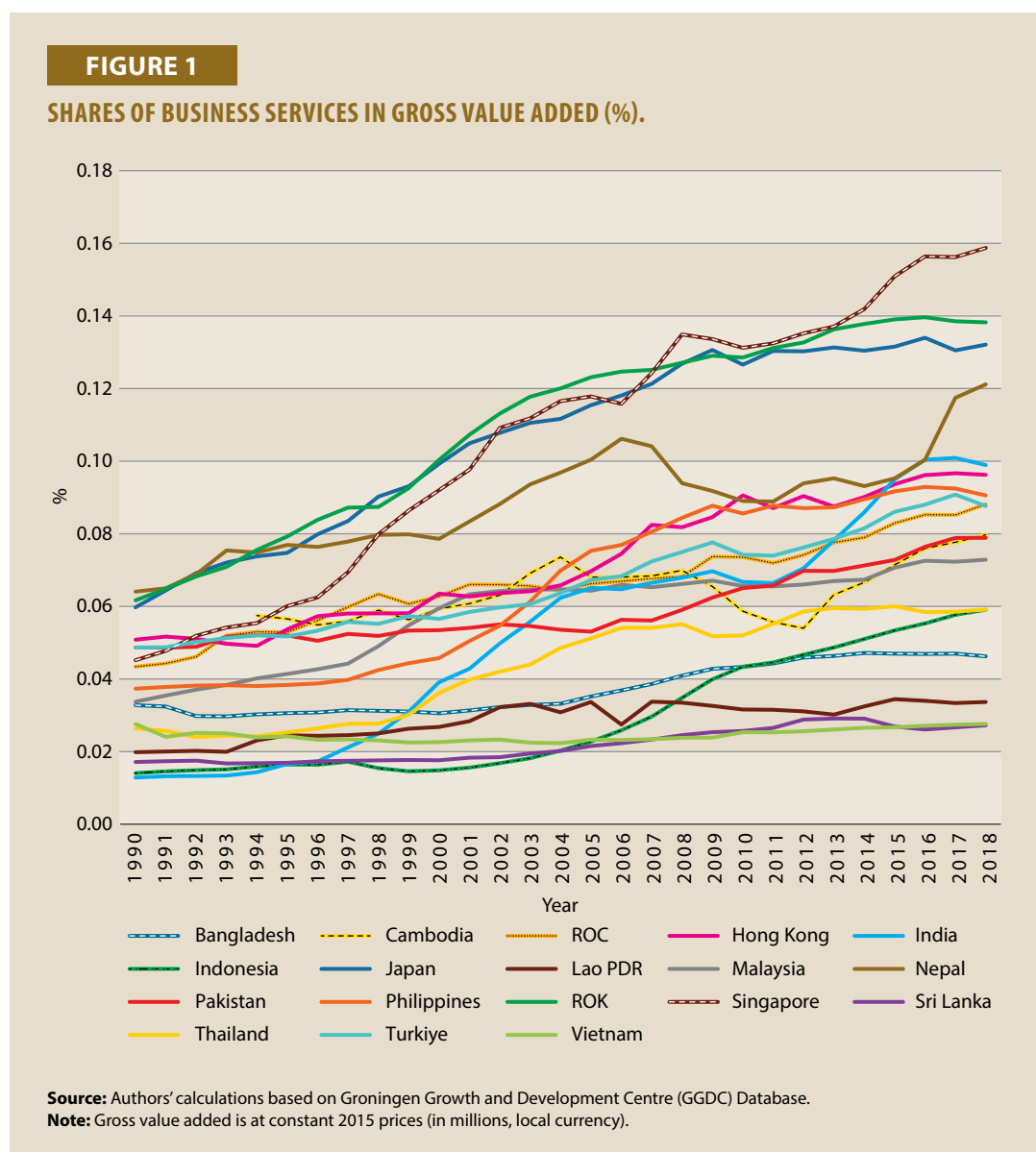
There are also cases where the business services sector has expanded and improved on its own. One such case has been in the Philippines, which leads the global business process management market. It has built and expanded its business area by developing comprehensive capabilities in overall corporate activities, customer management, computerization, and data utilization through business process management. Since then, the importance of data utilization and automation has grown due to the development of the internet, data-based economy, and automation systems, and the Philippine business services industry is leading the global market. Through the case of the Philippines, we will examine related policies that could promote the growth of the business services industry.

Considering the relationship between the share of KIBS and productivity in a country's economy, this chapter aims to provide insightful policy implications. Nevertheless, it should be noted that case studies that analyze the relationship between business services and productivity of APO member economies in detail are insufficient in number. Through case studies in Vietnam and the Philippines, we present implications for the development of the business services industry.

This chapter is composed of the following sections: First, the key trends and characteristics of business services are discussed. Next, KIBS-related definitions, classification, and importance of business services are reviewed. In particular, the challenges and opportunities that arose during the COVID-19 period are presented [3], and the relationship between KIBS and productivity is examined through case studies of two APO member economies. Finally, based on the results of this chapter, policy implications are briefly discussed.

## Trends of Productivity in Business Services

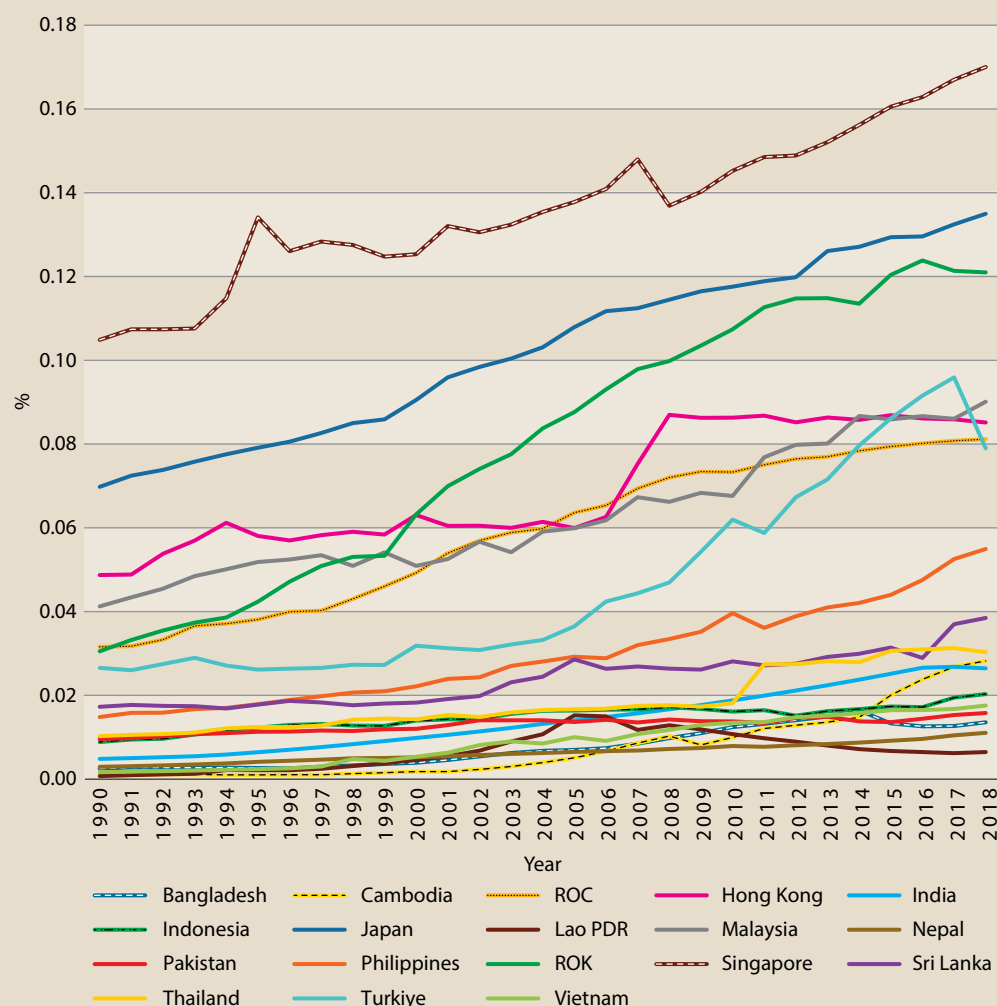
The business services sector is one of the most dynamic growth sectors in majority of APO member economies. As shown in Figures 1 and 2, the sector's share of value added and employment rose steadily, especially in economies such as Hong Kong, India, and Japan.



The relationship between business services and manufacturing is examined in more detail, considering that business services play a critical role in intersectoral linkages with manufacturing in the economy and thus in the development and productivity of the industry. As shown in Figure 3, the value-added share gap of manufacturing increased in the majority of APO member economies between 1994 and 2018, except for Nepal, Hong Kong, the Philippines, Sri Lanka, Lao PDR, Indonesia, and Singapore. On the other hand, the share gap of business services increased in all countries. For manufacturing, the value-added gap shows a different pattern based on the transition to other industries, but for business services, it shows a positive transition pattern for all countries. According to a simple regression analysis, if the value-added share gap of the manufacturing industry decreases by 1% point, the value-added share gap of business

FIGURE 2

## SHARES OF BUSINESS SERVICES BY TOTAL NUMBER OF PERSONS ENGAGED IN APO MEMBER ECONOMIES.



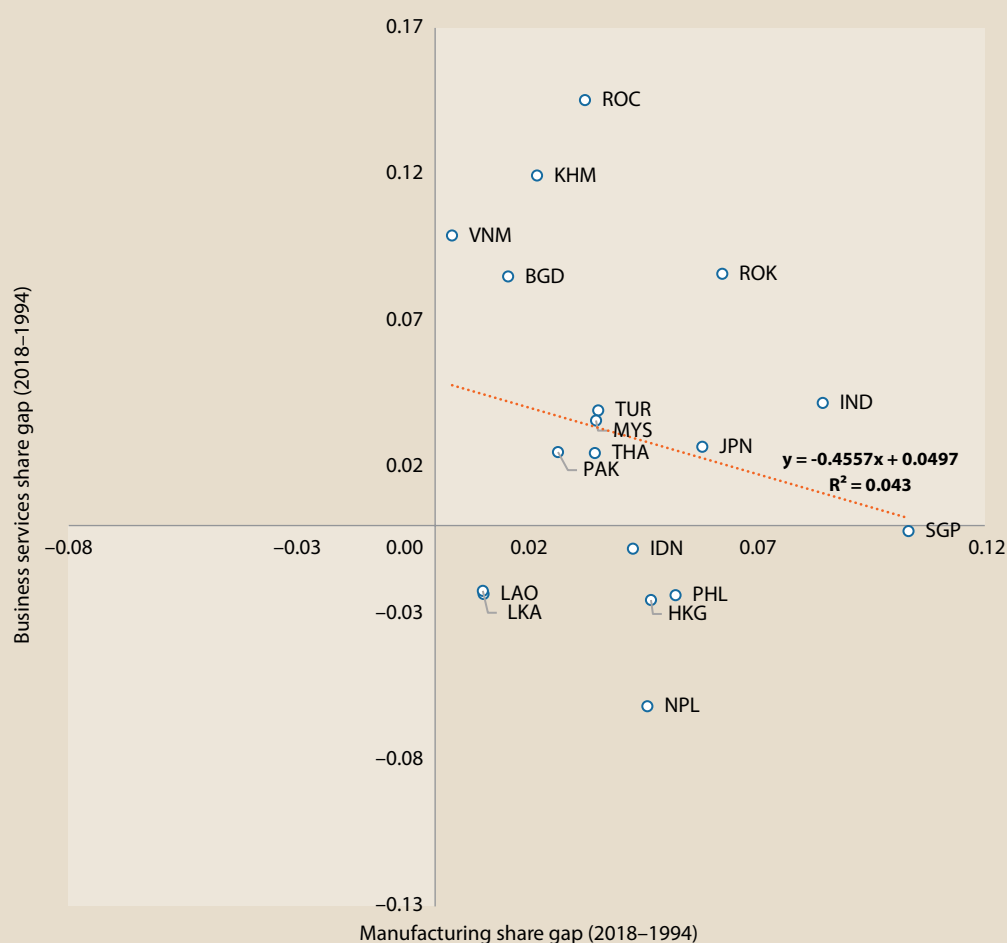
Source: Authors' calculations based on GGDC Productivity Database.

services is associated with an increase of 0.45% points. However, the coefficient of determination ( $R^2$ ) is very low (0.043), having low explanatory power, thus showing various patterns in all 18 APO member economies.

In addition, the distribution and characteristics of these various patterns are examined in detail, based on the average of the differences between share gaps of manufacturing and business services for 18 APO member economies. As shown in Figure 4, the differences in manufacturing and business services' shares between 1994 and 2018 for 18 APO member economies in percentages are displayed in the fourth quadrant to distinguish the characteristics of each country. In the first quadrant, both the Republic of Korea (ROK) and India show a higher-than-average share difference between 1994 and 2018 in terms of manufacturing and business services. These countries have achieved a relatively rapid increase in the proportion of manufacturing and have also achieved a rapid specialization in business services. In the second quadrant, the manufacturing

FIGURE 3

## MATRIX OF MANUFACTURING AND BUSINESS SERVICES' SHARE GAPS.



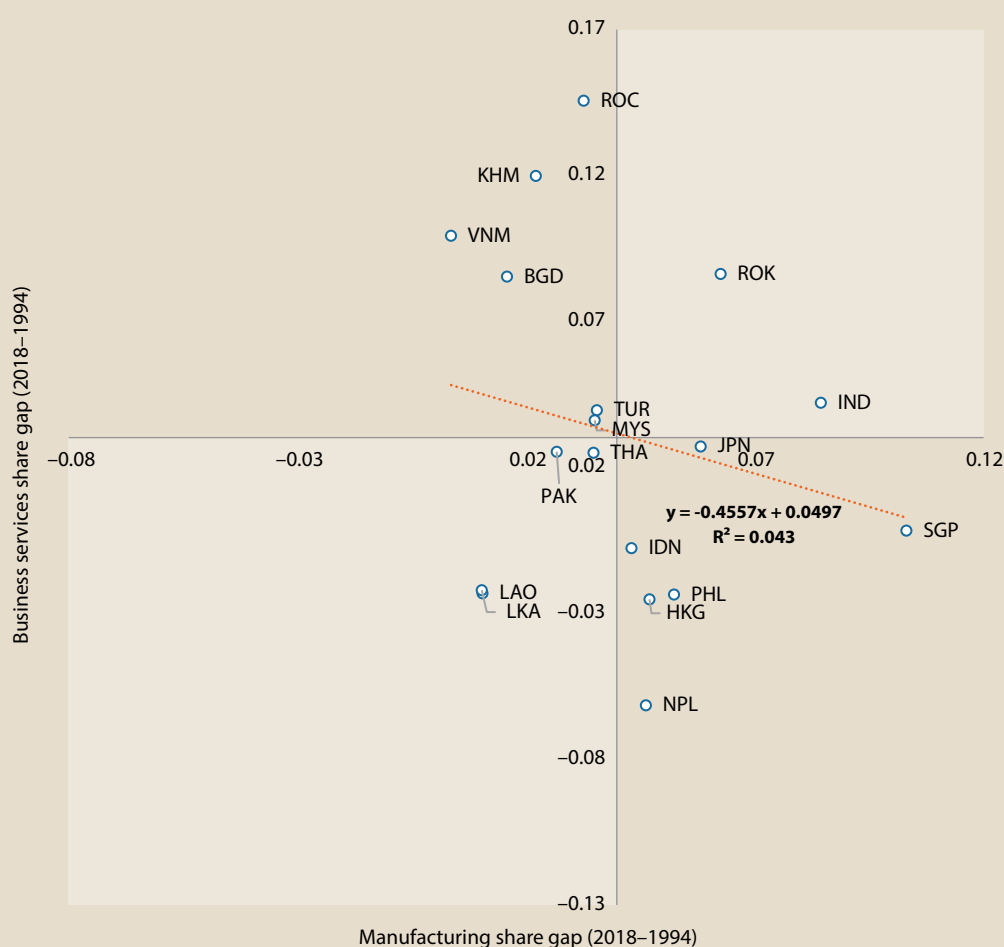
**Source:** Authors' calculations based on GGDC Database.

**Note:** This includes 18 APO member economies, excluding Fiji, IR Iran, and Mongolia due to data availability factors. Difference in sectoral shares between 1994 and 2018 from APO 18 countries are represented in percentage points. The point of intersection of the vertical axis and the horizontal axis is zero.

industry is higher than the average, while the service industry is lower, which is the case for economies such as Vietnam, the ROC, Cambodia, and Bangladesh. Based on the high share of value-added manufacturing in these countries, policy support for business services, including R&D services, can provide an opportunity to expand manufacturing capabilities and upgrade industries. The third quadrant shows lower-than-average shares in both manufacturing and business services and includes Lao PDR and Sri Lanka. These economies experienced a relative decline in shares of both manufacturing and business services. From a policy perspective, this could imply that these countries need to seek various specific development plans for business services if they cannot further develop the manufacturing industry. In the fourth quadrant, the manufacturing industry shows a lower share than the average, while the business services have a higher share. Here, the economies include Singapore, Nepal, Hong Kong, the Philippines, and Indonesia. These countries may consider policy directions to strengthen competitiveness through transition to a knowledge-based service economy (including IT capabilities), with a high proportion of relatively specialized business services.

FIGURE 4

## MATRIX OF AVERAGE DIFFERENCES BETWEEN MANUFACTURING AND BUSINESS SERVICES' SHARE GAPS.



**Source:** Authors' calculations based on GGDC Database.

**Note:** This includes 18 APO member economies, excluding Fiji, IR Iran, and Mongolia due to data availability factors. Difference of sectoral share between 1994 and 2018 from APO 18 countries are represented in percentage points. The intersection of the vertical axis and the horizontal axis is the average share gap of each sector.

## Theoretical Review

### Business Services Definition and Classification

The services sector can be classified into two broad sub industries: the producer service industry and the consumer service industry. The producer service industry refers to an industry that provides services to companies in order to help companies' production activities. This industry includes business services, finance and insurance, telecommunications, real estate and rental, and transportation and warehousing. The producer service industry often provides services as intermediate goods to manufacturers and actively uses them as a means of trade between countries or regions. On the other hand, the consumer service industry refers to an industry that directly provides services to consumers. These include lodging and restaurants, wholesale and retail, and educational service businesses. The consumer service industry has relatively less use of means of trade than the producer service industry, but its utilization has been increasing due to the recent developments in ICT.

The producer business services are defined as “a set of service activities that, through their use as intermediary inputs, affect the quality and efficiency of the production activities by complementing or substituting the in-house service functions” [4]. Business services enhance the competitiveness of a company by outsourcing and replacing or supplementing various tasks from within the company to a professional business service company outside the company.

On the other hand, as shown in Table 1 and mentioned earlier, business services can be divided into KIBS and operations business services. KIBS have three main categorizations: T-KIBS (T refers to technology/technical knowledge); P-KIBS (P refers to expertise in more traditional professions); and C-KIBS (C stands for cultural/creative knowledge) [5]. Specific tasks under KIBS include software and computer-related services, research and development, strategy and management consulting, marketing, accounting, tax and tax advice, and engineering.

Business services with knowledge-intensive characteristics play a role in secondary supply of expert knowledge between the market and in-house activities. In the past, activities of these business services were mostly conducted inhouse due to their strategic importance and core components, but recently, an increasing number of people are buying knowledge resources from external sources due to the economy of scale and the accumulation of experience and learning with other clients.

**TABLE 1****CATEGORIZATION OF BUSINESS SERVICES AS PART OF PRODUCER SERVICES.**

|                   |  |                       |   |  |
|-------------------|--|-----------------------|---|--|
| Producer services | Business-related services                    | Business services     | KIBS  | Software and computer services<br>Strategy and management consulting<br>Accounting, tax, and legal advice<br>Marketing services, opinion polling<br>Technical services, engineering<br>Research and development<br>Personnel training, headhunting |
|                   |  |                       | Operational business services   | Security services<br>Facility management, cleaning<br>Administration, bookkeeping<br>Temporary labor recruitment<br>Other operational services   |
|                   |  | Network type services | Distribution and trade services<br>Transport and logistics<br>Banking, insurance, stock exchange<br>Telecommunication, courier<br>Energy services |  |
|                   | Consumer services partly used by enterprises |                       |   |  |

**Source:** Adapted from Kox and Rubalacaba [7].

### Importance of the Business Sector

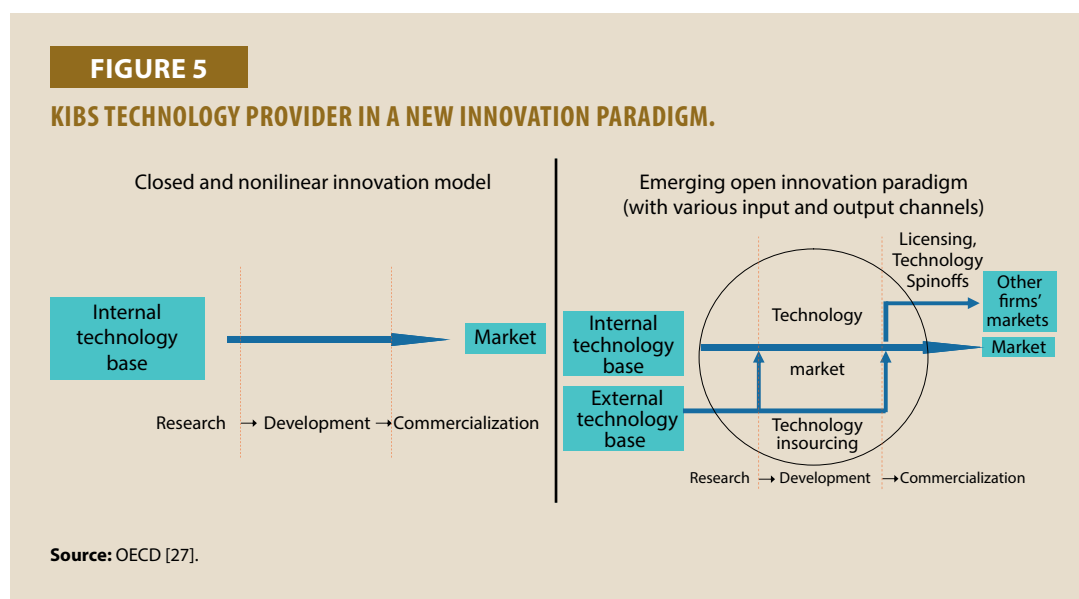
Representative roles of business services include strong forward linkages, productivity growth, acceleration in the innovation process, and knowledge propagation effects. First, business services have strong forward linkages as intermediaries and integrators that form cooperative partnerships with other sectors across the whole economy [9, 10]. A forward linkage refers to the unit of output induced in the entire industry by the use (demand) of business services in production processes of other industries when one unit of value added occurs in the business services sector. Especially, in middle-income countries, increased productivity is observed from using particular inputs that are appropriate for the specific needs of a firm [11]. For example, training and innovation support services and development services for supplier upgrading programs strengthen firm-level capabilities through multinational enterprises (MNEs) and local small and medium enterprises (SMEs) in Vietnam [12].

Second, the business services sector plays an important role in improving productivity of the overall economy. Specifically, KIBS play roles as crucial drivers of economic development [13] and added value creation [14], promoting the development of the manufacturing industries [15] and generating value-added services and jobs [16]. Globalization or increased competitive pressure among industries has a positive relationship with increased productivity [17, 18, 19]. Companies actively use the business services sector to improve efficiency by outsourcing or offshoring other processes and instead focusing on core competitive advantages in a business environment where competitive pressure has risen. However, in recent years, many Western economies are experiencing a decline in labor productivity growth due to the composition and compression effect, especially in the professional services sector, which is one of the subsectors of business services [20].

Third, the business services sector strengthens and expands the innovation process. The expanding serviceability of the economy and the complexity and diversification of consumer products require more complex knowledge and skills in the production and service sectors, including R&D [21]. KIBS play important roles to support the business processes of organizations in both public and private sectors as problem solvers [22]. KIBS also facilitate and promote innovation systems, serve as intermediaries that support the innovation of client companies, and work with the industry or clients to jointly produce intermediate or innovative solutions [23]. However, it is important to note that the competence of the business services sector can contribute to innovation and productivity improvement only when implemented with the ability to address new innovation requirements. The benefits of recent and spreading digitalization may not be fully enjoyed unless sufficient human capital investments are premised [24, 25].

Finally, it contributes to productivity improvement through the knowledge dissemination effect on business services. Business services make an industry with both knowledge-intensive and intermediate goods characteristics that contributes not only to the creation of value-added business services themselves, but also to the increase in productivity of other industries through knowledge dissemination effects. KIBS includes economic activities for the generation, accumulation, or dissemination of knowledge [26]. In particular, the business services industry, which uses external R&D results more, supplements the insufficient internal R&D capabilities. Among the business services, KIBS is a type of service, which, due to its knowledge-intensive characteristics, leverages high expertise and trained human capital as a major input factor in the production process rather than physical capital or intermediate goods. Therefore, KIBS has a ripple effect that induces technological innovation in connection with the manufacturing industry. Figure 5 shows the role of

a technology supplier in the process of technology development flowing into the market from an external technology base in the value chain.



## Key Issues of Business Services

### KIBS in the Time of COVID-19

The need for service-oriented production, marketing, management consulting, and service R&D is increasing, and simultaneously, the importance of knowledge-based occupations is also increasing [27]. Due to the demand for the knowledge-based professional business field, KIBS is gaining more attention as a second knowledge infrastructure in the modern economy [29].

Since its first introduction by Miles *et al* [5] as an economic activity service that creates major added values through the creation, accumulation, and dissemination of knowledge, KIBS has made significant contributions to employment, economic growth, and innovation activities [26]. In particular, as a problem solver, KIBS is expected to play an important role in solving socioeconomic problems related to the COVID-19 pandemic, which has had a great impact on APO member economies since 2020. However, a pandemic inherently restricts knowledge management and practical activities between KIBS providers and their clients.

KIBS are services that exchange and convert knowledge through face-to-face (F2F) contact. In an exchange between KIBS companies and their clients, F2F contact not only allows information exchange, but also the building of trust in relationships and the establishment of a common understanding toward problem solving. Many professional workers can often perform highly electronic practices through remote work [28]. Even before the COVID-19 pandemic, some standardized KIBS activities were performed through remote work. However, in general, KIBS are mostly active through F2F contact. KIBS companies are established in geographical proximity to facilitate close contact with clients [29, 31].

The COVID-19 pandemic had a significant impact on KIBS activities. As shown in Table 2, various common policies were applied during the outbreak of the pandemic. Such policies limited in-person contacts with clients and, therefore, affected KIBS's work practices and knowledge management.

TABLE 2

## COMMON POLICY MEASURES DURING THE COVID-19 PANDEMIC.

| Aim  | Contents   |
|--|--|
| Limiting the spread of the virus and protecting those most vulnerable                      | <ul style="list-style-type: none"> <li>• Advice for or enforce measures that restrict the use of meeting places such as clubs, bars, restaurants, hotels, and non-essential shopping venues and public facilities such as libraries, museums, schools, and colleges. This had obvious impacts on the conduct of many businesses, as well as on all levels of education.</li> <li>• Stringent enforcement of what became known as social distancing, requiring people to stay at home and businesses to shift work online, as far as possible; restricting travel to work for employees in non-essential industries. Many businesses were affected, including KIBS.</li> <li>• Restricting international movements, seeking to quarantine those arriving from other countries.</li> <li>• Recommendation or enforcement of the use of masks (especially in indoor public locations).</li> </ul> |
| Strengthening and supporting frontline health and social care services                     | <ul style="list-style-type: none"> <li>• Preventing available HSC resources from being overwhelmed by COVID-19. This included building/redesigning of hospitals and efforts to develop and supply relevant equipment and medicines, along with the provisioning of support for R&amp;D that could feed into such efforts to support the capabilities of HSC services to cope with the pandemic.</li> <li>• Management of complex new procedures established to assist HSC in addressing the COVID-19 pandemic. KIBS may have roles to play both in providing advice to organizations and supporting them with staff.</li> </ul>  |
| Supporting businesses, employees, and others affected by the pandemic and policy responses | <ul style="list-style-type: none"> <li>• Impacts related to loss of business due to social distancing and, more so, due to enforced closure may be alleviated by various means such as loans, grants, etc.</li> <li>• Employees may be supported via, for example, furlough schemes (which aim to protect jobs), one-off payments, or welfare benefit systems.</li> </ul>  |

Source: Miles *et al* [31].

Meanwhile, as shown in Table 3, KIBS offered various business opportunities about client problems relevant to the pandemic. Policy measures such as social distancing and travel restrictions designed to curb the rapid spread of the disease had significantly reduced traditional F2F contacts and travel. KIBS industry, instead of utilizing the traditional F2F meetings, utilized new technologies, and the use of webinars increased rapidly [32]. However, online communication has many restrictions on informal communication that helps build trust and chemistry among people [33].

TABLE 3

## KIBS AND THEMES RELEVANT TO THE COVID-19 PANDEMIC.

| KIBS sector                 | Themes relevant to COVID-19 pandemic  |
|-----------------------------|---|
| Accountancy, auditing, etc. | Bankruptcy, financial restructuring, and access to loans and subsidies related to crisis      |
| Legal services              | Intermediary in contracts and conflicts associated with business disruption and restructuring |

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| KIBS sector                       | Themes relevant to COVID-19 pandemic   |
|-----------------------------------|--|
| Management consulting             | Analysis of the impact of COVID-19 and post-pandemic strategy  |
| Engineering services              | New health, safety, and hygiene issues around equipment and technological systems  |
| Architecture                      | New health, safety, and hygiene issues around building design and construction   |
| Advertising                       | New messages and communication channels associated with the pandemic   |
| Market research and opinion polls | Supplying intelligence on public responses to COVID-19 and governance issues, including reactions to company and government strategies |
| R&D services                      | Biology and epidemiology services critical to government's and health service's coronavirus responses                                  |
| Computer and IT services          | Support for remote workforces, communication with business partners and consumer, ecommerce, etc.                                      |
| Information services              | Competitive intelligence on responses to COVID-19  |

**Source:** Miles *et al* [32].

After the outbreak of the COVID-19 pandemic, KIBS was an important agent in terms of performing functions that were still important to the economy and that required expertise in which customers lack in sufficient quality or quantity. KIBS played a key role in helping economies rebound and/or restructuring as the immediate threat of the pandemic subsided.

In response to the immediate impact of the pandemic and related policy responses, KIBS may face a number of changes and opportunities in future. First, KIBS may partially take a different course in which some client-customized services take a standardized form. With the acceleration of digitalization that emerged prior to the COVID-19 pandemic, unofficial, mutual interactions with limited clients were rapidly being replaced by online platforms. Creative relationship-building plans were developed to replace face-to-face contacts with customers [34]. Second, business communication and marketing services may play an increasingly important role in response to the disruption caused by the COVID-19 pandemic [32]. KIBS can obtain many opportunities to conduct strategic consulting on e-commerce, which includes the B2B and B2C sectors, for solutions to various supply chain problems that clients face in compromised supply chains and uncertain markets [32]. Third, KIBS can experience an increased demand for new system design services as well as traditional knowledge-intensive services. The social distancing certification system, epidemic preparedness audit, epidemic prevention, and recovery planning services were all introduced during the COVID-19 pandemic. Employee training and training of various organizations, including private, public, and educational services, were requested as traditional services of KIBS [32]. In addition, consulting on changes and plans in organizations and work processes that required transformation due to the social distancing policies and high sanitation systems can be highlighted as new demand areas for KIBS. Finally, such changes in KIBS sector may pose an additional business opportunity, including policy support for public services, educational services, and the private sector by government and public institutions. R&D for the development of service methodologies, along with performance evaluations of government policies that are urgently implemented, can also be revitalized [32].

## Country Case Studies

This section identifies two case studies, those of Vietnam and the Philippines, on how business services contribute to the industry and the economy, and also derive policy implications from them.

Business services firms are mostly dependent on other industries, especially on the manufacturing sector, as well as on demands from customers. This is more apparent with manufacturing SMEs, since in the majority of cases, the demand for business services also increases with the growth of these businesses. This is because the need for external services to advance corporate management and accelerate product development increases once the manufacturing sector grows first.

Among APO member economies, Vietnam is a representative case, which expanded its manufacturing base in the initial distribution-oriented industrial structure and started manufacturing. It then began to produce smartphones by attracting FDI and advanced manufacturing. In this process, R&D investment and support for domestic companies are being increased to expand their capabilities and upgrade their industries. R&D services are representative areas of the business services industry, and provide services based on professional manpower and technology to small- and medium-sized companies that have limited R&D capabilities and find it difficult to develop their own products and services.

There are also cases where the business services sector expands and improves on its own. This is the case with the Philippines, which leads the global business process management market. It has built and expanded its business area by developing comprehensive capabilities in overall corporate activities, customer management, computerization, and data utilization through business process management. Since then, the importance of data utilization and automation has grown due to the development of the internet, data-based economy, and automation systems, with the Philippine business services industry leading the global market in the field. Through the case of the Philippines, we will examine related policies that could promote growth of the business services industry.

Through these two cases, implications for the development of the business services industry will be presented.

### Case Study 1: Vietnam

Vietnam has achieved outstanding economic growth through various policy approaches. Currently, Vietnam is one of the leading countries in the southeast Asian region from a manufacturing perspective. Vietnam produces the majority of Samsung smartphones in southeast Asia. Considering the high technology embedded in smartphones, it can be said that Vietnamese manufacturing labor force is properly skilled in the high-tech industry. As high-tech companies require business services to support their production and management, it is expected that they already have a partner in the business services industry. Additionally, the rapid advancement of the industry indicates an increased need for R&D input and business services to support business management and add additional value to high-tech projects. As a result, the Vietnamese business services industry is prepared for growth. Review of the literature and interviews with experts were conducted to examine the types of government approaches that contributed to the high-tech industry and what could lead to its advancement in future.

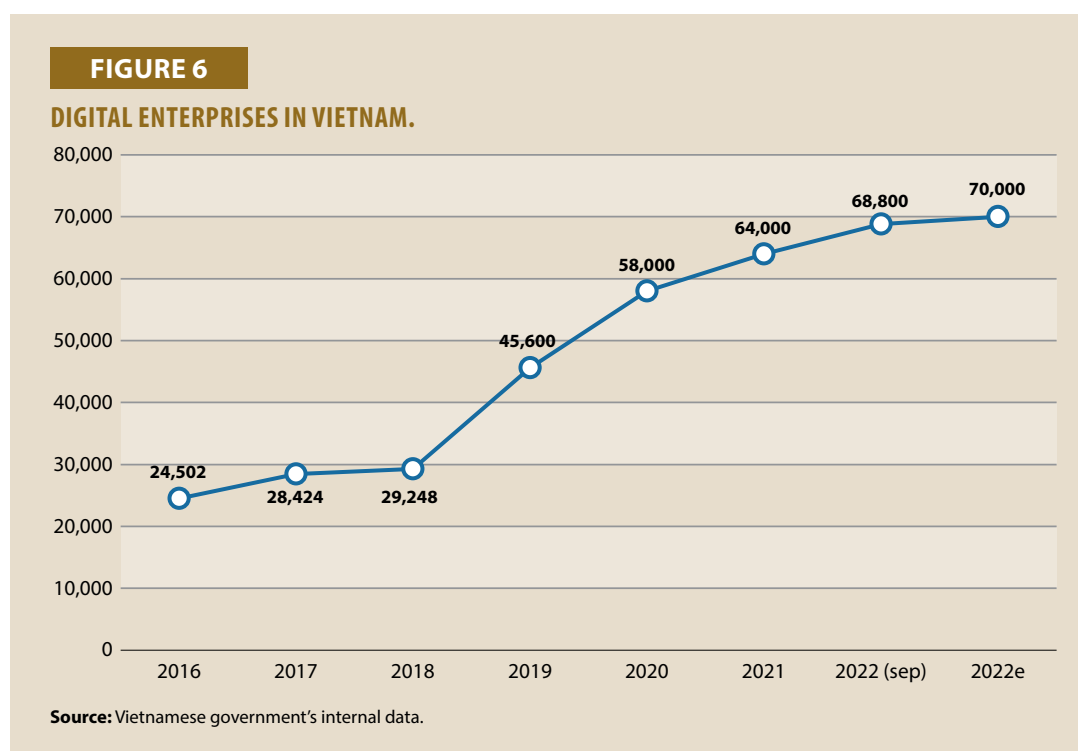
Vietnam's GDP in 2021 increased by 2.56% compared with 2020 due to the impact of the COVID-19 pandemic. The agriculture, forestry, and fishery sector grew by 3.27%, while adding 15.7% to the growth rate of total added value of the whole economy; the industry and construction sector grew by 3.85%, accounting by 55.6%; and the services sector by 1.57%, contributing 28.7% to the total

added value. The COVID-19 pandemic seriously affected commercial and service activities in Vietnam. The wholesale and retail sector grew by 0.5% in the previous year, contributing 0.05 % to the growth rate of total added value of the whole economy; transportation and warehousing dropped by 3.11% (amounting to -0.19% of the total added value); the accommodation and food services industry dropped sharply by 20.21% (-0.5% of the total added value). The health sector and social assistance activities achieved the highest growth rate in the services sector with an increase of 41.01%, contributing 0.52% to added value; financial, banking, and insurance activities increased by 9.5%, also contributing 0.52% to the added value; and the information and communication industry increased by 5.08%, contributing 0.32% to the added value.

According to a recent report from the Ministry of Information and Communications of Vietnam, the local ICT market had an estimated value of USD 7.7 billion in 2021. The value is expected to grow by around 8% annually until 2026 [30]. The Vietnamese government has declared ICT as a major industry and growth driver; and has stressed the importance of applying ICT solutions for improving operational efficiencies and providing better governance services.

The government has also approved the National Digital Transformation Program through 2025, with a vision to 2030, which includes supporting programs for the growth of the ICT market. ICT enterprises in Vietnam have steadily increased, and the government is providing more support to ICT enterprises. The number of digital enterprises in Vietnam increased around 2.8 times between 2016 and 2022 (see Figure 6).

According to the US International Trade Administration, Vietnam is expected to make large imports of ICT hardware, software, and services as Vietnamese suppliers are still relatively undeveloped and may not be able to offer the same range of solutions and services as other foreign suppliers do. However, local software solutions companies are currently expanding their businesses from subcontracting to coworking with large corporates. According to Vietnam Software Association



(VINASA), an organization of software firms and IT service providers, the number of projects that rely solely on outsourcing has decreased considerably in recent years. Most software firms now both outsource and collaborate on R&D with partners.

#### Policy for ICT Industry

The government's effort began with the legislation of "Law of Information Technology" in 2006; "Law of Cyber Security" in 2015; "Decree of a Number of Key Tasks and Solutions for e-Government Development in the Period of 2019-2020" in 2019; and "Decision by the Prime Minister on Approving the National Digital Transformation Program to 2025" in 2020. In 2021, the Prime Minister's approval of "Promoting the Application of Information Technology and Digital Transformation in Trade Promotion Activities in the period of 2021–30" was announced. The objectives include raising awareness and capability in information technology applications and digital transformation in trade promotion activities; and promoting foreign trade and domestic trade development which contribute to the restructuring of the industry and the trade. Detailed objectives are suggested with specific numbers to be supported by law.

Until the year 2025, the following objectives are to be achieved:

- Digital Trade Promotion Ecosystem is established and promoted;
- 100% of the trade promotion organizations and over 200,000 businesses are granted accounts with the Digital Trade Promotion Ecosystem, and 50% of these have transactions and information sharing;
- specialized databases for trade promotion and 10 key export industries are formed and connected with the database of 10 key export markets;
- 25% of the market's connecting services are organized on the connection platforms, supporting 100,000 businesses;
- 25% of the number of trade fairs and exhibitions are organized in the digital environment;
- 100% of the trade promotion agencies and more than 100,000 businesses, cooperatives, and business households receive training, guidance, and support on information technology applications, digital transformation in trade promotion activities, and information security assurance; and
- 100% of the trade promotion agencies and more than 100,000 businesses, cooperatives, and business households use, exploit, and operate the sharing platforms and share data with the Digital Trade Promotion Ecosystem.

By the year 2030, the below objectives are to be achieved:

- Digital Trade Promotion Ecosystem is completed and promoted;
- 75% of the trade promotion agencies and businesses that were granted accounts are active, searching, providing, and sharing information on the Digital Trade Promotion Ecosystem on a regular basis;

- 50% of market connecting services of businesses are performed on the Digital Trade Promotion Ecosystem, supporting 1,000,000 businesses;
- specialized database of trade promotion and 20 key export industries is completed, expanded, and connected with the database of 20 key export markets;
- 60% of the trade fairs and exhibitions are organized in the digital environment;
- 100% of the trade promotion agencies and more than 1,000,000 businesses, cooperatives, and business households receive training, guidance, and support on information technology applications, digital transformation in trade promotion activities, and information security assurance; and
- 100% of the trade promotion agencies and more than 500,000 businesses, cooperatives, and business households use, exploit, and operate the sharing platforms and share data with the Digital Trade Promotion Ecosystem.

This approval outlines a clear plan for promoting digital transformation and application of technology. This can give company employees and foreign investors a perspective on the government and encourage them to make further investments. Additionally, there are many indicators, and it is expected that companies will acknowledge the government's perspective and plan for the industry. Based on their understanding, companies are more likely to participate in support programs.

#### Policy for Science, Technology and Innovation

In 2013, the Vietnamese government enacted the Law on Science and Technology, which outlines the overall science and technology policy of Vietnam in 2022, “Strategy for Science, Technology and Innovation Development until 2030.” It was approved based on the following points:

- Develop science, technology, and innovation as the top national policy to play a strategic breakthrough role in the new period.
- Develop social sciences and humanities, natural sciences, technical sciences, and technology in a concerted, interdisciplinary, and focus-driven manner.
- Harmoniously and effectively combine the development of internal capacity with the optimization of opportunities and external resources.

The major objectives are as follows:

- Science, technology, and innovation's contribution to economic growth will be improved through scientific research and technological development by research institutes and universities, technology innovation, and enhancement of governance and organization capacity in enterprises.
- Science, technology, and innovation will play an important role in the development of spearhead industries, focused on the processing and manufacturing industry, to significantly help restructure the economy in a modern manner and transform Vietnam into a country with modern industries by 2030.

- Science, technology, and innovation will significantly contribute to the building and development of cultural and social values and people of Vietnam.
- The country's Global Innovation Index (GII) will be improved continuously so that Vietnam is among the top 40 in the world on GII.

The strategy covers ten categories: information and communications technology, biotechnology, new material technology, technology of machine manufacturing and automation, machine technology, technology in natural disaster prevention and climate change response, energy technology, environmental technology, space technology, advanced and smart construction, and transportation and infrastructure technology.

The support scheme for advanced science, technology, and innovation strategy is included in this strategy, involving Ministry of Science and Technology; Ministry of Planning and Investment; Ministry of Finance; Ministry of Education and Training; Ministry of Labour, Invalids and Social Affairs; Ministry of Home Affairs; Ministry of Information and Communications; and Ministry of Foreign Affairs. Their and other related government entities' roles are stated for effective implementation of the strategy.

#### Policy for Supporting SMEs

The decree "Elaboration of Some Articles of the Law on Provision of Assistance for Small and Medium Enterprises" contains details of assisting SMEs based on the "Law on Provision of Assistance for Small and Medium Enterprises." It contains the criteria for identification of SMEs; assistance program for SMEs; counseling for SMEs; assistance in development of human resources for SMEs; and assistance for SMEs converted from household businesses, startups, and SMEs participating in industry clusters.

#### BOX: COUNSELING CONTENTS

SMEs will receive counseling about personnel, finance, manufacturing, sales, market, internal administration, and other contents relevant to their business operation (except counseling about administrative procedures and legal advice according to relevant laws) as follows:

- 100% of the value of the advisory contract but not exceeding VND50 million per year per enterprise for micro-enterprises, not exceeding VND 70million per year per enterprise for women-owned micro-enterprises with high female employment and micro-enterprises that are social enterprises;
- Reimbursement of 50% of the "contract but not exceeding VND100 million per year per enterprise for small enterprises, not exceeding VND 150 million per year per enterprise ..."
- Reimbursement of up to 30% of the "contract but not exceeding VND 150 million per year per enterprise for medium enterprises, not exceeding VND200 million per year per enterprise..."

Such support programs could help SMEs develop their manufacturing, marketing, and management capacities. They could also give consulting companies business opportunities for new contracts with local companies. While counseling was given no attention regarding its effect on corporate performance, the effectiveness of counseling may be higher when a beneficiary company is a small business. A global company has the capacity to manage and develop its business by itself, and it can do so with its own resources or networks. However, in the case of SMEs, procuring, manufacturing, and supplying come first, and better management and long-term strategy follow later. Thus, counseling on management practices is crucial for SMEs to improve their capacity.

In line with “Promoting the Application of Information Technology and Digital Transformation in Trade Promotion Activities in the Period of 2021–30,” the organization of implementation and roles and responsibilities are stated in the document. In this decree, the Ministry of Planning and Investment is leading to assist the government in uniform management of the provision of assistance for SMEs. The Ministry of Finance is tasked with the role of planning a budget, developing guidelines, and proposing policies on subsidies. The third implementation organization is the Ministry of Labor, Invalids and Social Affairs. Its role is to cooperate with the Ministry of Finance and relevant agencies in providing vocational training for employees of SMEs. The role of the State Bank of Vietnam is to estimate the demand for interest rate subsidy. It also provides guidelines for credit institutions to grant subsidized loans to startups and cooperates with the Ministry of Finance in reviewing and comparing interest rate subsidy statements prepared by credit institutions.

#### Policy Implications

An important aspect to be focused on is the implementation section of this study. The Vietnamese government has outlined the roles and responsibilities for relevant policies. The Ministry of Industry and Trade, which is the leading organization for these policies, is responsible for hosting and coordinating related ministries and organizations. The Ministry of Public Security, Ministry of National Defense, and the Ministry of Information and Communication are responsible for coordinating information safety and digitalization. The Ministry of Finance and the Ministry of Planning and Investment have been assigned to allocate the budget properly and to share, connect, and link data with other crucial information such as import and export data, and business information statistics.

The policy document regarding IT and digital transformation focuses on the use of IT and data for market-related activities. The policy on SMEs involves assisting SMEs with their production and management and supporting business services (especially consulting services) to expand their market base.

The Vietnamese officer interviewed in this regard also mentioned this. The Vietnamese business custom emphasizes relationship building with business partners. While the contract document is critical, the relationship between business partners carries more meaning and value. If mutual trust is strong enough, a contract document is considered as a document to be completed as a procedure. Therefore, consulting contracts that require sharing of internal information could be more effective based on mutual trust than high-quality consulting based on just contractual relations.

From a consulting company’s perspective, with many consulting projects with partners from various industries, it could expand its capacity to diversify analysis methods and delivery approaches based on demands.

In contrast, many companies do not prefer to share internal information or data with experts from outside, and it could be a hindrance in getting expert advice. Nevertheless, if the government supports SMEs' counseling expenditures, it may encourage SMEs to enter into contracts with consulting companies.

#### Implementation

The policy documents may have implications for governance in government organizations. In these documents, the roles and responsibilities of related ministries are outlined for effective implementation of policies. Ministries are given a clear assignment of their tasks, and the private sector and citizens can understand and monitor them.

Companies use digitalization, R&D vitalization, and business services to enhance corporate performance and contribute to the national economy. It is necessary to discuss the participation of the Ministry of Industry as essential at this point. Even though priorities may differ based on the agenda, the Ministry of Industry can maximize its effectiveness when it actively participates and communicates with industries (companies) regarding policies and support measures that can be effectively applied to businesses.

In “Strategy for Science, Technology and Innovation Development until 2030,” 10 government entities were listed for implementation. However, the Ministry of Industry was not included. While the strategy focuses on the development stage, there is an opportunity for technology to be adopted by different industries. Therefore, the strategy would be more comprehensive if the Ministry of Industry took part in it.

Other than the implementation of governance, government resources for policy implementation are an issue. In an interview with a Vietnamese government official, the respondent emphasized the necessity for securing proper resources (physical, financial, and human). The government provided various policy documents, strategies, and program documents related to the implementation. After the implementation, detailed programs and projects had to be provided in order to meet the goals provided. At this point, the interviewee pointed out that different levels and programs should be prioritized according to budgets and human resources.

#### Case Study 2: The Philippines

In 2021, the Philippines recorded a growth rate of 5.7%, which was below the target range of 6.5% to 7.5% for 2021. Had the pandemic not occurred, the Philippines could have become an upper-middle-income country in 2020 based on its favorable growth from 2016 to 2019. The improvement of the country's GII rank in 2019 and 2020 was not sustained in 2021, where the Philippines ranked 51st out of 132 economies. The target for the country is to be among the top one-third of all economies.

The Philippines is the second-largest market for IT business process management. In 1992, the Philippines started its first call center; and in 2000, its business process operations (BPO) industry contributed 0.05% to the country's GDP. The BPO industry now contributes 2.4% to its GDP, and the Philippines has gained 3% share of the global market in this area. In 2022, the BPO industry accounted for 160,000 additional jobs. Currently, IT services such as network management and data center management are becoming increasingly important due to the fourth industrial revolution (4IR) and data-driven economy. As part of its 4IR-related business process management (BPM) infrastructure, the Philippines has already secured a data economy business.

The business services industry follows manufacturing when the latter becomes more advanced with a demand for better management and additional value. Facilities management and cleaning services are used for cost reduction, while legal and auditing services are employed for management support. Product R&D occurs when a company attempts to launch a market-leading product or improve its production process. Marketing strategy is crucial for capturing new clients, and customer service is critical for maintaining existing customers. In general, companies tend to put more effort into production capacity, followed by advanced business management practices for better management and bigger profits. As it involves highly qualified human resources, the government considers business services to be a difficult industry to develop. Additionally, most of the business service customers are not individuals but other companies, mainly manufacturers.

The Philippine BPM industry already has a foundation built on decades of experience and numerous practical experiences from many different companies. In other words, if the Philippines' manufacturing grows with high technology, it will make use of BPM for efficient management and added value.

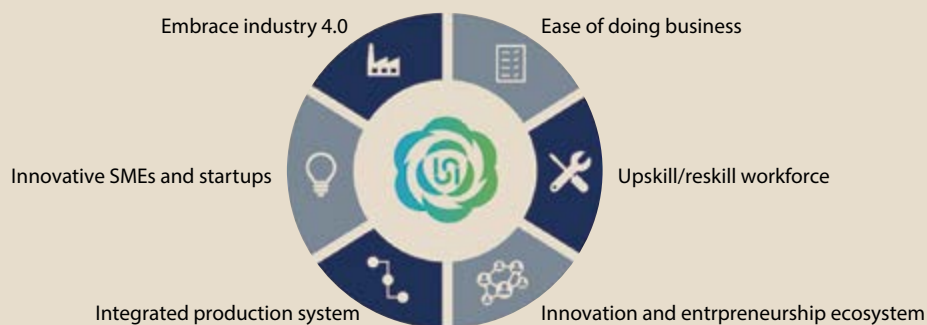
#### Industrial Policy

With innovation at the center of the country's strategic policies and programs, the Inclusive Innovation Strategy (i3S) aims to grow innovative and globally competitive manufacturing, agriculture, and service sectors while strengthening ties with domestic and global value chains. In particular, i3S envisions the government to act as the facilitator in addressing the most binding constraints in preventing the industries from growing. It aims to create globally competitive and innovative industries through (1) building an innovation and entrepreneurship ecosystem that will help in forming new industry clusters; (2) removing obstacles to growth that will allow the Philippines to attract more investments; (3) strengthening the domestic supply chain to encourage inclusivity and promote self-sufficiency; and (4) deepening the participation of the industries in global and regional value chains to maximize economic benefits.

The i3S is based on the following six strategic actions (see Figure 7) aimed at pursuing coordination with other government agencies, the industry, and the academia:

- (1) **Embrace Industry 4.0:** Embrace industry 4.0 technologies to make industries more competitive with manufacturing as a major driver of industrial development and inclusive and sustainable growth.
- (2) **Innovative SMEs and startups:** Promote the development of more innovative MSMEs and startups.
- (3) **Integrate the production system:** Integrate production system by linking manufacturing with agriculture and services, address gaps in our domestic supply chain and deepen our participation in GVCs.
- (4) **Promote ease of doing business:** Improve the infrastructure by streamlining and automating regulatory processes and investing in digital and other physical infrastructure including power and logistics.
- (5) **Upskill/reskill workforce:** Build human capital, upgrade, reskill, and equip workforce with new digital skills to prepare them for future production.

- (6) Build an innovation and entrepreneurship ecosystem:** Build this ecosystem through strong collaboration between government, academia, and industry; pursuing more market-oriented research; and acceleration of research commercialization.

**FIGURE 7****STRATEGIC ACTIONS OF THE INCLUSIVE INNOVATION INDUSTRIAL STRATEGY.**

Source: Department of Trade and Industry of the Philippines [36].

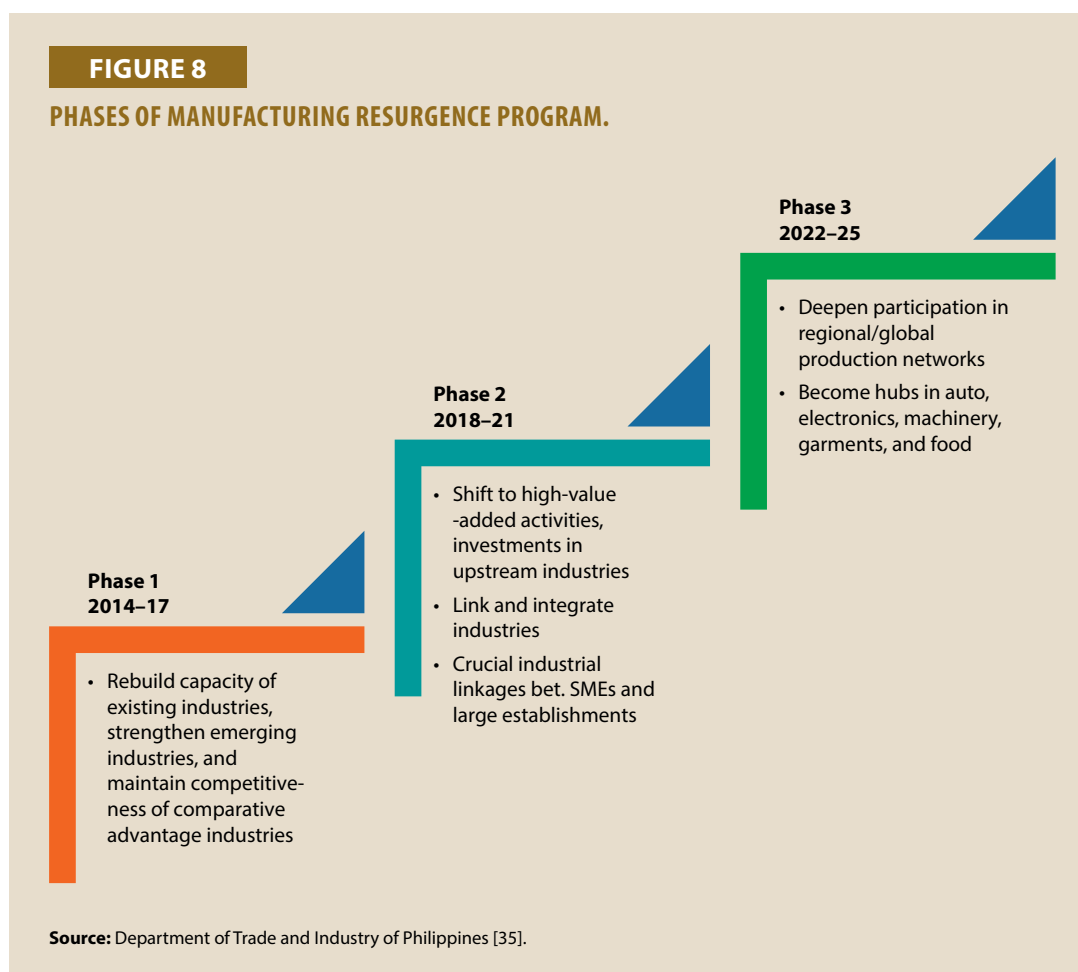
The subsectors discussed are the top priorities for industry development with focus not only on manufacturing but on linking together activities through ‘servicification of manufacturing,’ which connects service activities like design, R&D, engineering, and after-sales with manufacturing. The i3S offers IT-BPM and e-commerce services for higher-earning nonvoice service BPOs; knowledge process outsourcing in medical, financial, and legal services; game development; and engineering services outsourcing (ESO), software development, and shared services.

The Philippines adopted IT-BPM Roadmap 2016–22 [37] for accelerating the national economy. The roadmap provides guidance to different subsectors such as animation and game development, contact center and BPO, health information management, IT and software development, and global in-house center operations. The current strategy enhances the implementation of the roadmap for a future-ready IT-BPM sector, including the subsectors in IT-BPM Roadmap 2016–22 in order to improve the telecommunication infrastructure to establish a robust remote working environment for the sector.

The i3S will continue to be at the core of the government’s initiatives to boost capacities of local enterprises; adopt inclusive business models; and strengthen micro, small and medium enterprises (MSMEs) and the startup ecosystem.

#### Manufacturing Policy

In pursuit of the Philippine government’s goal of achieving inclusive growth, the Department of Trade and Industry is implementing the Manufacturing Resurgence Program (MRP) [38]. The MRP aims to rebuild the capacities of industries, strengthen new ones, and maintain the competitiveness of industries with comparative advantages (see Figure 8). It also seeks to build up agriculture-based manufacturing industries that generate employment, and support small-holder farmers and agri-cooperatives through product development, value additions, and their integration into big enterprises for marketing and financing purposes.



Based on the Manufacturing Industry Roadmap, the MRP targets to close the gaps in industry supply chains, provide access to raw materials, and expand domestic markets and exports for Philippine-manufactured products. In the action plan, innovation is part of Stage 4 SME Development and Technology/Innovation, which determines industry–academia linkages, R&D, adoption of green processes, green products, and technology extension services for small and medium-sized enterprises in addition to incubation, information, and communication.

Instead of generating synergy through incorporating BPM content into all industrial policies, the Philippines has adopted a policy of supporting its BPM industry to create overseas customers and other manufacturing industries.

Since business services are utilized for value-added creation and effective management by other industries represented by manufacturing, it is necessary to solidify the foundation of other industries that become customers of business services. However, it seems necessary to select business service factors that can be utilized even at the basic development stage of each industry to induce linkages between the Philippine manufacturing industry and the world-class domestic business services industry.

## Conclusion

Business services have been long been attracting attention as a sector that has been gaining higher employment rate and creating value added, whereas the proportion of employment rate in the

manufacturing sector is decreasing due to the rapid convergence and development of technologies. In particular, KIBS play a critical role in improving manufacturing productivity and expanding economic knowledge base due to the intermediate input of services into the manufacturing industry and their high efficacy in knowledge dissemination.

This chapter has reviewed the trend, business classification, and importance of business services; and qualitatively analyzed the relationship between business services and productivity through case studies on Vietnam and the Philippines.

In case of Vietnam, consulting projects for small and medium-sized enterprises are supported. Based on Vietnamese customs that value trust between partners as much as formal contractual relationships, such consulting projects help build trust between Vietnamese companies and revitalize the business services market.

In case of the Philippines, it has world-leading IT-BPM capabilities and has established and implemented policies to further deepen its business process industry in response to the changing environment and circumstances such as the 4IR and the emergence of data economy. By expanding the services sector, which used to be represented by call centers in the past, this chapter has established and suggested policy implementations for growth of knowledge-based nonvoice services.

Based on these results, the following policy implications are provided to improve business services in APO countries:

First, in order to enhance productivity of business services, APO member economies should establish and strengthen a high-level knowledge base based on professional manpower. While there is the advantage of a relatively lower fiscal expenditure in fostering business services, there is a disadvantage that a high level of knowledge base cannot be achieved in a short period of time. In particular, KIBS has already secured professional manpower in overseas markets, and competition against large professional companies with international competitiveness is steeply intensifying. Therefore, policy authorities in each country need to establish mid- to long-term policies to foster competent human resources and support projects with policy priorities in fostering business services. For example, KIBS is mostly occupied by small and medium-sized companies, which are limited in terms of resources for planning and operating quality education and training programs on their own. Measures such as supporting joint education programs and establishing specialized educational institutions can help ease the limitations. The basic direction of specific human resource development can include diversification and specialization of educational and training programs for fostering professional manpower by field, establishment of an internationally accepted qualification system, and construction and operation of an information system related to professional manpower.

Second, KIBS should find new opportunities in systems, production methods, and services that have so far been influenced by the COVID-19 pandemic. A new system that utilizes increasingly complex and high-level technologies often allows first movers to enjoy all the advantages and leaves nothing for late comers. In order for KIBS to offer the first-mover advantage and provide a competitive advantage at the same time, policy authorities in each country must establish and implement measures to improve related policies to ease regulations that hinder first access to the new system while dramatically increasing information access to KIBS suppliers in the region. Specific policy support measures include corporate restructuring support to promote M&A for

specialization and large-scale expansion, institutional improvement and government support expansion to promote outsourcing of internal services within companies, and expansion of financial and tax support to increase R&D investment.

Finally, policies for fostering business services must be set in connection with the level of knowledge base by country and the characteristics of each country. The effect of productivity improvement will differ depending on the proportion of employment and added value of business services in the context of the national economy. Therefore, it is necessary to establish detailed policy goals or action plans for business service promotion policies that also consider income levels by country and development stages by sector. By citing the three stages of KIBS development [39], the development stages of business services by country can be divided into embryonic, second knowledge infrastructure, and networked service professionals, and used for policy design.

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# CROSS-CUTTING ISSUE

## REGULATORY REFORMS AND PRODUCTIVITY

### Introduction

A regulatory reform to foster competition is perceived as a crucial driver in building a growth-enabling environment to promote productivity gains and economic growth. The term ‘regulation’ in this context generally refers to the intervention of a government to regulate a wide range of activities in the economy as a whole, using economic control. The restrictions are not only on the price, quantity, and quality of goods and services but also on the entries and exits of firms.

Much of the economics literature suggests that in a modern market economy, regulations are regarded as instruments that governments enforce to address market issues such as economies of scale, asymmetry of information and externalities, and economic efficiency [5, 8, 15, 18]. However, if unnecessary or excessive regulations are imposed on firms or industries, that could undermine their productivity by diverting resources away from their best use. Thus, mitigating regulatory barriers through targeted reforms is crucial for improving allocative efficiency and boosting productivity growth.

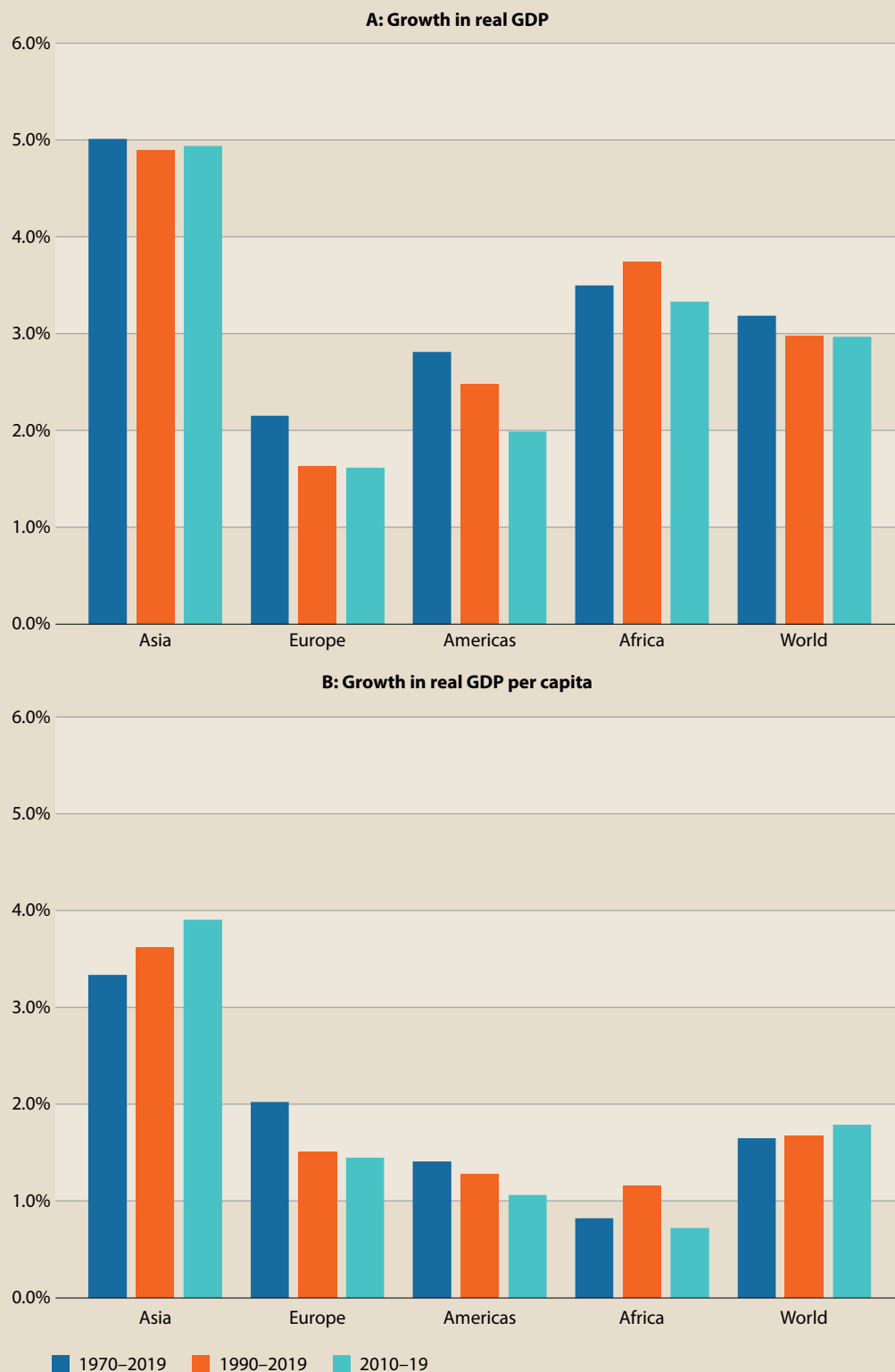
Over the last few decades, Asia has made extraordinary strides in economic performance. Growths in real GDP and GDP per capita have been among the fastest in the world, at 4.9% and 3.6%, respectively, over the period of 1970 to 2019 (see Figure 1). Most APO members have hence witnessed notable changes in their living standards and economic structures. In a short period, the so-called Asian Tigers, namely, the Republic of Korea (ROK); the Republic of China (ROC); Hong Kong; and Singapore have accomplished transformation from poverty to wealth, while making the transition from agriculture to manufacturing or services-based economies. Emerging APO members that have established themselves as global manufacturing hubs (Philippines and Vietnam being prime examples), have demonstrated robust economic growth even after the recession of 2008–09, whereas others across the world have struggled to exit the deep downturn.

Although there is a vast volume of literature that has revealed many possible drivers for such achievements, the empirical analysis of the role of regulatory reforms in terms of productivity performance has been limited due to a lack of consistent data. Given that the prior literature [9–12] has been heavily focused on advanced economies, mostly the OECD members, meaningful insights can be drawn by shedding light on the Asia–Pacific region, based on the economies of APO members.

Following the COVID-19 pandemic, there is growing awareness among governments worldwide that reforming regulations, aimed at building fairer and more competitive markets, is imperative to revitalize the depressed economies in the post-pandemic era. Recent literature, however, points out that there has been a lag in adjusting policies and regulations to the looming challenges. Notwithstanding the fact that a detailed assessment of past experiences, including the recession of 2008–09, is essential to devise reform directions in the post-COVID-19 era, so far, no studies have apparently assessed the likely impact of regulatory reforms over the last two decades (2000–19). Therefore, there is a strong need to assess the prior reforms’ performances so as to formulate evidence-based regulatory reform strategies for APO member economies.

**FIGURE 1**

**GROWTHS IN REAL GDP AND GDP PER CAPITA.**



**Note:** GDP and GDP per capita are at constant 2015 prices in USD.  
**Source:** UN National Account Database.

Against this backdrop, this chapter explores the association between regulatory reforms and productivity, with a special focus on APO member economies over the period 2000–19. Toward this end, this study begins by reviewing the theoretical argument on the regulations–productivity nexus. Next, trends and key characteristics of regulatory reforms in APO member economies are investigated and described. Throughout this chapter, “regulatory reforms” will be referred to as either liberalizing or tightening of regulations (i.e., deregulation or adjusting the number of regulations). The types of regulations mainly cover product market reforms, which are divided into two categories: trade regulatory reforms and business regulatory reforms. In the following sections, the linkages between regulatory reforms and productivity growth are explored empirically and extensively, including details of methodological approaches and results of the analyses. The last section concludes with implications of the key findings.

## Theoretical Review: Regulations and Productivity

### Rationale for Regulatory Reforms

Regulations, also known as administrative laws or rules, are a major avenue through which governments influence the market economy that needs clear rules to function efficiently. It is important to note that they tend to be cumulative or replicant in nature; hence reforming them from time to time seems to be inevitable in practice.

For instance, a regulation designed with vague target groups and undefined outcomes could become degenerated into an instrument that is merely for expanding bureaucratic influence in the administrative system, while failing to meet the intended objectives. In this case, excessive procedures could impose unnecessary burdens (red tape) on dynamic and innovative business activities. If, on the other hand, regulations are imposed in response to the demands of interest groups acting to maximize their own well-being (called the ‘rent-seeking behavior’), reforms could be delayed or even fall through due to strong resistance from such well-organized groups. This would, in turn, harm the economy as a whole, causing a high level of corruption and strengthening the informal economy, thereby leading to lower output, higher prices, and less innovation compared with a robustly competitive market [4, 14, 15]. Furthermore, outdated laws and legislations that fail to meet the changing needs of businesses can also become needless regulatory burdens. In all these cases, regulatory reforms can be justified to achieve the intended objective of tackling market distortions and thus improving overall economic efficiency.

In this regard, the OECD suggests three developmental stages of regulatory reforms (see Table 1).

**TABLE 1**  
**STAGES OF REGULATORY REFORMS.**

| Stages   | Contents (objectives)  |
|--|--|
| Fewer regulations (quantity)                             | Simplification of administrative procedures, reduction of compliance costs, and abolishment of existing regulations  |
| Better regulation (quality)                              | Improvement of regulatory quality by designing more flexible and simple regulatory measures and alternative forms of regulations through the analysis of regulatory impact |
| Regulatory management (the whole-of-government approach) | A better understanding of the interaction between regulations for systematic management  |

**Note:** Parentheses denote the focal areas of reforms.

**Source:** [15].

The first stage, defined as the stage of deregulation, aims to eliminate direct government intervention in the economy by reducing regulatory inflation. At this stage, it can often manifest as a difficult and complicated reform agenda that does not have much influence on the intended policy outcomes. The second stage, which is denoted as the stage of better regulation, focuses on activities that replace existing regulations with higher-quality ones rather than simply reducing the number of regulations. The final stage, defined as the stage of regulatory management, places more emphasis on building a dynamic and efficient regulatory management system rather than enhancing the quality of individual regulations on a case-by-case basis. Based on a whole-of-government approach, this stage intends not only to upgrade the quality of existing regulations but also to improve the quality of new regulations. Behind this approach is the recognition that the success or failure of a regulation greatly hinges on the government's capacities to develop, coordinate, execute, and review the regulation [15, 16]. More importantly, it is attributable to the fact that every regulation is not detrimental to the economy and need not be abolished since some “desirable regulations” that stimulate fair competition and help form transparent legal systems can support efficiency and productivity gains. In this vein, building an integrated regulatory management system can therefore be essential to control regulations effectively at the aggregate level.

### Regulations and Productivity

Productivity growth depends on a multitude of factors, which could be categorized into internal and external factors in firms and industries. The former (internal factor) consists of technological progress; workforce quality (knowhow, skills, and capabilities); and managerial skills, among others. The latter (external factor) covers competition and regulatory environment, including access to finance and availability of knowledge and human capital. Particularly, regulations could have a significant impact on labor productivity (LP) by altering the level of competition; the relative prices of factor inputs (labor and capital); and the incentives for investment, thereby either improving each firm/industry's efficiency (the within-sector effect) or stimulating firms/industries more efficiently to grow faster (the inter-sectoral effect) or both [6, 7].

As noted, reform-induced productivity gains mainly stem from two channels: growth of productivity within a sector and between sectors. However, reforms are found to have heterogeneous effects on these channels, according to specific reform areas. The “product market reforms” addressed in this chapter connote a variety of dimensions, but mainly focus on the degree of deregulation in terms of two aspects: trade regulatory reforms and business regulatory reforms. How these reform areas affect productivity growth through intrasectoral and intersectoral channels is summarized in Table 2.

**TABLE 2**

#### PRODUCT MARKET REGULATION AND PRODUCTIVITY GROWTH.

| Type/channel   | Productivity growth  |
|--|--|
| <b>Overall product market regulation (real sector)</b> |  |
| Trade regulatory barriers                              | <ul style="list-style-type: none"> <li>• The reduction of barriers to promote trade within narrowly defined industries/products can induce a reallocation of resources toward more productive firms within the same industry.</li> <li>• In response to more opportunities to enter global markets (e.g., tariff reductions), a significant reallocation of labor can be made to higher productive, exporting firms. Furthermore, the increased exposure of firms to foreign knowledge and frontier technologies can also boost productivity growth, through intra- or inter-shifts of resources.</li> </ul> |

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| Type/channel                 | Productivity growth  |
|------------------------------|--|
| Business regulatory barriers | Eliminating unnecessary obstacles, i.e., excessive government procedures necessary for business activities and barriers to market entry, facilitate competition among producers of goods and services, enabling them to allocate resources more efficiently across or within sectors, thereby promoting aggregate productivity growth. |

Sources: [6, 20].

## Regulatory Reform Trends

This section of the study describes reform efforts in APO member economies at the aggregate level by grouping countries using the Economic Freedom Index database, in which the key merit covers a long and latest time series data and comprises all APO members. Reform indices range from 0 to 1, with 0 being the most restrictive regulations in a given area and 1 being the most liberalized or deregulated. The average reform index is computed as the arithmetic average of indicators capturing the degree of liberalization in two areas: trade regulatory reforms and business regulatory reforms. The definition for each regulatory area is presented in Table A1 of the Appendix.

Figure 2 depicts the overall trend of reforms executed to measure how regulations have restricted entry into markets and interfered with the economic freedom to engage in voluntary exchange over the past several decades (1970–2019). While broad differences in an overall reform index are found across regions, substantial reforms were commonly undertaken between 1980 and 2000. After the major deregulations in the 1990s, in particular, the impetus for further reforms slowed and even decreased by the mid-2000s. The pace of reforms, however, was reaccelerated to boost the depressed economy in the aftermath of the recession of 2008–09 across geographical regions. APO member economies appear to be no exception to this general trend.

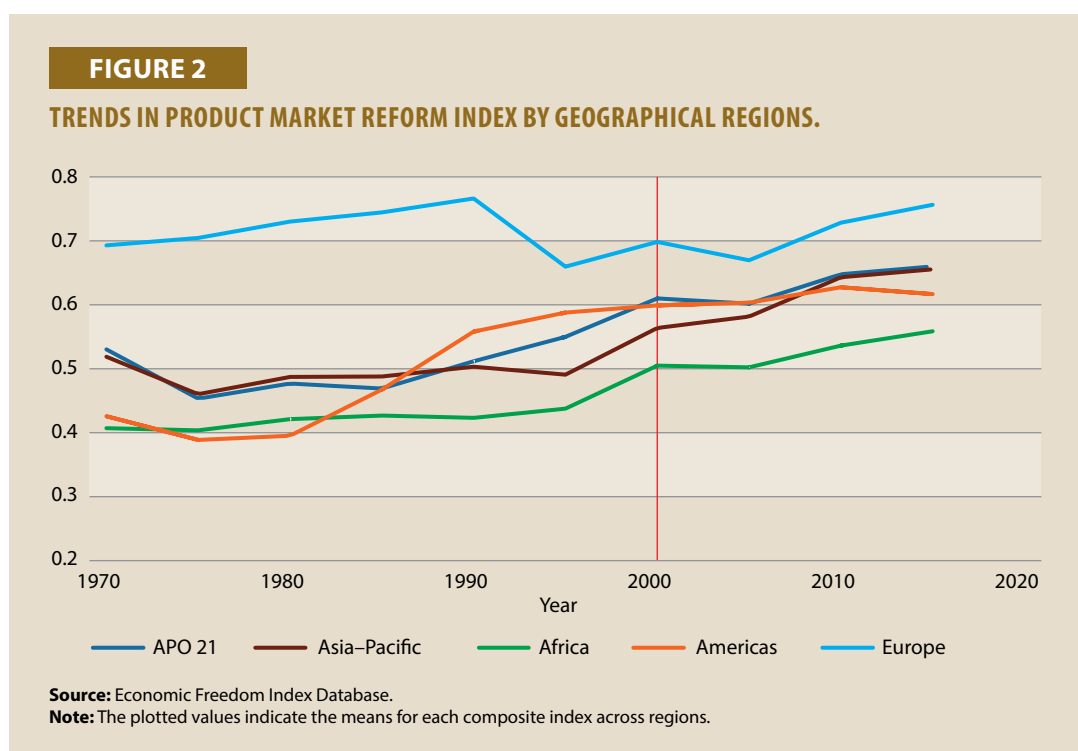
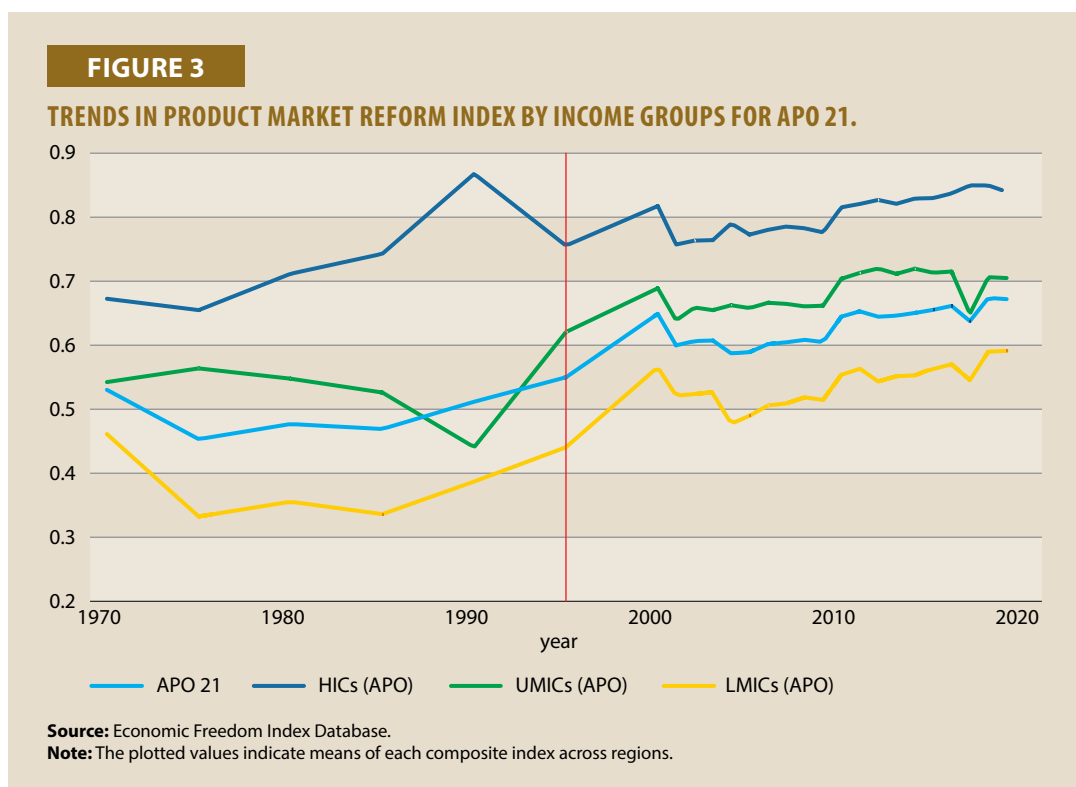


Figure 3 compares regulatory reform trends among APO member economies in greater detail by grouping them into high-income countries/economies (HICs), upper-middle-income countries (UMICs), and low-middle-income countries (LMICs), based on the income classification of the World Bank as of 2022. Reforms have been more far-reaching in the UMIC group than in other income groups, especially in the late 1990s. Among UMIC countries, Thailand, which had to undertake strong reforms after withstanding the Asian Economic Crisis of 1997, is a prime example. Since 2000, more intermittent reforms with less variation have been implemented across all APO income groups, with rapid integration into GVCs progressing as a key vehicle for adoption of advanced production processes.



Another notable trend is that emerging APO members (the LMIC and UMIC groups) have had greater liberalization over the past few decades, thereby narrowing gaps with the HIC group significantly as a process of catching up with frontier countries, whereas a gap still exists between them to some extent.

A closer examination of the average pattern in each reform area with a focus on the 2000s does not mask considerable heterogeneity, as seen in Figure 4. Yet, a striking feature that can be noted across all APO groups is that there remains ample scope for eliminating regulatory burdens to trade and business environments, which in turn could bolster productivity.

Concerning the (median) trade regulatory reforms index, the UMICs have undergone gradual deregulation while there has even been tightening among the LMICs in the 2000s (see Panel A, Figure 4). On the other hand, there is evidence of a trend toward reforming business regulations, most notably among the LMICs (see Panel B, Figure 4). The variations of specific reform areas within the HIC group have narrowed, in contrast with the rise in cross-country differences within the UMIC and LMIC groups, indicating that marked differences exist within the same income groups across emerging APO countries.

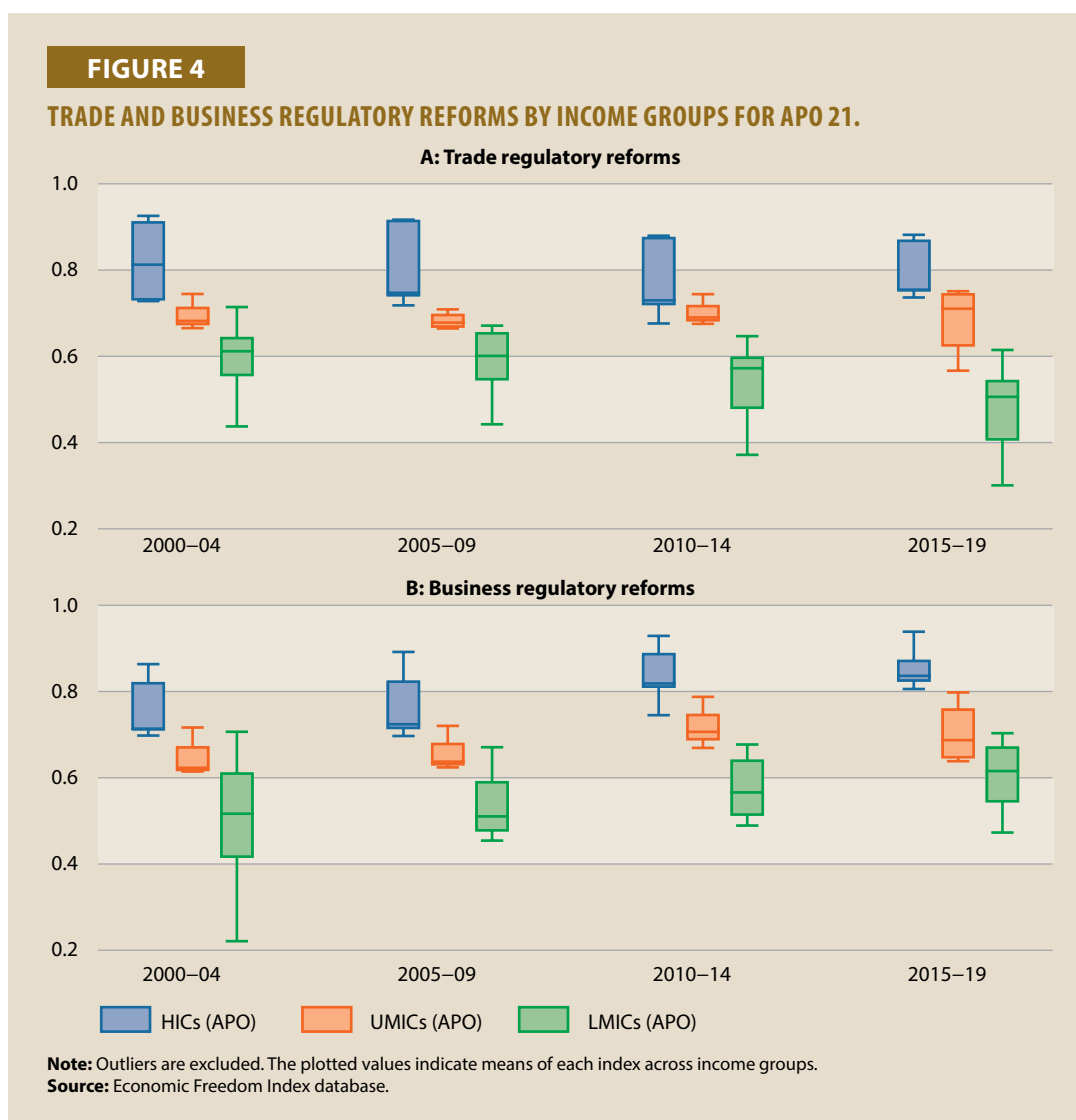
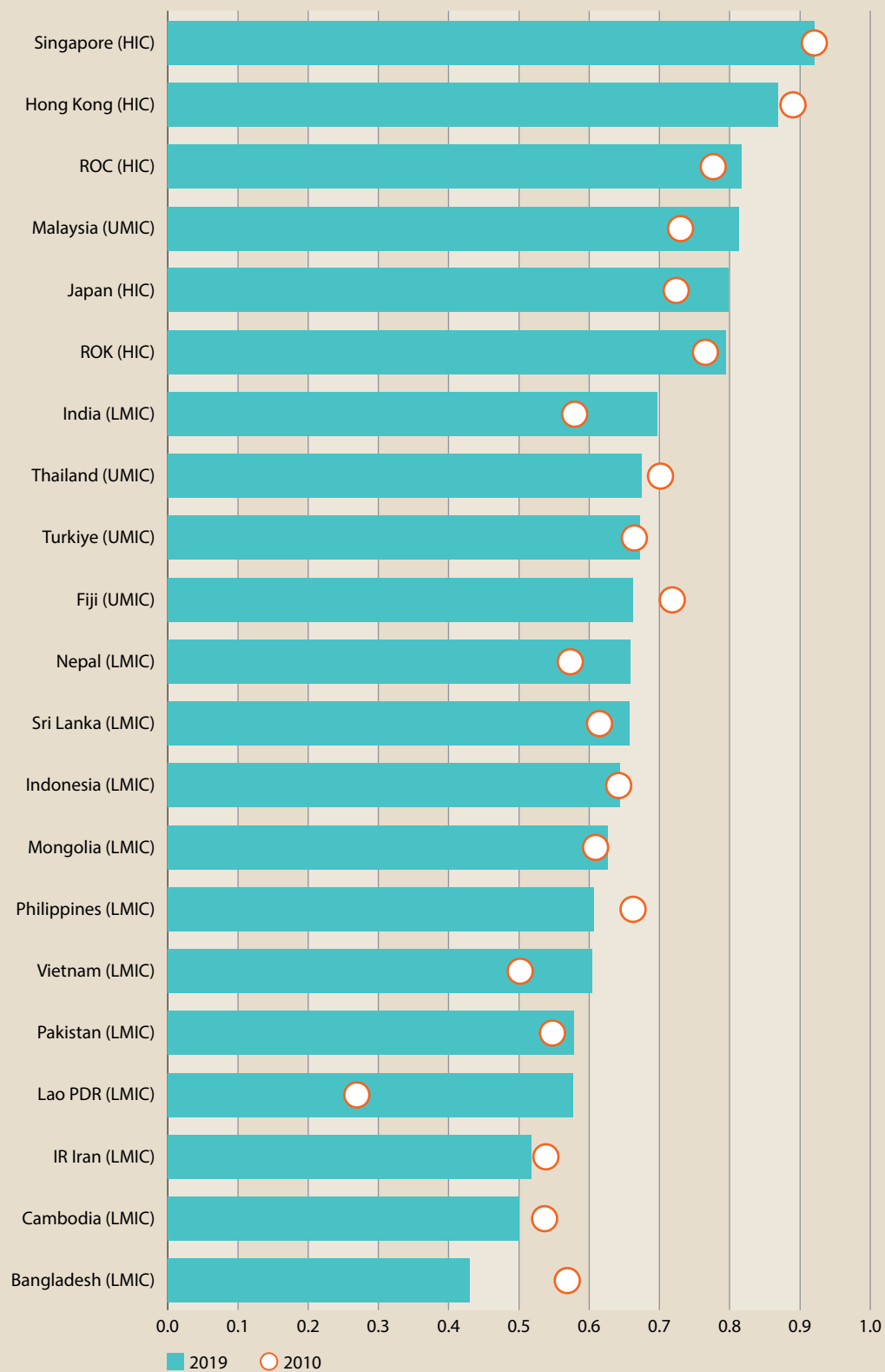
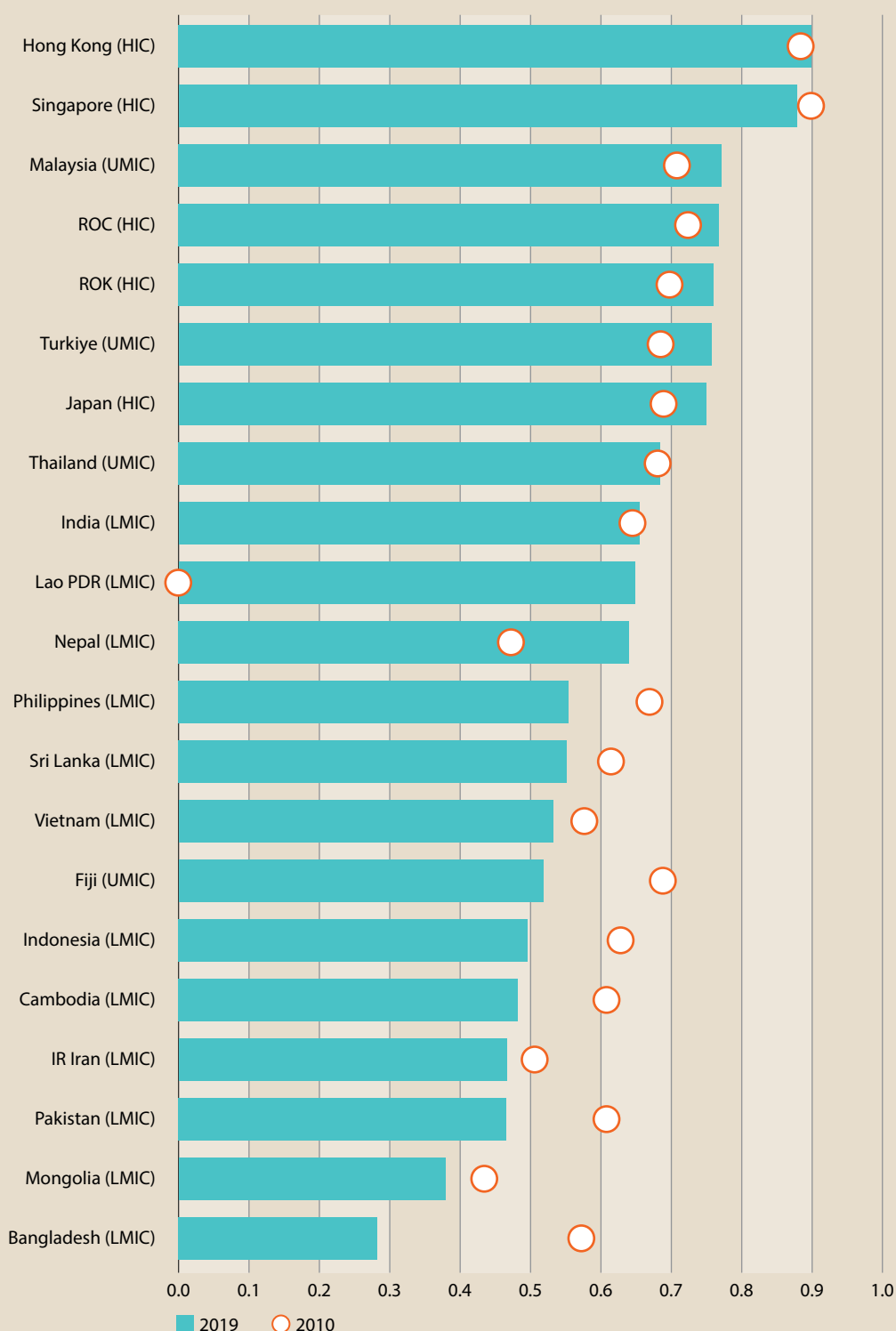


Figure 5 shows the overall reform indices by individual APO member economies. The degree of deregulation differs across countries, ranging from 0.91 (Singapore) to 0.43 (Bangladesh). Notably, Malaysia and India demonstrate a higher degree of deregulation than the counterparts in their income groups, UMIC and LMIC, respectively, as of 2019. Regardless of such income classification, seven APO members saw a drop in the regulatory reform index by lifting restrictions during the period 2010–19. Bangladesh experienced the sharpest fall (–0.14); followed by Fiji (–0.05), the Philippines (–0.05); Cambodia (–0.04); Thailand (–0.03); Hong Kong (–0.02); and IR Iran (–0.02). Conversely, some APO countries reported a notable increase including Lao PDR (0.31); India (0.12); and Vietnam (0.1).

Figure 6 exhibits how the type of regulatory reform varies by a significant margin across APO member economies. Like the overall reform index, Singapore and Hong Kong present the highest degree of deregulation in both the reform areas, whereas Bangladesh shows the most restrictive regulations as of 2019. Both Singapore and Hong Kong, in particular, share some common features in that as small city-economies based on ports, they have achieved economic success taking advantage of their geographical locations and international trade that induced them to pursue a greater degree of liberalization.

**FIGURE 5****OVERALL PRODUCT MARKET REFORM INDEX 2019 BY INDIVIDUAL APO MEMBERS.**

Source: Economic Freedom Index Database.

**FIGURE 6A****TRADE AND BUSINESS REGULATORY REFORMS BY INDIVIDUAL APO MEMBERS, 2019.****A: Trade regulatory reforms**

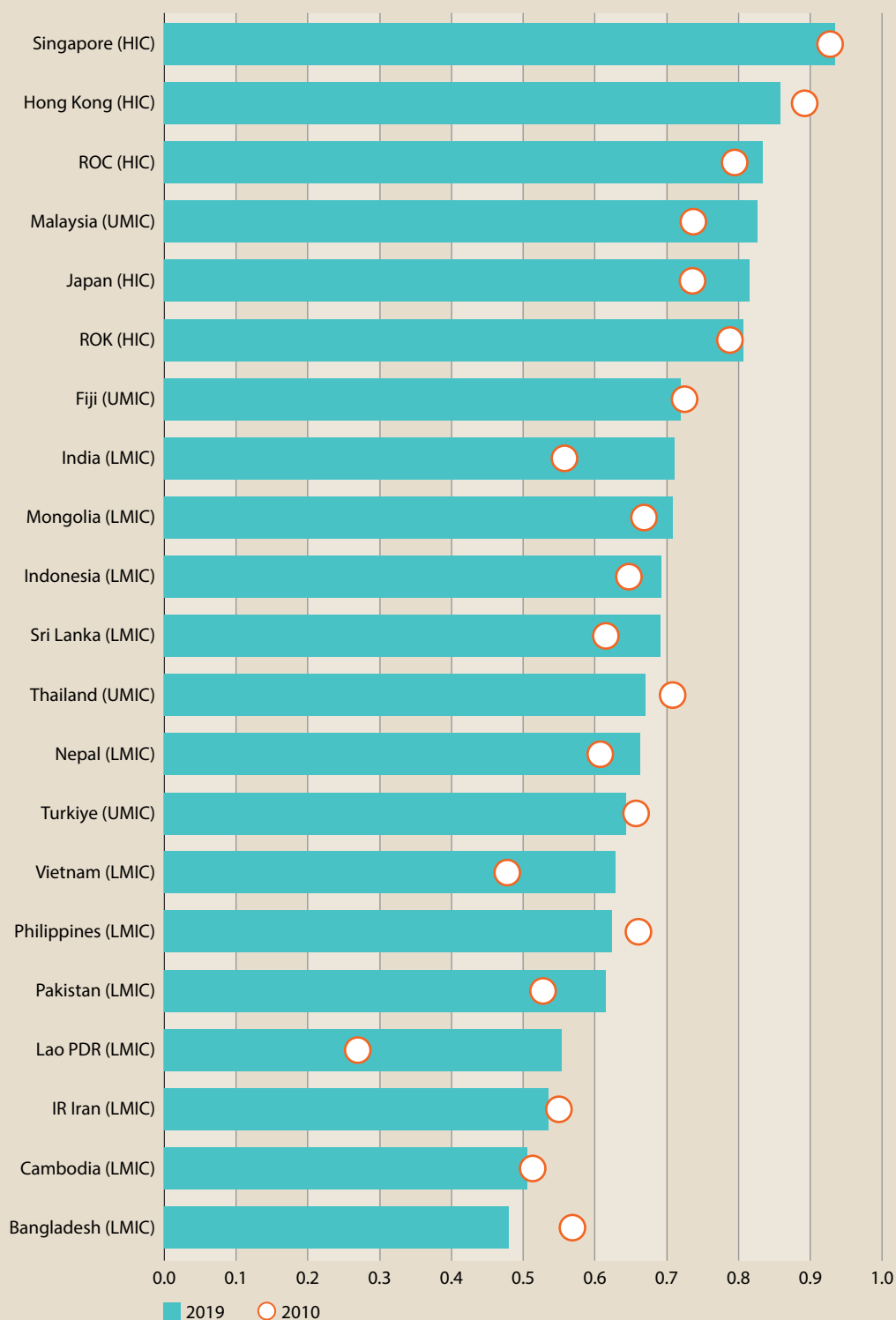
**Source:** Economic Freedom Index database.

**Note:** Data on trade regulatory reforms for Lao PDR is not available for 2010.

FIGURE 6B

## TRADE AND BUSINESS REGULATORY REFORMS BY INDIVIDUAL APO COUNTRIES, 2019.

## B: Business regulatory reforms



Source: Economic Freedom Index database.

Note: Data on trade regulatory reforms for Lao PDR is not available for 2010.

It is also worth noting that, as mentioned before, there is considerable heterogeneity within both the reform realms for each income group, in part reflecting the huge variation in the degree of deregulation. As for trade regulatory reforms, examples of the largest gaps between countries include Malaysia (0.77) and Fiji (0.52) in the UMIC group; and India (0.66) and Bangladesh (0.28) in the LMIC group. For business regulatory reforms, Malaysia (0.83) and Türkiye (0.64) in the UMIC group; and India (0.66) and Bangladesh (0.28) in the LMIC group are major examples. This suggests that much room for further deregulation remains in the respective income groups.

## Regulatory Reform Effects

This section empirically examines the role of regulatory reforms in the growth of LP, by utilizing APO Productivity Database and Economic Freedom Index database for 21 APO member economies during the period 2000–19. The empirical analysis attempts to address the following questions:

- (1) Do regulatory reforms foster LP growth?
- (2) What is the main channel through which regulatory reforms affect LP growth? What are the within-sector effects and between-sector effects (structural changes)?
- (3) Do regulatory reforms enhance the growth of services' LP?
- (4) Do regulatory reforms (i.e., deregulation) coupled with improving regulatory quality further promote LP growth?

This exercise can help provide country authorities with the direction to prioritize among a wide range of reform options in greater detail.

## Methodologies

This study utilizes two econometric specifications to investigate the impact of regulatory reforms on the growth of LP. Two different approaches are taken into consideration to provide a comprehensive, complementary perspective of devising evidence-informed reform directions for APO member economies.

### Baseline Model

First, this study follows the approach employed by Konte *et al* [20] and Prati, Onorato, and Papageorgiou [18], which is based on growth regressions, to reveal whether regulatory reforms have a significant impact on LP growth and its two elements: the intra-sectoral element (the within-sector effect) and the inter-sectoral element (the between-sector effect or structural change). The shift-share methodology used by McMillan and Rodrik [13] is applied to decompose aggregate LP growth as follows:

$$\Delta LP_t = \sum_{i=1}^N \Delta lp_{i,t} \theta_{i,t-k} + \sum_{i=1}^N lp_{i,t} \Delta \theta_{i,t} \quad (1)$$

where,  $\Delta LP_t$  is the change in aggregate LP between periods  $t - k$  and  $t$ . The first term is the “within-sector” element, which is the weighted average of the change in LP in each of the  $N$  sectors, with the weight for sector  $i$  being the labor share of that sector in period  $t - k$ , measured by  $\theta_{i,t-k}$ . This element measures the growth of within-sector productivity stemming from deepening of capital and technological progress through investments in respective sectors. The second term is the “between-sector or structural change” element, which is a weighted average of the change in labor

shares in the N sectors, with the weights captured by the LP of the sector in period t. The reallocation effects measure the growth in LP due to the shift of workforce toward more productive sectors.

The basic equation is thus derived as follows:

$$\Delta \ln (LP)_{i,t} = a + (\alpha - 1) \ln (LP)_{i,t-1} + \beta \text{Reform}_{i,t-n} + \gamma Z_{i,t-1} + \delta_i + \theta_t + \varepsilon_{i,t} \quad (2)$$

where,  $\Delta \ln (LP)_{i,t}$  represents outcomes of interests, i.e., the growth rate of ❶ total factor productivity (TFP), ❷ aggregate labor productivity, ❸ within-sector productivity ❹ between-sector (reallocation) productivity, and ❺ sectoral (service) LP between period t – k and t. Further,  $(LP)_{i,t-1}$  is the one-year lag in LP growth to test for convergence across countries. Reforms include the overall product market reform index, trade regulatory reform index, and business regulatory reform index that are introduced separately. Z indicates a vector of control variables, including the level of human capital, the stock of physical capital (investment), and trade openness;  $\delta_c$  represents country-specific effects;  $\theta_t$  stands for the time fixed effects; while the number of countries and time observations are denoted by  $c=1, \dots, N$ ; and  $t=1, \dots, T$ , respectively; and  $\varepsilon$  is an error term.

To estimate the above models, this study employed the System Generalized Method of Moments (GMM) estimation methodology proposed by Arellano and Bover [1] and Blundell and Bond [3]. This technique runs a system of two equations to tackle potential endogeneity issues: one in “first differences” and the other in levels using the lagged values of explanatory variables as internal instruments.

The above model can be written equivalently as:

$$\ln (LP)_{i,t} = a + \alpha \ln (LP)_{i,t-1} + \beta \text{Reform}_{i,t-n} + \gamma Z_{i,t-1} + \delta_i + \theta_t + \varepsilon_{i,t} \quad (2')$$

Consider equation (2') in first-differences

$$\Delta \ln (LP)_{i,t} = a + \alpha \Delta \ln (LP)_{i,t-1} + \beta \Delta \text{Reform}_{i,t-n} + \gamma \Delta Z_{i,t-1} + \Delta \varepsilon_{i,t} \quad (2'')$$

### Extended Model

Secondly, to test whether ❹ the complementarity between reducing regulatory quantity and improving regulatory quality promotes LP growth; the reform index, defined as liberalization or deregulation above, is linked with the regulatory quality index and included as an interaction term in the Equation (2'), as shown in Equation (3). The description and sources of the data are summarized in Table A2 of the Appendix.

$$\Delta \ln (LP)_{i,t} = a + \alpha \Delta \ln (LP)_{i,t-1} + \beta (\Delta \text{Reform}_{i,t-n}^{\text{Quant}} \times \Delta \text{Reform}_{i,t-1}^{\text{Qual}}) + \gamma \Delta Z_{i,t-1} + \Delta \varepsilon_{i,t} \quad (3)$$

### Estimated Results

❶ and ❷) Do regulatory reforms foster productivity growth?

The baseline results of these analyses are presented in Table 3. Notably, no significant effects on either TFP or aggregate LP growth were found for the first and second year of reforms in columns (1) and (2). However, as indicated in column (3), a positive and significant role of (overall) regulatory reforms was revealed in the third year, implying that it would take time (e.g., three years) for the benefits to materialize to the full extent. Hence, it is advisable to take into account the time lags between the actual execution of reforms and the manifestation of their effect when devising reform plans and strategies.

Computing the size of the estimated effects of reforms based on the approach taken by Prati, Onorato, and Papageorgiou [18], it was found that full deregulation (i.e., a leap from 0 to 1) would yield an increase in TFP and aggregate LP by 40.9% and 121.6%, respectively, in the long term. This indicates that there is still much room for further improvement for productivity growth in APO member economies through productivity-enhancing reform policies.

**TABLE 3**  
**REGULATORY REFORMS AND TFP/AGGREGATE LP GROWTH.**

| Variables                  | TFP growth            |                       |                       | Aggregate LP growth   |                       |                       |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                            | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   |
| Ln_ TFP (t-1)              | -0.4915***<br>(0.096) | -0.3898***<br>(0.076) | -0.3976***<br>(0.090) |                       |                       |                       |
| Ln_ LP_ Productivity (t-1) |                       |                       |                       | -0.0553***<br>(0.016) | -0.0522***<br>(0.014) | -0.0629***<br>(0.014) |
| Overall Reforms (t-1)      | 0.0205<br>(0.030)     |                       |                       | -0.0498<br>(0.031)    |                       |                       |
| Overall Reforms (t-2)      |                       | 0.0619<br>(0.036)     |                       |                       | -0.0184<br>(0.020)    |                       |
| Overall Reforms (t-3)      |                       |                       | 0.1627**<br>(0.062)   |                       |                       | 0.0765**<br>(0.031)   |
| Ln_ Human Capital (t-1)    | 0.0756**<br>(0.036)   | 0.0682**<br>(0.031)   | 0.0686<br>(0.042)     | 0.0101<br>(0.016)     | 0.0239<br>(0.016)     | 0.0233<br>(0.015)     |
| Ln_ Investment (t-1)       | 0.0090<br>(0.010)     | 0.0136<br>(0.012)     | 0.0041<br>(0.014)     | 0.0070<br>(0.008)     | 0.0005<br>(0.010)     | -0.0040<br>(0.011)    |
| Ln_ Openness (t-1)         | 0.0349**<br>(0.016)   | 0.0462***<br>(0.016)  | 0.0380**<br>(0.017)   | -0.0051<br>(0.010)    | -0.0051<br>(0.008)    | -0.0045<br>(0.010)    |
| Constant                   | 0.8269***<br>(0.225)  | 0.5254**<br>(0.203)   | 0.5464**<br>(0.223)   | 0.5895***<br>(0.172)  | 0.5594***<br>(0.149)  | 0.6237***<br>(0.149)  |
| No. of observations        | 399                   | 378                   | 357                   | 399                   | 378                   | 357                   |
| No. of countries           | 21                    | 21                    | 21                    | 21                    | 21                    | 21                    |
| AR (1) test                | 0.000828              | 0.000601              | 0.00168               | 0.000572              | 0.00116               | 0.00164               |
| AR (2) test                | 0.0783                | 0.0654                | 0.428                 | 0.232                 | 0.243                 | 0.153                 |
| Hansen J test              | 0.785                 | 0.800                 | 0.991                 | 0.788                 | 0.864                 | 0.755                 |

**Notes**

(1) Robust standard errors are in parentheses ( ).

(2) \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

(3) Year fixed effects are included in all estimations but are not reported.

The estimation results by different types of reforms, reported in Table A3 of Appendix, indicate that among the business regulatory reforms, reducing ‘bureaucracy costs,’ i.e., regulatory compliance and bureaucratic inefficiency, has a significant impact on boosting the aggregate LP growth. The results support the perspective of classical economy that eliminating regulatory burdens and compliance requirements that discourage private-sector growth is crucial for enhancing LP economy-wide.

(3 and 4) What is the main channel through which regulatory reforms affect LP growth?

The question of whether reforms affect LP growth by stimulating a more efficient reallocation of resources within sectors, across sectors, or both, is investigated and the results are provided in columns (2) and (3) of Table 4. It was found that both the components are positive and significant, with the coefficient magnitude of the first variable (the within-sector effects) being larger than the second one (the between-sector effects). In other words, economy-wide reforms can foster both within- and between-sector productivity growths, thereby promoting aggregate LP growth. Yet, such reforms have a more sizable impact on aggregate LP growth, especially through the intra-sector channel. The results are consistent with the idea that, by facilitating fair competition, regulatory reforms on overall product markets would induce improvements in human capital, and further investments in physical capital, innovation, and resource reallocation from the least to the most productive firms both within and across sectors. Yet, gains in within-sector productivity from deregulation appear to be more far-reaching than between-sector gains.

TABLE 4

## REGULATORY REFORMS AND WITHIN-SECTOR AND BETWEEN-SECTOR LP GROWTH.

| Variables              | (1)<br>Aggregate LP growth | (2)<br>Within-sector LP growth | (3)<br>Between-sector LP growth |
|------------------------|----------------------------|--------------------------------|---------------------------------|
| Ln_LP_Productivity     | -0.0629***<br>(0.014)      | -0.0541***<br>(0.013)          | -0.0088*<br>(0.004)             |
| Overall Reform (t-3)   | 0.0765**<br>(0.031)        | 0.0552*<br>(0.028)             | 0.0213*<br>(0.011)              |
| Ln_Human Capital (t-1) | 0.0233<br>(0.015)          | 0.0340*<br>(0.018)             | -0.0107<br>(0.008)              |
| Ln_Investment (t-1)    | -0.0040<br>(0.011)         | -0.0104<br>(0.011)             | 0.0064<br>(0.006)               |
| Ln_Openness (t-1)      | -0.0045<br>(0.010)         | -0.0041<br>(0.008)             | -0.0004<br>(0.003)              |
| Constant               | 0.6237***<br>(0.149)       | 0.5515***<br>(0.130)           | 0.0722<br>(0.051)               |
| No. of observations    | 357                        | 357                            | 357                             |
| No. of countries       | 21                         | 21                             | 21                              |
| AR(1) test             | 0.00164                    | 0.000787                       | 0.00615                         |
| AR(2) test             | 0.153                      | 0.835                          | 0.0842                          |
| Hansen J test          | 0.755                      | 0.884                          | 0.910                           |

Notes: (1) Robust standard errors are in parentheses.

(2) \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

(3) Year-fixed effects are included in all estimations but are not reported.

Further estimations using the within- and between-sector components as dependent variables were carried out to measure the impacts of various types of reforms. These results are reported in Table A4 and Table A5 of Appendix. Unlike the above estimation results, heterogeneous effects of specific reform areas were found; while a reduction in compliance costs of importing and exporting, including bureaucracy costs, had significant effects on boosting the growth of within-sector productivity, whereas non-tariff trade barriers as well as procedures for starting a new business have growth-inhibiting effects.

The findings suggest that reduction in trade barriers that leads to further integration with global markets could spur higher gains of within-sector productivity by increasing the exposure of domestic firms to frontier technologies and advanced knowledge. However, increased competition with frontier firms in the global arena may increase underemployment, counteracting the resource reallocation toward more productive firms within industries. In addition, as demonstrated by Ahearne and Shinada [2], some startups that may have already lost their competitiveness tend to extend their survival rate with support from governments and banks. If the proportion of these so-called “zombie firms” increases within industries, the overall sector growth would decline largely due to misallocation of resources.

Conversely, for between-sector productivity growth, it was revealed that lowering “compliance costs of importing and exporting” among trade barriers would hamper resource reallocation of labor from low-to high-productivity sectors. A possible explanation of the results is that integration with the global economy, coupled with labor-substituting technology progress, which was accelerated in the 2000s in most Asian economies, may weaken labor demand, especially in high-productive industries producing capital-intensive commodities. In turn, this could hinder sectoral reallocation.

#### ⑤ Do Regulatory Reforms Enhance Service LP Growth?

Table 5 shows the effects of reforms on service productivity growth. While no effects are found in other areas of reforms, easing restrictions of complying with “administrative requirements” (e.g., permits, regulations, and reporting) has a significant impact on enhancing productivity, particularly in trade services (i.e., wholesale and retail trade, repair of vehicles and household goods, and hotels and restaurants), which boasted of the fastest growth trajectory over the period of 2010–19 among the services subsectors (see chapter on Trends and Challenges in Services Sector). These results may reflect how deregulatory reforms for fair competition and increased business freedom played a vital role in fostering the growth of productivity in trade services.

**TABLE 5**

#### REGULATORY REFORMS AND SERVICES LP GROWTH.

| Variables         | (1)<br>(Aggregate)<br>services | (2)<br>Wholesale<br>and retail<br>trade, repair<br>of vehicles<br>and house-<br>hold goods,<br>and hotels<br>and restau-<br>rants | (3)               | (4)<br>Transport,<br>storage, and<br>communica-<br>tions | (5)<br>Financial<br>intermedia-<br>tion, real<br>estate,<br>renting,<br>and<br>business<br>activities | (6)<br>Community,<br>social, and<br>personal<br>services |
|-------------------|--------------------------------|---|-------------------|--|---|--|
| Ln_LP_Ser. (t-1)  | -0.9997<br>(0.849)             |   |                   |  |   |  |
| Ln_LP_wrhh. (t-1) |                                | 0.1997<br>(0.312)   | 0.0863<br>(0.200) |  |   |  |
| Ln_LP_tsc. (t-1)  |                                |   |                   | -0.0414<br>(0.231)                                       |   |  |
| Ln_LP_frr. (t-1)  |                                |   |                   |  | 0.1830<br>(0.198)   |  |

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| Variables                   | (1)<br>(Aggregate)<br>services | (2)<br>Wholesale<br>and retail<br>trade, repair<br>of vehicles<br>and house-<br>hold goods,<br>and hotels<br>and restau-<br>rants | (3)                 | (4)<br>Transport,<br>storage, and<br>communica-<br>tions | (5)<br>Financial<br>intermedia-<br>tion, real<br>estate,<br>renting,<br>and<br>business<br>activities | (6)<br>Community,<br>social, and<br>personal<br>services |
|-----------------------------|--------------------------------|---|---------------------|--|---|--|
| Ln_LP_cs. (t-1)             |                                |   |                     |  |   | -0.6195<br>(0.470)                                       |
| Overall reforms<br>(t-3)    | -0.3087<br>(0.454)             | -0.0915<br>(0.093)  |                     | -0.1091<br>(0.235)                                       | -0.1757<br>(0.778)  | -0.4235<br>(0.485)                                       |
| Admin. requirement<br>(t-3) |                                |   | 0.2161**<br>(0.087) |  |   |  |
| Ln_Human Capital<br>(t-3)   | -0.3232<br>(0.532)             | -0.1124<br>(0.105)  | -0.3032<br>(0.249)  | 0.1941*<br>(0.095)                                       | -0.1036<br>(0.237)  | -0.9056<br>(0.581)                                       |
| Ln_Investment<br>(t-3)      | 0.0779<br>(0.104)              | 0.3507**<br>(0.139)   | 0.2327<br>(0.163)   | 0.0385<br>(0.091)  | 0.0939<br>(0.157)   | 0.0604<br>(0.152)  |
| Ln_Openness (t-3)           | -0.0974<br>(0.138)             | 0.1586*<br>(0.077)  | 0.1894**<br>(0.071) | -0.0189<br>(0.108)                                       | 0.0352<br>(0.225)   | -0.3820*<br>(0.192)                                      |
| Constant                    | 11.1172<br>(9.568)             | -3.6708<br>(3.318)  | -2.3440<br>(2.268)  | 0.5545<br>(2.306)  | -0.5345<br>(2.187)  | 8.8108<br>(5.832)  |
| No. of observations         | 357                            | 357   | 302                 | 357  | 357   | 357  |
| No. of countries            | 21                             | 21  | 21                  | 21   | 21  | 21   |
| AR(1) test                  | 0.976                          | 0.0527  | 0.0412              | 0.932  | 0.358   | 0.0998   |
| AR(2) test                  | 0.948                          | 0.181   | 0.444               | 0.518  | 0.250   | 0.295  |
| Hansen J test               | 0.999                          | 0.992   | 0.897               | 0.855  | 0.714   | 0.945  |

**Note:** (1) Robust standard errors are in parentheses.

(2) \*\*\* p&lt;0.01; \*\* p&lt;0.05; \* p&lt;0.1.

(3) Year fixed effects are included in all estimations but are not reported.

**⑥** Extended model) presents regulatory quantity or quality, or both?

As mentioned under the ‘Theoretical Review’ section earlier, it is widely acknowledged that after implementing “deregulation,” which aims to reduce the number of regulations, it is necessary to direct regulatory policies toward improving “the quality of regulations.” Also, it is most desirable to build a “regulatory management system” to ensure sustained growth and welfare for the whole society. This subsection tests the sequential and/or complementary relationship by exploring whether a mix of eliminating the number of regulations and improving the quality of existing regulations through complementarity is effective in boosting aggregate LP growth.

First of all, this section addresses the question whether there are time lags between regulatory quality improvement and its effects, as observed in deregulatory reforms. The results in column (2) of Table 6 demonstrate that elevating the quality of regulations has positive and significant effects on LP growth, with larger magnitude and less time required (one-year lag) to yield productivity gains than the effects generated by deregulation. This implies the possibility that even though

much more time and painstaking efforts may be required to improve the quality of regulation itself, since the validity and rationality of each regulation needs to be reviewed carefully, quality-enhancing reforms could achieve more sizeable productivity gains in a shorter time once executed. This denotes, in part, the possibility that the quality improvement of regulations is generally done sequentially after institutional arrangements are formed for regulatory reforms.

**TABLE 6****COMPLEMENTARITY OF REGULATORY REFORMS.**

| Variables                     | (1)                   | (2)                   | (3)                   | (4)                   |
|-------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Ln_ LP_ Productivity (t-1)    | -0.0649***<br>(0.014) | -0.0682***<br>(0.013) | -0.0646***<br>(0.013) | -0.0774***<br>(0.013) |
| Reform_ Quantity (t-3)        | 0.0735**<br>(0.032)   | 0.0689**<br>(0.031)   | 0.0721**<br>(0.032)   | -0.1882<br>(0.151)    |
| Reform_ Quality (t)           | 0.0289<br>(0.041)     |                       |                       |                       |
| Reform_ Quality (t-1)         |                       | 0.0827*<br>(0.040)    |                       | -0.3598<br>(0.239)    |
| Reform_ Quality (t-2)         |                       |                       | 0.0326<br>(0.032)     |                       |
| Quality (t-1) X Quantity(t-3) |                       |                       |                       | 0.6643*<br>(0.358)    |
| Ln_ Human Capital (t-1)       | 0.0235<br>(0.015)     | 0.0193<br>(0.015)     | 0.0224<br>(0.016)     | 0.0271<br>(0.017)     |
| Ln_ Investment (t-1)          | -0.0029<br>(0.011)    | -0.0006<br>(0.011)    | -0.0020<br>(0.010)    | -0.0018<br>(0.011)    |
| Ln_ Openness (t-1)            | -0.0045<br>(0.010)    | -0.0060<br>(0.010)    | -0.0040<br>(0.010)    | -0.0102<br>(0.010)    |
| Constant                      | 0.6268***<br>(0.145)  | 0.6386***<br>(0.143)  | 0.6193***<br>(0.131)  | 0.9061***<br>(0.190)  |
| No. of observations           | 357                   | 357                   | 357                   | 357                   |
| No. of countries              | 21                    | 21                    | 21                    | 21                    |
| AR(1) test                    | 0.00161               | 0.00141               | 0.00165               | 0.00178               |
| AR(2) test                    | 0.156                 | 0.127                 | 0.165                 | 0.134                 |
| Hansen J test                 | 0.890                 | 0.915                 | 0.914                 | 0.956                 |

**Notes:** (1) Robust standard errors are in parentheses.

(2) \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

(3) Year fixed effects are included in all estimations but are not reported.

Second, this section investigates the effects of reform complementarity. The results, reported in column (4), suggest that complementarity exists between the two reform policies, and it also has a positive and significant impact on LP growth with the largest magnitude when compared with the two in isolation. The findings provide evidence to support the argument that forming a regulatory reforms system based on a systematic and complementary approach is essential, with due consideration of the sequential effects of regulatory reforms, in terms of quantity and quality, on LP growth.

## Conclusions

Regulation is one of the key instruments for governments to boost fair competition and thereby accomplish greater efficiency gains in the economy. Over the last several decades, regulations have been newly created and also reformed across countries, depending on a change of circumstances, especially the technology, global trade, and investment landscape. This chapter has presented a comprehensive analysis of the role of regulatory reforms in productivity performance among APO member economies. It has explored whether reforms promote productivity; the channels through which regulatory reforms can boost productivity; and how different types of reforms affect productivity differently. The chapter has also examined the extent to which two different regulatory policies (i.e., reducing the number of regulations; and improving the quality of regulations) enhance productivity. It has also analyzed their complementary effects on productivity.

The results of the analysis provide evidence to support the argument that regulatory reforms serve the essential role of boosting LP in APO member economies. Specifically, this study has documented the following findings including some policy implications.

First, it is observed that overall product market reforms tend to generate a significant enhancement of LP after three years. In other words, there is a time lag between the time of a reform's implementation and the time when the reform manifests to facilitate productivity growth. This suggests that an anticipated delay between an action and a consequence should be taken into account when formulating regulatory policies. Yet, it is notable that changes in product and service life cycles in the market have become shorter because of faster-paced technological changes, which has further accelerated after the outbreak of COVID-19. Therefore, it is advisable to reform existing regulations that could have tangible effects on the intended outcomes in a timely manner since some regulations appear to be inconsistent and outdated for the current business environment and their lingering effects could reshape the market conditions in inconceivable ways.

Second, reform benefits for productivity enhancement have stemmed from both intrasectoral and intersectoral channels; but the former has a greater impact than the latter. In this context, the differential effects of reforms through the two different channels need to be considered when selecting priority areas strategically to enhance economy-wide productivity. Furthermore, various types of reforms, such as easing of trade barriers (e.g., nontariff trade barriers and compliance costs of importing and exporting) and business barriers (e.g., bureaucracy costs and starting a business), have heterogeneous effects. The effects can be either negative or positive on intrasectoral and intersectoral productivity growth and in some cases may not necessarily lead to productivity improvement. As such, the reforms should be complemented by measures tailored to a country's specific needs with an array of reforms by strengthening the growth-facilitating effect, and at the same time, mitigating the potential adverse effect of reforms.

Third, among many services subsectors, economy-wide reforms have been particularly beneficial in boosting the productivity of trade services (i.e., wholesale and retail trade, repair of vehicles and household goods, and hotels and restaurants) with lower levels of productivity including low-skill and informal activities. However, in order to derive great benefits from the services sector, which is a new growth engine for further productivity growth, it is vital to nurture higher-productivity sectors. Examples are financial intermediation and business activities that possess greater potential for strong and extensive linkages with other sectors and generate greater output and higher-skill jobs. To this end, efforts aimed at shifting the reform direction from a broader and general administrative base toward more productive service activities (with a sector and/or market focus) are required to raise overall productivity reliably. On the other hand, the rapid expansion of online and untact trade services, which utilize new digital technologies such as big data, the internet of things (IoT), and artificial intelligence (AI) is a typical trend that has been observed recently across economies. As such, eliminating regulatory hurdles that hinder investments in the development of digital infrastructures to meet existing and future demand is highly needed to enhance the potential and relieve the constraints on services' productivity.

Last, regulatory reforms, where quantity and quality complement each other in a sequential manner, have had consistently positive effects on productivity growth, pointing to profound implications. It is increasingly recognized that with the impacts of the COVID-19 pandemic still lingering, it is imperative to initiate multipronged regulatory reforms to revitalize the depressed economies of APO members. However, the findings suggest that higher priority should be given to building a well-developed regulatory management system that could increase resilience for stronger recovery from shocks by making it easier to allocate resources for the best use rather than making temporary and/or partial reforms. Moreover, such a well-designed system should proceed with concerted and persistent reforms in terms of quantity and quality in a complementary manner in response to fast-changing market conditions, thereby ultimately achieving sustained productivity growth.

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## Appendix

**TABLE A1**
**DEFINITION OF REGULATORY REFORMS.**

Overall product market regulation (real sector): It is about how regulations restrict entry into markets and interfere with the freedom to engage in voluntary exchange, reducing economic freedom.

Regulatory trade barriers: These include a wide variety of trade restrictions, e.g., tariffs, quotas, and hidden administrative restraints.

Nontariff trade barriers

Compliance costs of importing and exporting

Business regulations: These impose regulatory restraints that limit the freedom of exchange in businesses.

Administrative requirements

Bureaucracy costs

Requirements for starting a business

Impartial public administration

Licensing restrictions

Cost of tax compliance

**TABLE A2**
**DATA SOURCES.**

|                | Variable                                 | Source                                   |
|----------------|--|--|
| Productivity   | Labor productivity                       | APO Productivity Database 2021           |
|                | Total factor productivity                |  |
| Regulations    | Regulatory trade barriers (0~1)          | Economic Freedom Index Database for 2021 |
|                | Business regulations (0~1)               |  |
|                | Regulatory Quality Index (0~1)*          | World Governance Indicators 2022         |
| Human Capital  | Human Capital Index                      | Penn World Table (Version 10.0)          |
| Investment     | Gross fixed capital formation (% of GDP) | UNCTAD Database                          |
| Trade openness | Trade in goods and services (% of GDP)   |  |

**Note:** This indicator has been rescaled to a range between 0 and 1.

TABLE A3

## AGGREGATE LP GROWTH BY DIFFERENT TYPES OF REFORMS.

| Variables                               | (1)                    | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   | (7)                   | (8)                   | (9)                   | (10)                  | (11)                  |
|---|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Ln_LP_                                  | -0.10629***<br>(0.014) | -0.0612***<br>(0.013) | -0.0595***<br>(0.015) | -0.0631***<br>(0.014) | -0.0611***<br>(0.014) | -0.0620***<br>(0.015) | -0.0687***<br>(0.031) | -0.0621***<br>(0.017) | -0.0524***<br>(0.013) | -0.0597***<br>(0.016) | -0.0568***<br>(0.014) |
| Productivity (t-1)                      |                        |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Overall reforms (t-3)                   | 0.0765**<br>(0.031)    |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Trade barriers (t-3)                    |                        | 0.0302<br>(0.030)     |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Nontariff trade barriers (t-3)          |                        |                       | -0.0111<br>(0.016)    |                       |                       |                       |                       |                       |                       |                       |                       |
| Compliance costs of import/export (t-3) |                        |                       |                       | 0.0117<br>(0.014)     |                       |                       |                       |                       |                       |                       |                       |
| Business (admin) barriers (t-3)         |                        |                       |                       |                       | 0.0544**<br>(0.022)   |                       |                       |                       |                       |                       |                       |
| Admin. requirements (t-3)               |                        |                       |                       |                       |                       | 0.0274<br>(0.017)     |                       |                       |                       |                       |                       |
| Bureaucracy costs (t-3)                 |                        |                       |                       |                       |                       |                       | 0.0288**<br>(0.011)   |                       |                       |                       |                       |
| Starting a business (t-3)               |                        |                       |                       |                       |                       |                       |                       | -0.0167<br>(0.014)    |                       |                       |                       |

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[illegible]

**Notes:** (1) Robust standard errors are in parentheses.

(2) \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$

(3) Year fixed effects are included in all estimations but are not reported.

TABLE A4

## WITHIN-SECTOR LP GROWTH BY DIFFERENT TYPES OF REFORMS.

| Variables                                | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Ln_ LP_ Productivity                     | -0.0541***<br>(0.013) | -0.0516***<br>(0.014) | -0.0561***<br>(0.013) | -0.0598***<br>(0.014) | -0.0530***<br>(0.015) |
| Overall reforms (t-3)                    | 0.0552*<br>(0.028)    |                       |                       |                       |                       |
| Trade barriers (t-3)                     |                       |                       |                       |                       |                       |
| Non-tariff trade barriers(t-3)           |                       | -0.0474**<br>(0.017)  |                       |                       |                       |
| Compliance costs of import /export (t-3) |                       |                       | 0.0215*<br>(0.012)    |                       |                       |
| Business (admin) barriers(t-3)           |                       |                       |                       |                       |                       |
| Bureaucracy costs(t-3)                   |                       |                       |                       | 0.0274**<br>(0.010)   |                       |
| Starting a business(t-3)                 |                       |                       |                       |                       | -0.0289*<br>(0.014)   |
| Ln_ Human Capital (t-1)                  | 0.0340*<br>(0.018)    | 0.0364<br>(0.028)     | 0.0541**<br>(0.026)   | 0.0455<br>(0.031)     | 0.0471*<br>(0.024)    |
| Ln_ Investment(t-1)                      | -0.0104<br>(0.011)    | -0.0220*<br>(0.012)   | -0.0135<br>(0.012)    | -0.0192<br>(0.013)    | -0.0151<br>(0.012)    |
| Ln_ Openness(t-1)                        | -0.0041<br>(0.008)    | 0.0005<br>(0.009)     | -0.0097<br>(0.009)    | -0.0057<br>(0.011)    | -0.0094<br>(0.009)    |
| Constant                                 | 0.5515***<br>(0.130)  | 0.6085***<br>(0.155)  | 0.6095***<br>(0.150)  | 0.6565***<br>(0.158)  | 0.6301***<br>(0.163)  |
| No. of observations                      | 357                   | 305                   | 322                   | 313                   | 334                   |
| No. of countries                         | 21                    | 21                    | 21                    | 21                    | 21                    |
| AR(1) test                               | 0.000787              | 0.00461               | 0.00231               | 0.00235               | 0.00155               |
| AR(2) test                               | 0.835                 | 0.485                 | 0.609                 | 0.511                 | 0.592                 |
| Hansen J test                            | 0.884                 | 0.882                 | 0.794                 | 0.994                 | 0.967                 |

**Notes:** (1) Robust standard errors are in parentheses).

(2) \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

(3) Year fixed effects are included in all estimations but are not reported.

TABLE A5

## BETWEEN-SECTOR LP GROWTH BY DIFFERENT TYPES OF REFORMS.

| Variables                                | (1)                 | (2)                  | (3)                  |
|--|---------------------|----------------------|----------------------|
| Ln_ LP_ Productivity                     | -0.0088*<br>(0.004) | -0.0069<br>(0.005)   | -0.0098**<br>(0.005) |
| Overall Reforms (t-3)                    | 0.0213*<br>(0.011)  |                      |                      |
| Trade barriers (t-3)                     |                     |                      |                      |
| Compliance costs of import /export (t-3) |                     | -0.0098**<br>(0.004) |                      |
| Ln_ Human Capital (t-1)                  | -0.0107<br>(0.008)  | -0.0021<br>(0.008)   | -0.0109<br>(0.008)   |
| Ln_ Investment (t-1)                     | 0.0064<br>(0.006)   | 0.0065<br>(0.006)    | 0.0056<br>(0.006)    |
| Ln_ Openness (t-1)                       | -0.0004<br>(0.003)  | 0.0011<br>(0.004)    | -0.0011<br>(0.004)   |
| Constant                                 | 0.0722<br>(0.051)   | 0.0591<br>(0.054)    | 0.0853<br>(0.053)    |
| No. of observations                      | 357                 | 322                  | 357                  |
| No. of countries                         | 21                  | 21                   | 21                   |
| AR(1) test                               | 0.00615             | 0.00708              | 0.00575              |
| AR(2) test                               | 0.0842              | 0.112                | 0.0796               |
| Hansen J test                            | 0.910               | 0.999                | 0.832                |

**Notes:** (1) Robust standard errors are in parentheses.

(2) \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

(3) Year fixed effects are included in all estimations but are not reported.

## SPECIAL ISSUE

# SERVICES AND ROLE OF GVCs IN PRODUCTIVITY GROWTH

### Introduction

The world economy is moving toward services. Service jobs occupy major shares in most countries, and more than three-quarters of jobs in high-income countries are usually from the services sector. Even in middle-income countries, many service activities provide high incomes and decent jobs. Trade in services is rising in tandem with the increasing share of services in the global economy. It is well known that the growth of services trade has outpaced that of merchandise trade since the second half of the last century. It is also well recognized that the liberal international order and information technology (IT) revolution are the two key drivers that have fueled the rapid rise of services in production and trade. Frontier innovations and breakthroughs in services are currently reshaping the global industrial landscape. Along with these developments appear the global value chains (GVCs) that link national economies far tighter than before.

The development of GVCs provides a new perspective on economic development. GVCs are usually composed of diverse and complex networks of suppliers encompassing raw material providers, parts and components suppliers, end-product manufactures, and specialized service providers, many of which are crossing national borders. “The complex web of interactions among firms from different countries is the reason why GVC trade offers more opportunities for productivity growth than trade in final goods and services” [1]. Participation in GVC provides opportunities for productivity growth to participating firms and this triggers the reallocation of resources toward more productive firms and sectors. Industry-wise and economy-wise effects are generally considered occurring through such important channels as enhanced specialization, access to foreign inputs and markets, knowledge spillovers from leading firms, and the upscaling of firms themselves.

This chapter will review the current status of services trade and GVCs in APO member economies. The review aims, first, to ascertain the effect of global trends in APO economies, i.e., how well APO economies are responding to the new economic environment. The review will then be extended to see the relationships between participation in GVCs and changes in nations’ comparative advantages. For this purpose, this chapter will extensively use two readily available indicators that are produced by the Asian Development Bank (ADB). This exercise will produce a snapshot of complex relations and networks running through APO member economies and also the interrelations with other economies. The snapshot is a starting point for deducing a comprehensive picture of the GVC paradigm. This chapter will show one way to use existing data, and will also provide directions for further study, which will complement and enrich the current review.

This chapter will perform an introductory analysis for understanding the complex phenomenon that has become increasingly important for sustaining economic growth. The phenomenon overlaps services trade, participation in GVCs, and service-led development. The next section will deal with conceptual and data issues in services trade and GVCs. Since there are huge contributions from prior studies, the section will highlight key points in conceptual development. Data issues will be

addressed in the context of this chapter's usage of existing data. One of the sections will ascertain the current status of services trade and GVCs in APO economies. Fact-finding will be completed in the first half, while the second half will embark upon a pattern-finding exploration where two key indicators will be extensively used. The implications from the findings of this section will be discussed in the subsequent section. Illustrative examples will be used for comparison between India and PR China. The next section will articulate the directions for further study under five headings: development strategy, comparative analysis, network analysis of GVCs, the relation between participation in GVC and productivity growth, and policy issues.

## Services Trade and GVCs

There is a sizable literature on the fundamental role of services in broad terms of economics, such as structural changes and economic transformation. Many other important issues have been raised subsequently, as services have grown faster than manufacturing and have attracted strong interests in view of their role in sustaining economic growth. Recent research and policy practices tend to focus more on services trades and their relations with GVCs. This section will provide a brief overview of some key issues in services trade and GVCs. Conceptual development will be reviewed first, and then measurement issues will be discussed.

### Main Themes and Phases of Development

Theories of international trade have been well established, focusing on commodities and physical products. Comparative advantages and technological differences are the main determinants of trade patterns across nations. Since services are intangible forms of production and exchange, and require physical proximity between producers and consumers, it is reasonable to raise such questions as how well will the framework of international trade be applied to trade in services? Mattoo and Zanini [2] assert that theories of comparative advantages and gains from specialization (arising from increasing returns to the scale or agglomeration effects) are equally applicable as explanations for both goods and services trades. Comparative advantage based on factor endowments explains vertical specialization between countries, while the narrative of increasing returns explains the trade between similar countries, viz. horizontal specialization. Further, they assert that both the explanations apply not only to cross-border trade, but also to other modes of trade, including commercial presence and movement of natural persons.

In contrast with theoretical underpinnings that assert similar explanations for goods trade and services trade, a microscopic view of business enterprises' activities renders many differences between manufacturing and services. Since "enterprises can hire any conceivable business activity, capability, and asset class as a service," [3] manufacturing firms may opt for outsourcing many activities that had been performed in-house by themselves.<sup>1</sup>

Business services that support manufacturing, such as accounting and legal consulting; autonomous service such as communications and transportation; and public support services such as infrastructure and education can all contribute to a manufacturing firm's production activities. When specialized firms carve out a niche market, the number of those firms gain mass as an industry and outsourcing goes increasingly across national borders, and GVCs distinctively characterize the recent development of international trade. Here the interrelatedness between manufacturing and services, rather than similarities, is the key aspect that deserves special attention.

<sup>1</sup> The term 'outsourcing' refers to a "contractual agreement according to which the principal requires the contractor to carry out specific tasks, such as parts of a production process or even the full production process, employment services, or support functions" [3, 4].

TABLE 1

## DRIVERS OF GVC PARTICIPATION.

| Factors contributing to the early rise of GVC participation   | Drivers of the recent slowdown in GVC participation  |
|---|--|
| <ul style="list-style-type: none"> <li>• The literature ascribes the fast growth of vertical integration to a combination of policy measures and technological advancements.</li> <li>• Advances in technology further revolutionized global production in the 1990s, leading to a second unbundling.</li> <li>• The greatest impact of the ICT revolution has been on services trade.</li> <li>• Various waves of trade liberalization in the 1990s led to a sharp and broad-based reduction in tariffs, especially in emerging market economies, thus further enhancing trade integration.</li> <li>• The rise of Preferential Trade Agreements (PTAs) also favored participation in GVCs.</li> <li>• In addition to policy factors and technological advancements, available studies also highlight the roles of countries' structural characteristics and institutional factors.</li> <li>• Beyond specific characteristics and endowments, a broad range of policies and institutions also determine the degree of a country's engagement in GVCs.</li> <li>• Productivity and cost differentials across countries also serve as an important determinant of firms' decisions to offshore parts of the production process and whether to do so through FDI, with subsidiaries providing inputs to their parent firms or via arm's-length trade.</li> </ul> | <ul style="list-style-type: none"> <li>• Rising protectionism, globally, is likely to have contributed to a slower pace of GVC integration.</li> <li>• The greater volatility of transport costs and energy prices represents a further possible driver of the slowdown in GVC integration over the last decade.</li> <li>• Declining FDI flows are also linked to the recent moderation in GVC participation.</li> <li>• Rising labor costs in emerging market economies represent a further driver of the slowdown in GVC integration.</li> <li>• While ICT developments unequivocally boosted GVC participation, the impact of new technologies related to Industry 4.0 remains uncertain.</li> </ul> |

**Source:** Cigna, Gunnella, and Quaglietti [5].

There have been epochal phases in the development of GVCs and the change in the nature of services trade. Baldwin [6] viewed globalization from three phases of unbundling. Rapidly falling transport costs in the early nineteenth century enabled a dislocation of consumption and production across advanced nations, paving the way for the first unbundling. Globalization accelerated again from around 1990, when the ICT revolution radically lowered the cost of moving ideas. ICT made it possible to coordinate complex activities from a distance. This launch of the second unbundling involves the international separation of factories. "Globalization now meant that factories were crossing borders, not just goods crossing borders" [6]. Once this sort of offshoring was feasible, the north-south wage gap that had arisen during the first unbundling made it profitable. The second unbundling, sometimes called the "global value chain revolution," reshaped the contours of

industrial competitiveness that are increasingly being defined by the strategic positions at international production networks.

With astonishing advances in digital technologies, particularly technological breakthrough of machine learning, globalization is now entering its third phase, termed by Baldwin and Forslid [7] as “the globotics transformation.” They assert that ‘globotics,’ a compound word of globalization and robotics, will open a new path of services-led development for developing economies. They also predict that workers in developing nations are likely to shift from agriculture and manufacturing to export-oriented service sectors. As computers gain a new type of cognitive capacity, many jobs and tasks not only in manufacturing but also in services have become more automatable. This will offer new growth opportunities for developing countries. The authors argue, “since most services are underpriced in developing nations compared to developed nations, it is likely that this will mostly represent an export opportunity for developing nations and an import opportunity for developed nations” [7].

Technological breakthroughs are the main transforming forces in the three phases of unbundling of globalization. In addition, however, there are many other important factors that sometimes accelerate and at other times relax the pace of globalization. Table 1 lists factors contributing to the early rise of participation in the GVC as well as the drivers of recent slowdown in GVC participation. Policy intervention, in various purposes and diverse forms, is apparently the most critical factor in assisting or hindering GVC development. Trade liberalization in the 1990s, which enhanced trade integration, had greatly contributed to the rise of GVCs. In recent years, however, rising global protectionism is likely to have contributed to the slowing of GVC integration. Since the characteristics of many services give rise to market failure in terms such as natural monopoly or oligopoly, domestic policies on services are intrinsically ridden with regulatory issues [8]. Liberalization of services trade frequently faces resistance from domestic interest groups. Studies on the benefits and costs of policy interventions in services trade have not been carried out with adequate results, necessitating further efforts in future.

### Statistics and Data

International Standard Industrial Classification of All Economic Activities (ISIC) is a standard classification of economic activities. The classification combines the activities of producing units according to: similarities in the characteristics of the goods and services produced; the uses for which the goods and services are put; and the inputs, processes, and technologies of production. The latest version, ISIC Rev. 4, divides services at the highest aggregation into market services and non-market services. The breakdown of the former includes trade, transportation, accommodation and food, and business and administrative services. The latter includes public administration, community/social services, and other services and activities.

As an alternative to ISIC<sup>2</sup>, the General Agreement on Trade in Services (GATS) classification is based on the General Agreement on Tariffs and Trade (GATT) proposal issued on 10 July 1991. The proposal was made for trade negotiation purposes, rather than as a framework for statistical classification [9]. The 12 major categories in the list are: (1) business services; (2) communication services; (3) construction and related engineering services; (4) distribution services; (5) educational services; (6) environmental services; (7) financial services; (8) health-related and social services;

<sup>2</sup> Industry classification varies according to research purposes. For instance, McKinsey Global Institute [10] classifies services into two broad groups: labor-intensive services and knowledge-intensive services. The former includes wholesale and retail trade, transport and storage, and healthcare; and the latter encompasses professional services, financial intermediation, and IT services.

(9) tourism and travel-related services; (10) recreational, cultural, and sporting services; (11) transport services; and (12) other services not included elsewhere.

Based on the GATS, the international supply of services can take place through four different modes of supply, depending on the territorial presence of the supplier and the consumer at the time of transaction. [9]

The four modes are:

- mode 1 (cross-border supply), where both the supplier and the consumer remain in their respective territories (which would correspond to the traditional notion of trade and cover, for example, services that are supplied over the telephone or the internet);
- mode 2 (consumption abroad), where the consumer avails the service outside his or her home territory (as is the case, typically, for international tourist activities and amusement parks abroad);
- mode 3 (commercial presence), where service suppliers establish (or acquire) an affiliate, branch or representative office in another territory through which they provide their services (as is the case, for example, when a foreign bank investing in a host economy creates a subsidiary in order to provide banking services); and
- mode 4 (presence of natural persons), where an individual (either the service supplier himself if he or she is self-employed or an employee of the service supplier) is present abroad in order to supply a service (as is the case, for example, when an independent architect oversees a construction project abroad or a computer specialist is sent abroad by his employer to supply an IT service).

There has been much collaborative effort to get relevant data and improve the quality of data, to provide better statistics. The progress made by international organizations is reported in Box 1.

This study will use three databases:

- **ADB–MRIO:** The ADB–MRIO database offers three levels of sectoral aggregation; in 5-sector, 15-sector and 35-sector classifications. According to this three-level sector classification, services are grouped into two sectors (business services, and personal and public services); nine sectors; and 16 sectors. This paper will first review services as two groups, i.e., business services, and personal and public services, and then will go into more disaggregated sectors whenever needed.
- **World Development Indicators (WDI):** WDI is a database of global economic conditions across six dimensions: world view, people, environment, economy, states and markets, and global linkages. There are over 900 variables for 208 economies from 1960 to present. WDI is compiled by the World Bank and its international partners. All data in the first part of Section 3 of this paper are from WDI.
- **Penn World Table [11]:** The latest version 10.0 of this database was released on June 18, 2021. It is a database with information on relative levels of income, output, input, and

productivity, covering data on 183 countries between 1950 and 2019. This database helps researchers, among others, to conduct growth accounting across countries.

### BOX 1: PROGRESS FOR MEASURING GLOBAL PRODUCTION AND TRADE IN VALUE ADDED

Notable progress has been made toward a better understanding of the nature of global production. Several handbooks, guides, and statistics have been published since the last update of the international standards to better address the statistical challenges. In 2011, the United Nations Economic Commission for Europe (UNECE) published “The Impact of Globalization on National Accounts” to help compilers understand how globalization affects the framework of the National Accounts statistics. The 2015 UNECE “Guide to Measuring Global Production” provides better practical and conceptual guidance on global production activities and addresses the emerging data needs to better explain the macroeconomic implications of globalization.

Significant progress has been made on the development of multi-country or regional input-output tables; examples include the Organisation for Economic Cooperation and Development (OECD)–World Trade Organization (WTO)’s Trade in Value Added (TiVA) initiative launched in 2012; Full International and Global Accounts for Research in input-Output analysis (FIGARO); the Asian Development Bank; World Input-Output Database (WIOD); the Asia-Pacific Economic Cooperation (APEC)-TiVA; the North American TiVA initiative; and the OECD Expert Group on Extended Supply and Use Tables (eSUTs). Building on these initiatives to address the GVC-related classifications and the integration of the economic, environmental, and social dimensions of globalization, the UN guidelines on *Accounting for Global Value Chains: GVC Satellite Accounts and Integrated Business Statistics* (GVC Handbook) were developed as an extension of the 2008 SNA framework.

The national accounts and balance of payments frameworks provide excellent sources of information on domestic production by industry and international transactions that can be leveraged. The System of National Accounts (SNA) and Balance of Payments Manual (BPM) are useful frameworks for additional information that is helpful in building a bridge between the detailed international trade statistics and accounting frameworks that can improve the quality of ICIOs, eSUTs, GVC satellite accounts, and TiVA statistics. The UN builds on the recommendations of two recent initiatives to improve GVC analysis utilizing the underlying international statistical standard frameworks: (1) the OECD Expert Group on eSUTs<sup>10</sup>; and (2) the IMF’s Balance of Payments Statistics Committee Working Group on Balance of Payments Statistics relevant for GVCs (WG-GVC).

**Source:** IMF Committee on BOP Statistics, Inter-secretariat Working Group on National Accounts (Global Value Chains and Trade in Value Added, undated manuscript).

## Services Trade and GVCs in APO Economies

“The global economy has gone through a dramatic shift toward services. Services now generate more than two-thirds of the global economic output, attract over two-thirds of foreign direct investment, and provide most jobs globally. While services may have been perceived in the past as secondary to a country’s industrial strength, they have now become critical to development strategies, as strong, sustainable, and inclusive growth will not be achieved without due consideration of services.”

“Services trade policies can be an important element to overall productivity and trade performance, inclusiveness, and diversification. Expanding the service economy and boosting trade and investment in the sector can be an important pillar of economic diversification strategies, notably for countries with high dependence on commodities. However, overall, at the international level, government trade-related policies do not appear to have shifted toward services.” [12]

The above quotation has been taken from the WTO’s discussion paper prepared for the G20 meeting in 2020. It presents an overall, concise picture of the global economy in making the transition toward a more service-oriented economy. The first paragraph summarizes the current status of services in the global economy, and the second paragraph points out how the related policies are largely inadequate to meet the emerging requirements. A notable feature of the transition is that trade in services forms a large and growing share of global trade. This section will review the key features of the current status of services trade in APO member economies vis-à-vis the global trend.

### Trends in Services Trade in APO Member Economies

The global economy’s shift toward services can be viewed from two aspects. First, from the production side, services in most of the advanced economies take up more than two-thirds of national outputs. Furthermore, the shares of services in most of the developing and less-developed economies are increasing steadily. Among these economies, it is possible to identify two broadly different paths: one that hinges more on industrialization and the other, which, while sometimes skipping the industrialization path, moves toward services. As seen in Table 2, industrial economies show relatively higher labor productivity (LP) in industrial sectors including manufacturing than in services whereas most of service-based economies show the opposite pattern. These two development paths have significantly different implications for the future shape of industrial landscape in the global economy.

Despite these differences on the production side, the increasing role of services in the world trade is manifested clearly in the data: both the share and the volume of services have shown an increasing trend over the recent decades. Concerning the increasing role of services in world trade, WTO Secretariat [12] summarizes two broad trends and four roles of services in global trade. The remaining part of this section will review the key features of the trend comparing APO member economies in juxtaposition with the trend worldwide (see Table A1, Appendix for further information on employment and value added in services):

**(1) Services are more tradeable than in the past:** Table 2 shows several indicators regarding services trade. Trade in services (TiS) as percentage of GDP has increased steadily over the years. TiS of the world total increased from 7.7% in 1990 to 9.2% in 2000 and 13.6% in 2019. APO economies’ average showed a much higher rate of 23.7% in 2019, with varying rates across members. Singapore showed the highest magnitude of growth, at 112% in 2019, while

Bangladesh had the lowest growth rate of 4.5% in 2019. Singapore's TiS increased very rapidly between 2000 and 2019, whereas TiS for Bangladesh remained almost the same during the period. Comparing between 2000 and 2019, TiS for Indonesia, Malaysia, Nepal, Sri Lanka, and Vietnam decreased. The remaining economies have shown an increasing percentage of TiS in their GDPs.

Focusing on the magnitude of commercial services, APO economies have grown faster than the world, at an average annual growth rate of 9.4%, in comparison with the global average of 6.9%. In terms of size of commercial services exports, among APO members, Singapore and India were at the top position, followed by Japan, the Republic of Korea (ROK), and Hong Kong. However, the rapid growth in the trades of commercial services notwithstanding, the size of commercial services exports in many APO member economies is quite small. As shown in the data on income-level groupings of world regions, high-income countries take the lion's share of the world's commercial services exports. This fact indicates that exporting activities of commercial services are closely related with the demand from high-income countries.

**(2) The composition of services trade is changing:** Commercial services are composed of four subsectors, namely, financial services including insurance; communications services including computer-and-other-related services; transport services; and travel services. For the world total, communications services took roughly half of the commercial services exports in 2019, recording an increase from 43.5% in 2000 to 47.6% in 2019. The second largest subsector in world's commercial services exports was travel services at 25% in 2019, followed by transport services at 18.8% in 2019. Financial services occupied the lowest share in world's commercial services exports at 8.6% in 2019. For APO economies, travel services occupied the highest percentage in commercial services exports, at 40.5% in 2019; followed by communications services at 35.1%; transport services at 19.8%; and financial services at 4.6%, all in the same year.

Individually, however, APO economies show differences in their composition of commercial services exports. In 2019, communications services in many APO economies took the largest share of commercial services: India 72.4%; the Philippine 68.5%; Pakistan 65.9%; Japan 56.6%; the ROK 49.7%; and Singapore 43.9%. In contrast, a good number of member economies seemed to provide more travel services than others: Cambodia 81.5%; Fiji 63.8%; Indonesia 54.7%; Lao PDR 79.3%; Malaysia 48.4%; Mongolia 41.8%; Nepal 46.8%; Sri Lanka 48.4%; Thailand 74%; and Türkiye 48.2%. Hong Kong and Singapore are two member economies that have sizable shares of financial services in the exports of commercial services: it was 22.6% for Hong Kong and 17.3% for Singapore in 2019. The share of transport services in commercial services exports decreased between 2000 and 2019: 3.2%p globally and 10%p for APO average.

**(3) Services trade and productivity growth are strongly correlated:** Figure 1 presents the relationship between services trade and productivity growth over the long term. Panel A shows the relationship between trade in services (taken from BOP account at the current USD value) and value added per worker at constant 2015 USD value, both measured in terms of average annual growth rates for the period between 2000 and 2019. Panel B shows the labor productivity of services in relative terms with the industry, where LP is measured as value added per worker in terms of constant USD. The bars in Panel B represent the relative LP in 2000 and 2019, with some exceptions such as Hong Kong, Thailand, Singapore, and the ROK where data are available only for the year 2015.

Panel A shows a long-term relationship between services trade and the growth of LP for the world economies including APO member economies. The regression line in Panel A implies that a 10% increase in services trade is correlated with a 2.9% increase in value added per worker in services. Panel B shows the services' LP in comparison with the industry as a whole. As of 2019, the LP of services was higher than that of the industry in six APO member economies of Nepal, Pakistan, Hong Kong, India, Sri Lanka, and IR Iran. Furthermore, the relative LP in these economies also increased between 2000 and 2019, except for Hong Kong where the data is only for 2015. LP of services is lower than that of the industry in the remaining APO member economies. Among the latter group, four economies including Turkiye, Bangladesh, Japan, and Fiji show noticeable decreases in relative LP from 2000 to 2019.

**(4) PR China versus India:** Figure 1 includes PR China for comparison with APO members. Panel A shows that, in terms of growth in services trade and LP, PR China outperforms most of APO members, and Panel B shows that the relative LP of services decreased from 102% in 2000 to 79% in 2019. PR China's industrialization over the period between 2000 and 2019 has raised industry's LP far faster than the LP in the services sector. However, in parallel with the industrialization path, services have shown a steady increase in trade and productivity. This trend depicts a symbiotic relationship between industrialization and servitization.

Figure 2 compares growth paths in PR China and India starting from 1960 until 2019. (The data are from Penn World Table 10.0.) Two indicators, for which data are from Penn World Table, are used, namely, the TFP level based on the year 1960; and the capital-output ratio that can be interpreted as an indicator of capital deepening in economic growth. It is well known that manufacturing has led economic growth in PR China while services have led the growth in India. The growth trajectories in the figure do confirm this well-known fact. PR China had staggered both in capital accumulation and productivity growth during the 1960s and 1970s. Afterwards, PR China had shown continued increases in capital-output ratio and TFP level until the mid-2010s. In the recent years, PR China has continued to increase capital-output ratio but remained on a plateau in terms of TFP level. India's growth path is very different from PR China's. After a long period of stagnancy for more than three decades, India's capital-output ratio started to increase rapidly until the years around 2006. This rapid increase in capital-output ratio was particularly noticeable during the period from 1990 until 2006<sup>3</sup> [13, 14].

Furthermore, it is also worth noting that until the mid-2000s, capital deepening had not been accompanied with TFP growth. India's growth path, however, shows a dramatic turn around the mid-2000s, when the TFP level started to increase, with almost constant, and sometimes decreased, capital-output ratio. India's growth path since the mid-2000s shows a typical balanced growth path.

<sup>3</sup>"The sustained growth since the mid-1990s would clearly not have been possible without the liberalizing reforms of 1991. At the same time, it should be acknowledged that some aspects of the earlier economic regime played a positive role in the pattern of development later. Examples include the creation of a diverse set of skills through import substitution, an emphasis on tertiary education, creating a pool of university graduates for sophisticated service-sector jobs, and a government induced expansion of the banking network that helped in mobilizing savings." "Another remarkable feature of the Indian growth experience is the dominance of the service sector" [13].

TABLE 2

## TRADE IN SERVICES.

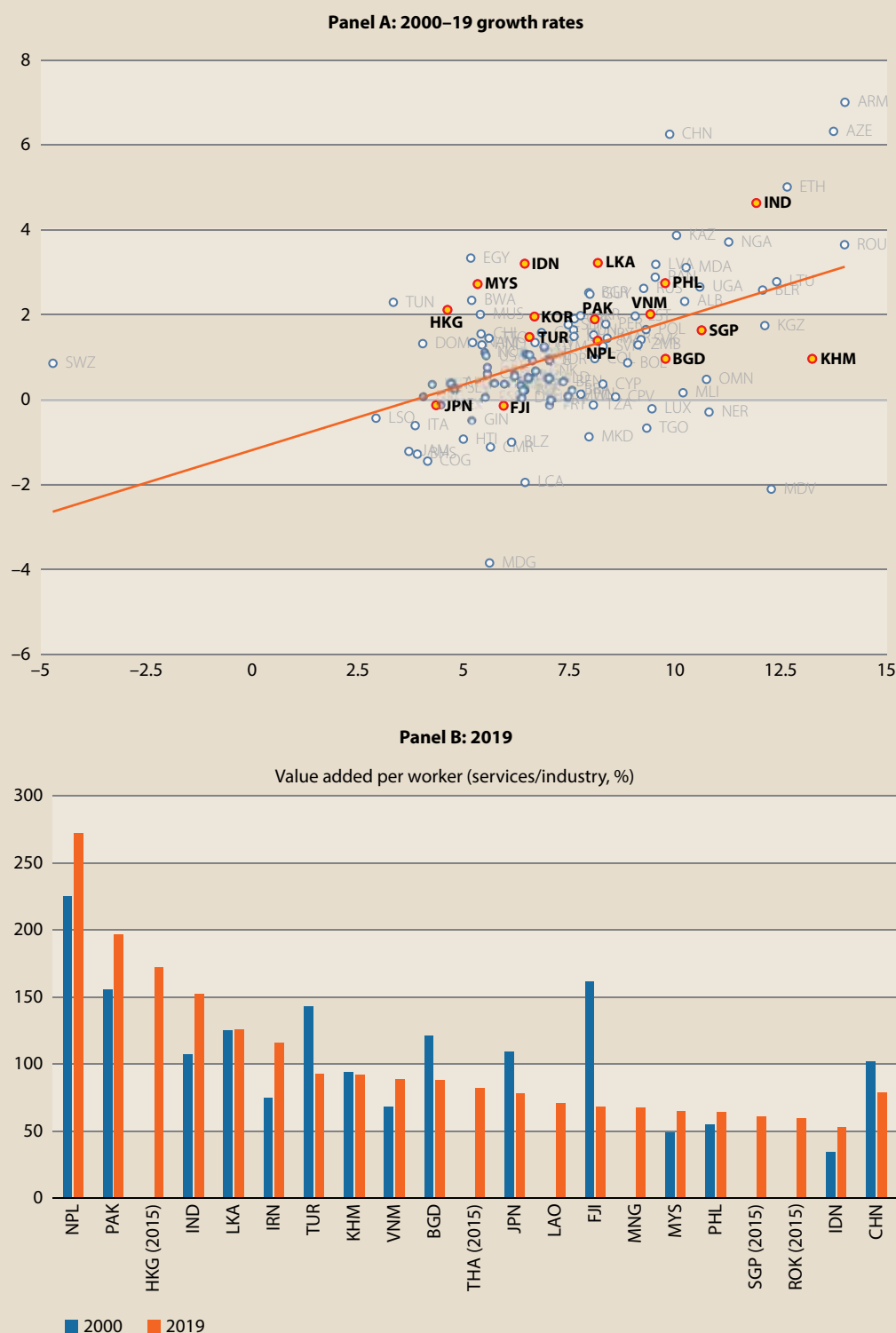
| Economy    | Trade in services (% of GDP) |      |      | Commercial service exports |       | Growth rate<br>Annual % | Financial services |      | Communications services |      | Transport services |      | Travel services |      |
|------------|------------------------------|------|------|----------------------------|-------|-------------------------|--------------------|------|-------------------------|------|--------------------|------|-----------------|------|
|            | 1990                         | 2000 | 2019 | 2000                       | 2019  |                         | 2000               | 2019 | 2000                    | 2019 | 2000               | 2019 | 2000            | 2019 |
| Bangladesh | 3.5                          | 4.6  | 4.5  | 0.3                        | 3.2   | 12.7                    | 5.8                | 4.6  | 44.2                    | 63.6 | 32.2               | 19.6 | 17.8            | 12.2 |
| Cambodia   |                              | 20.7 | 34.6 | 0.4                        | 5.9   | 13.8                    | 0.0                | 0.6  | 4.2                     | 4.5  | 23.9               | 13.4 | 71.9            | 81.5 |
| Fiji       | 50.4                         | 46.3 | 43.7 | 0.4                        | 1.5   | 6.8                     | 0.3                | 0.3  | 22.3                    | 3.8  | 31.4               | 32.0 | 46.0            | 63.8 |
| Hong Kong  |                              | 44.3 | 50.4 | 31.5                       | 101.9 | 6.2                     | 15.9               | 22.6 | 24.9                    | 18.1 | 40.5               | 30.9 | 18.7            | 28.4 |
| India      | 3.3                          | 7.7  | 12.2 | 16.0                       | 214.1 | 13.6                    | 3.3                | 3.4  | 60.9                    | 72.4 | 14.2               | 9.9  | 21.6            | 14.3 |
| Indonesia  | 8.0                          | 12.6 | 6.3  | 5.1                        | 30.9  | 9.5                     | 0.0                | 2.0  | 1.6                     | 30.5 | 0.1                | 12.8 | 98.3            | 54.7 |
| IR Iran    | 3.5                          | 3.4  | -    | 1.4                        | -     | -                       | 10.7               | -    | 2.9                     | -    | 49.4               | -    | 36.9            | -    |
| Japan      | -                            | 3.8  | 8.4  | 68.5                       | 204.9 | 5.8                     | 4.4                | 8.1  | 53.3                    | 56.6 | 37.3               | 12.8 | 4.9             | 22.5 |
| ROK        | 7.4                          | 11.4 | 14.2 | 31.8                       | 103.0 | 6.2                     | 1.1                | 3.7  | 34.2                    | 49.7 | 43.2               | 26.3 | 21.5            | 20.3 |
| Lao PDR    | 5.8                          | 12.6 | 12.9 | 0.1                        | 1.2   | 11.5                    | -                  | 2.4  | 0.0                     | 4.1  | 14.7               | 14.2 | 85.3            | 79.3 |
| Malaysia   | 21.2                         | 32.8 | 23.2 | 13.9                       | 41.0  | 5.7                     | 2.3                | 2.4  | 41.6                    | 36.4 | 20.1               | 12.8 | 36.0            | 48.4 |
| Mongolia   | 7.1                          | 21.1 | 31.4 | 0.1                        | 1.2   | 14.8                    | -                  | 0.4  | 10.8                    | 26.1 | 40.6               | 31.7 | 48.6            | 41.8 |
| Nepal      | 10.2                         | 12.8 | 9.8  | 0.4                        | 1.5   | 6.8                     | -                  | 1.0  | 46.5                    | 45.5 | 15.0               | 6.6  | 38.5            | 46.8 |
| Pakistan   | 8.8                          | 4.2  | 5.0  | 1.2                        | 4.7   | 6.9                     | 1.2                | 4.4  | 24.8                    | 65.9 | 67.5               | 19.1 | 6.5             | 10.6 |

(Continued on next page)

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| Economy     | Trade in services (% of GDP) |      |       | Commercial service exports |         | Growth rate<br>Annual % | Financial services |      | Communications services |      | Transport services |      | Travel services |      |
|-------------|------------------------------|------|-------|----------------------------|---------|-------------------------|--------------------|------|-------------------------|------|--------------------|------|-----------------|------|
|             | 1990                         | 2000 | 2019  | 2000                       | 2019    |                         | 2000               | 2019 | 2000                    | 2019 | 2000               | 2019 | 2000            | 2019 |
| Philippines | 9.9                          | 13.0 | 18.4  | 5.6                        | 41.2    | 10.5                    | 1.6                | 0.8  | 51.7                    | 68.5 | 8.3                | 7.0  | 38.4            | 23.7 |
| Singapore   | 59.4                         | 58.2 | 112.2 | 25.9                       | 215.2   | 11.1                    | 9.2                | 17.3 | 25.3                    | 43.9 | 45.7               | 29.4 | 19.9            | 9.4  |
| Sri Lanka   | 13.4                         | 15.7 | 14.4  | 0.9                        | 7.5     | 11.0                    | 4.4                | 4.7  | 24.8                    | 15.5 | 43.7               | 31.4 | 27.1            | 48.4 |
| Thailand    | 14.9                         | 23.2 | 25.4  | 13.8                       | 80.8    | 9.3                     | 0.6                | 1.1  | 21.5                    | 15.9 | 23.6               | 8.9  | 54.3            | 74.0 |
| Turkiye     | 7.4                          | 10.1 | 12.0  | 19.2                       | 61.9    | 6.2                     | 2.1                | 2.8  | 42.7                    | 11.2 | 15.4               | 37.8 | 39.8            | 48.2 |
| Vietnam     | 19.1                         | 10.8 | 10.8  | 2.7                        | 16.6    | 9.6                     | –                  | –    | –                       | –    | –                  | –    | –               | –    |
| APO average | 14.6                         | 18.9 | 23.7  | 12.0                       | 59.9    | 9.4                     | 3.9                | 4.6  | 28.3                    | 35.1 | 29.8               | 19.8 | 38.5            | 40.5 |
| PR China    | 2.8                          | 9.5  | 5.3   | 78.4                       | 242.8   | 5.9                     | 0.2                | 3.6  | 74.4                    | 62.6 | 4.7                | 19.0 | 20.7            | 14.8 |
| LIC         | 6.9                          | 6.7  | 11.9  | 2.7                        | 19.3    | 10.3                    | –                  | 5.2  | –                       | 24.6 | –                  | 22.0 | –               | 51.4 |
| LMC         | 7.0                          | 10.6 | 11.9  | 74.7                       | 493.4   | 9.9                     | 3.2                | 3.8  | 40.0                    | 47.3 | 19.1               | 17.2 | 39.2            | 31.6 |
| UMC         | 6.4                          | 8.7  | 7.4   | 197.0                      | 723.3   | 6.8                     | 2.5                | 4.1  | 53.5                    | 46.4 | 12.5               | 19.4 | 31.5            | 30.2 |
| HIC         | 7.8                          | 9.2  | 16.5  | 1,418.0                    | 5,014.6 | 6.6                     | 9.1                | 10.9 | 39.6                    | 48.2 | 26.4               | 18.6 | 27.1            | 22.3 |
| World       | 7.7                          | 9.2  | 13.6  | 1,679.3                    | 6,199.9 | 6.9                     | 6.8                | 8.6  | 43.5                    | 47.6 | 22.0               | 18.8 | 29.2            | 25.0 |

**Data Source:** World Development Indicators.**Note:** Annual growth rate represents the average between Commercial Service exports in 2000 and 2019. Unit: Billion USD

**FIGURE 1****SERVICES TRADE AND VALUE ADDED GROWTH RATES FOR THE PERIOD 2000–19.**

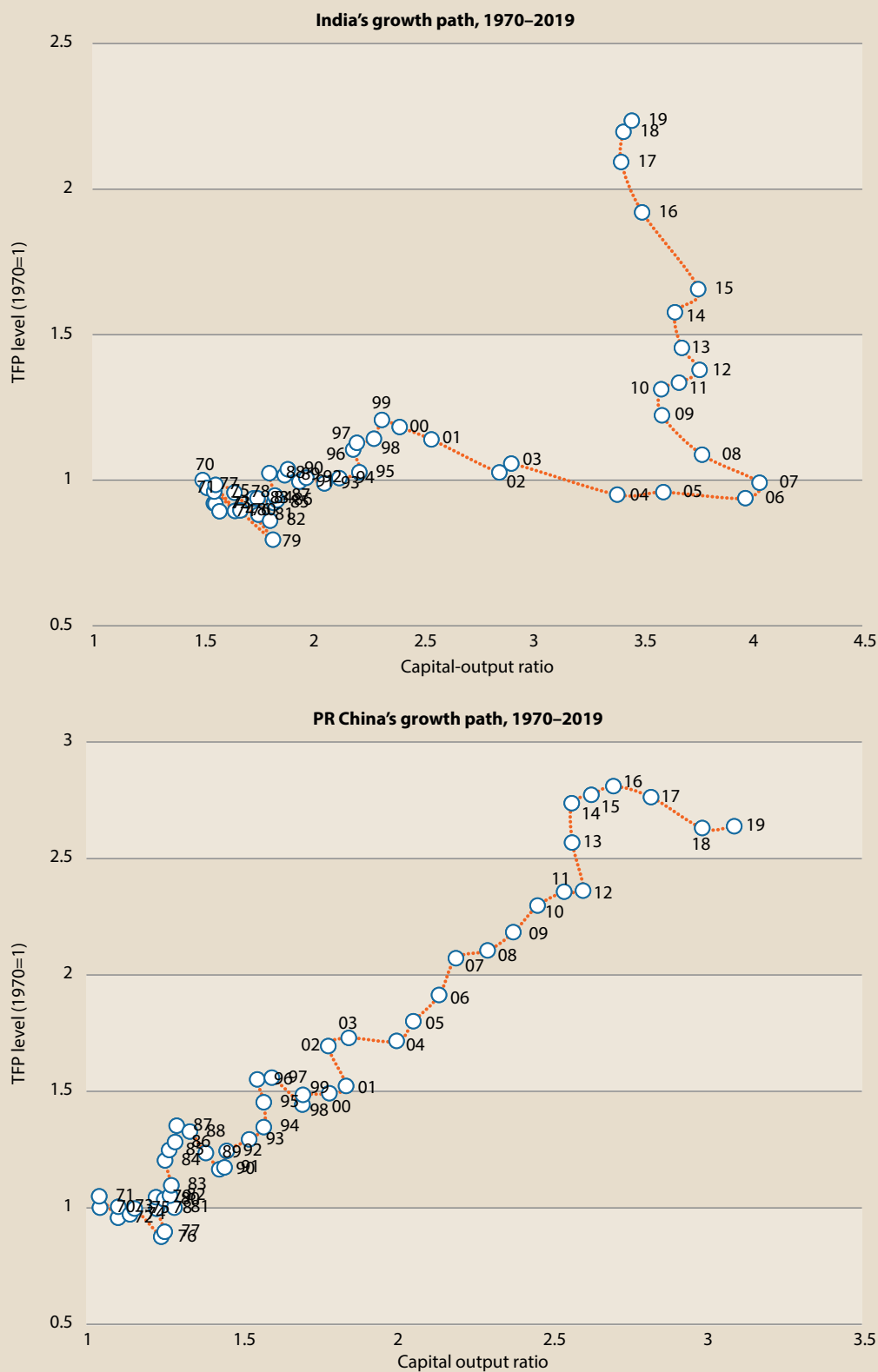
**Notes:** (Panel A) All data are as of 2019, except in the case of Thailand, where the data is for 2015. Value added per worker is in constant 2015 USD value.

(Panel B) x-axis = percentage change between 2000 and 2019; y-axis = annual growth rate of value added per worker (%)

**Source:** World Development Indicators.

FIGURE 2

## GROWTH PATHS OF INDIA AND PR CHINA.



### GVC Participation and RCAs

Business enterprises decide strategically to participate in GVCs, as a means to strengthen their competitive advantages. The decision generally depends on firms' capabilities and their positions in value chains. The relationship between participation in GVC and comparative advantages at the national level becomes more complex and depends on many factors of different dimensions. Factor endowment conditions and technology differences are the two most critical factors for determining a nation's comparative advantages in international trade. Additionally, prior studies on GVCs provide an articulated list of many important factors: the stages of economic development that provide the base for wage differences; industrial structures of which sectoral composition is the most critical in determining GVC participation; and other institutional factors such as regulatory regimes and openness to FDI. The following investigation uses only two quantitative indicators; hence, the usage is limited to showing those diverse facets of the complex relationship between GVC participation and comparative advantage. Nonetheless, identifying a general pattern across countries is the goal of this section.

**TABLE 3**

#### DETERMINANTS OF GVC PARTICIPATION.

| Non-policy factors  | Policy factors  |
|---|---|
| <ul style="list-style-type: none"> <li>• <b>Market size:</b> The larger the size of the domestic market, the lower the backward engagement of a country, and the higher the forward engagement. Countries with larger markets are able to draw on a wider array of domestic intermediates both in terms of purchases and sales.</li> <li>• <b>Level of development:</b> The higher the per-capita income, the higher the aggregate forward and backward engagement. Developed countries tend to source more from abroad and sell a higher share of their gross exports as intermediate products.</li> <li>• <b>Industrial structure:</b> The higher the share of the manufacturing sector in GDP, the higher the backward engagement, and the lower the forward engagement.</li> <li>• <b>Location:</b> GVC activity is organized around the large manufacturing hubs. The more the distance to main manufacturing hubs in Europe, North America, and Asia, the lower the backward engagement, suggesting that there is a premium to being placed close to large 'head-quarter' economies.</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Trade policy:</b> Low import tariffs, both at home and faced in export markets, and engagement in Regional Trading Agreements (RTAs) can all facilitate backward and forward GVC engagement.</li> <li>• <b>Inward FDI openness:</b> This tends to have a significant association with both backward and forward integration; #</li> <li>• <b>Other GVC-related policies:</b> These include trade-related policies such as trade facilitation, protection of intellectual property, logistics performance, infrastructure, and the quality of institutions.</li> </ul> |

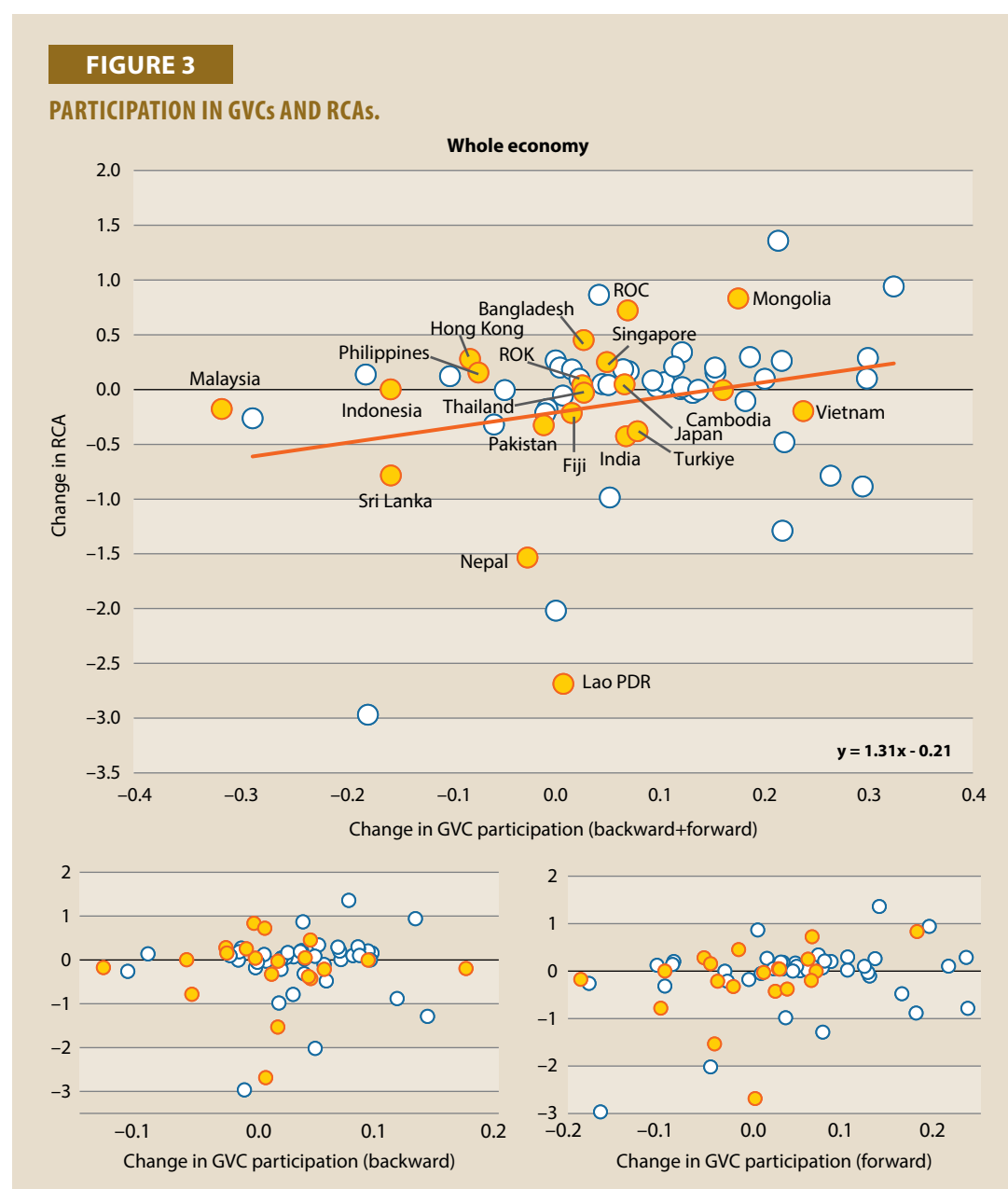
Source: OECD [15].

### Economy-wise Relationship

Figure 3 plots changes in GVC participation and RCAs for the period between 2000 and 2020. Participation rates are used as the sum of backward and forward engagements, and individually. APO member economies are shown with the red-diamond mark and the economy's name. It is hard to find a straight relationship between these two, though a regression line with a positive slope can be derived. Rather, there appear four groups, according to the locations of the four quadrants in the figure. The economies in the first quadrant, including Mongolia, the Republic of China (ROC),

Bangladesh, and Singapore have gone more global, with positive increases in RCAs. A similar but negative relationship can be found for the economies in the third quadrant, such as Nepal, Sri Lanka, and Malaysia, where both participation in GVCs and revealed comparative advantages (RCAs) have decreased. The opposite relationship appears in the second and fourth quadrants, where the relationship between GVC participation and RCA goes in the opposite direction. Despite the sizable increase in GVC participation, some economies including Vietnam and Cambodia do not seem to improve nations' RCAs. Hong Kong and the Philippines seem exceptional in that these two economies have improved their RCAs with decreased participation in GVCs.

The diversity of countries' positions calls for a nuanced approach in interpreting the relationships and a more disaggregated picture than the whole economy. It is possible to conjecture easily that in many countries sector-level pictures will not necessarily conform to the whole economy's picture. It is very natural that RCAs reflect changes in factor conditions that determine the comparative advantages of



industrial sectors. Over a long period of years, national economies will experience changes in sectoral composition according to changes in sectors' comparative advantages. For example, in India, we can find a sector (e.g., telecommunications) that becomes more connected and more competitive; whereas in Thailand, some sectors, despite becoming more globalized, still suffer from gaining international competitiveness (e.g., air transport services).

### Primary and Manufacturing Sectors

Since the focus in this section is mainly on services, primary and manufacturing sectors would be grouped together into four subsectors: agriculture and fishing, mining and quarrying, light manufacturing, and heavy manufacturing. For those primary and manufacturing sectors, increased participation in GVCs does show a positive relationship with RCAs.

- **Agriculture, forestry, and fishing:** In terms of the RCA index in 2020, there were four distinct groups with varying differences in GVC participation. Cambodia, Pakistan, and Lao PDR were very high in RCA indexes, with varying changes in GVC participation: Cambodia and Lao PDR increased their GVC participations whereas for Pakistan it remained unchanged. Then, there were five economies with high RCAs: Vietnam, Thailand, Nepal, Indonesia, and Fiji. Eight other APO economies showed moderate RCAs. The remaining five countries showed RCAs below 1, which means that agriculture is comparatively disadvantageous for them in terms of international division of labor. As will be shown later, Singapore and Hong Kong are geographical trading hubs, whereas the ROK, Japan, and the ROC are more specialized in high-technology manufacturing.
- **Mining and quarrying:** Four countries, namely, Mongolia, Indonesia, Lao PDR, and Malaysia show positive comparative advantages. Only Mongolia's mining sector has shown increases in GVC participation between 2000 and 2020. GVC participation of the other three countries have decreased for the same period.
- **Manufacturing:** By dividing manufacturing into two subsectors, light and heavy, it is possible to obtain a concise picture of international division of labor among economies. Most economies have high RCAs in either light or heavy manufacturing, with a few exceptions. Bangladesh, Cambodia, Indonesia, Pakistan, the Philippines, Sri Lanka, and Vietnam show high RCAs in light manufacturing. Japan, the ROK, and the ROC are the three economies that are specialized in heavy manufacturing. PR China maintains moderate strengths, both in light and heavy manufacturing, and over the years PR China's GVC participations have increased steadily. Malaysia also appears to have comparative advantages both in light and heavy manufacturing, but with decreasing GVC participation. Türkiye and Thailand are two countries that have good RCAs in light manufacturing and have increasing RCAs in heavy manufacturing, coupled with increasing participation in GVCs.

Producing physical products and interconnected through trading relations, primary and manufacturing sectors show a clear picture of international division of labor. Economies tend to specialize in those sectors of comparative advantage based on resource endowments. The specialization patterns, however, tend to change over many years, as shown by the changes between 2000 and 2020 in Figure 3, since endowment conditions also change in relative terms. It seems apparent that participation in GVC is related to the (changing) positions of RCAs, but no uniform pattern seems to exist. This requires more detailed investigation into disaggregated sectors, especially in manufacturing.

FIGURE 4A

## GVCs PARTICIPATION AND RCAs IN PRIMARY AND MANUFACTURING SECTORS.

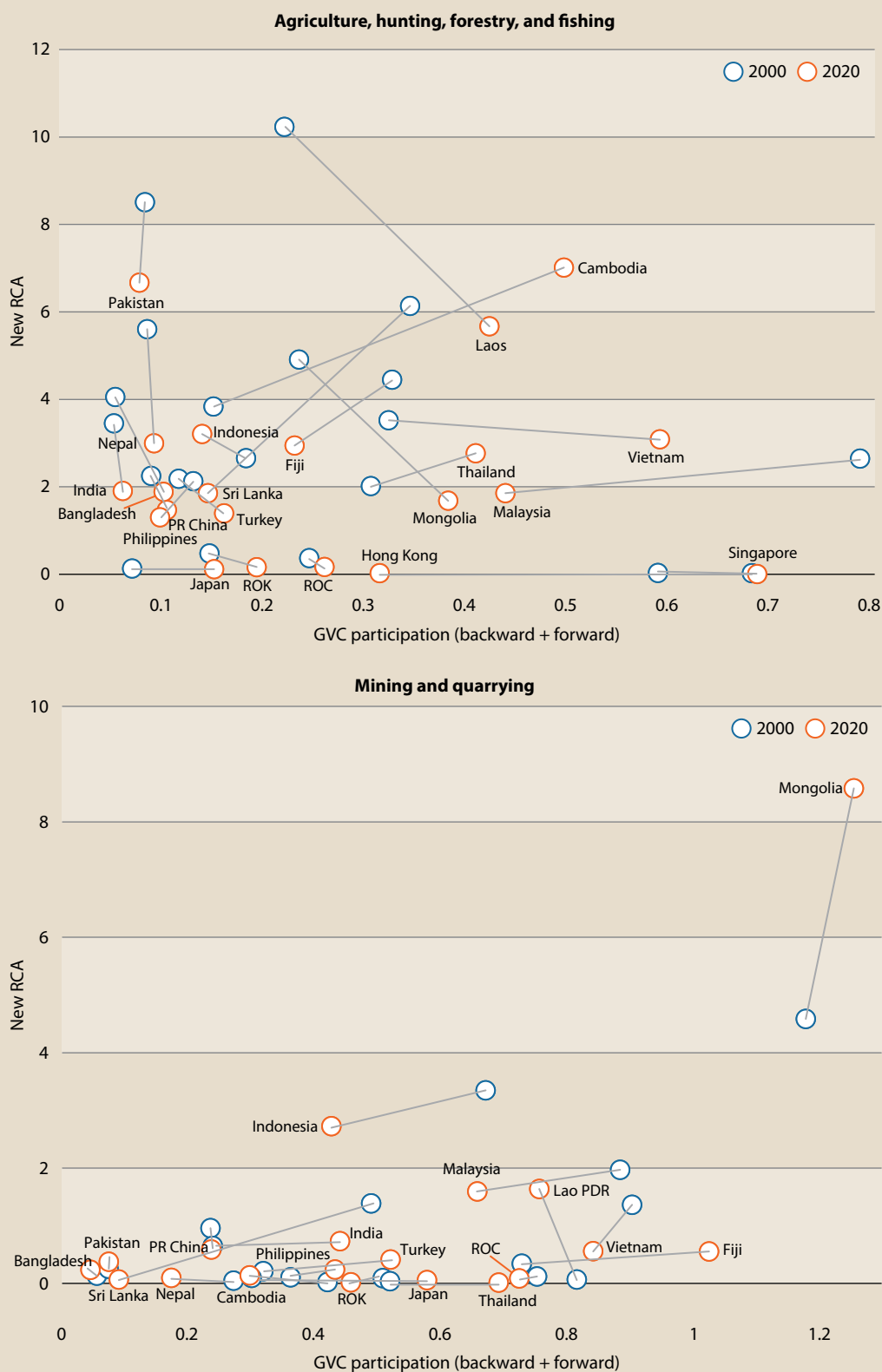
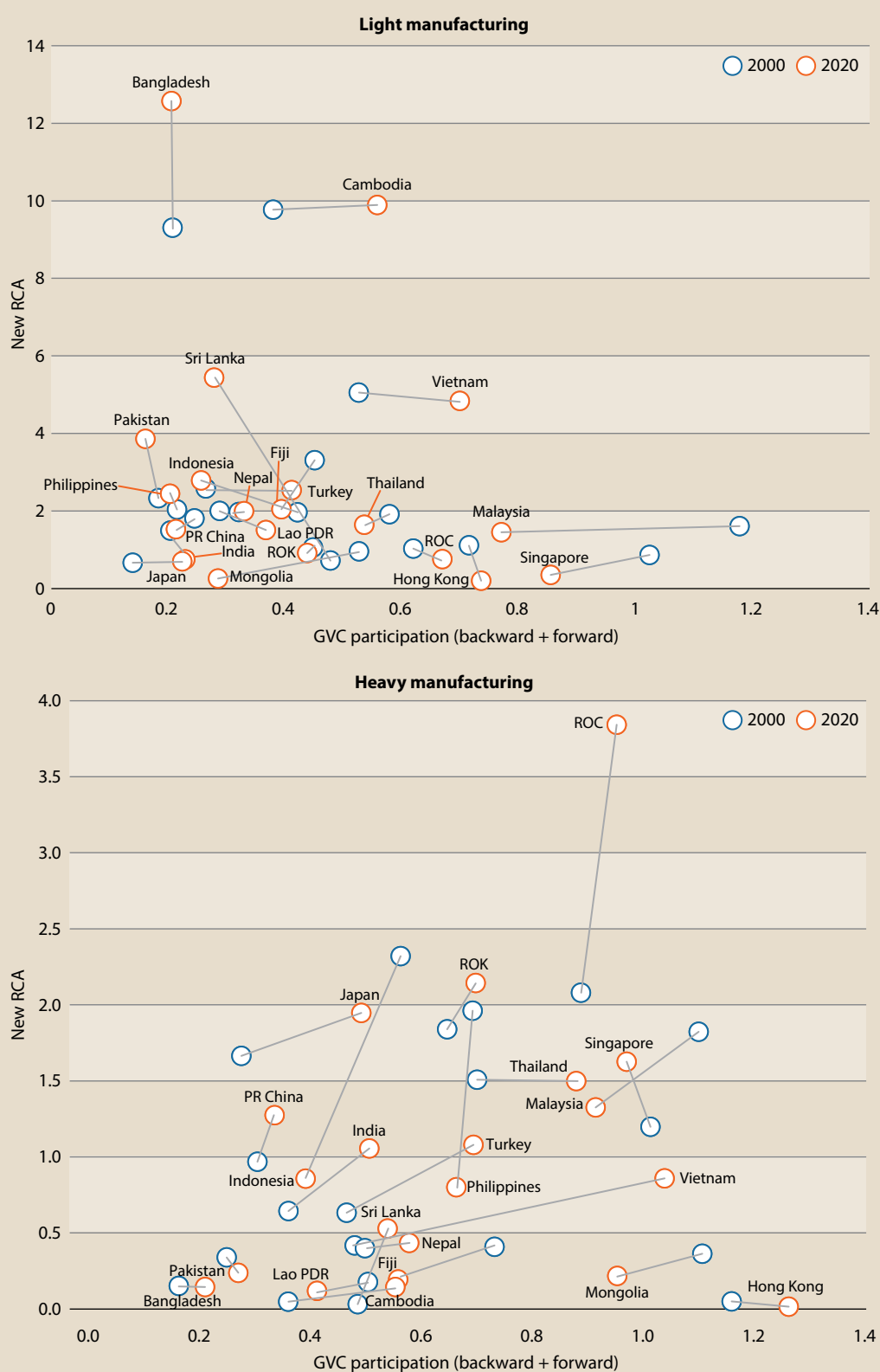


FIGURE 4B

## GVCs PARTICIPATION AND RCAs IN PRIMARY AND MANUFACTURING SECTORS.



## Services

Services are divided into two subsectors: personal and public services, and business services. The former includes five areas: (1) public administration; (2) education; (3) health and social work; (4) other community, social, and personal services; and (5) private households with employed persons. When these five services are grouped together (into personal and public services), only four APO member economies show high RCAs; but all these economies show decreases in GVC participation. In these five subsectors of services, Pakistan and Fiji show high RCAs in health and education services, and Nepal in health services.

In general, personal services in APO economies do not have international competitiveness. However, many APO economies show strong RCAs in business services. Over the years between 2000 and 2020, many APO member economies have shown improved RCAs in business services. Hong Kong stands out among peers, followed by Fiji, Nepal, the Philippines, Singapore, and Cambodia. Malaysia, Sri Lanka, Thailand, and Pakistan have also made significant improvements in RCAs in terms of business services, whereas Lao PDR, Türkiye, and India have made moderate improvements. The remaining APO member economies and PR China have shown deterioration in RCAs in their business services. Among the improved economies, five of them, Fiji, Singapore, Cambodia, Türkiye, and India have shown a positive relationship between participation in GVCs and RCAs. In contrast, however, despite decreases in GVC participation, some economies including Malaysia, Sri Lanka, Hong Kong, Nepal, and Thailand have improved their RCAs. Hence, comparing these two contrasting groups, one might arrive at the conclusion that participation in GVCs does not seem to be related to improvement in RCAs. However, this conjecture seems rather frivolous as most countries strive for strengthening business services with globalization, but the outcome will depend on the channels and mechanisms through which globalization affects the competitiveness of targeted sectors. This point calls for further detailed study, particularly case studies of same sectors across many countries.

- **Telecommunications:** Many APO economies show very high RCAs, mostly with increasing participation in GVCs. Nepal appears outstanding in this regard, while Hong Kong, Bangladesh, and Fiji are also strong in telecommunications services. The nature of “telecommunications services” under the same classification differs greatly across countries. For example, high value-added services are provided by high-caliber software engineers in India, whereas low-value-added call-center services are provided by English-fluent nationals in the Philippines. [16]
- **Financial intermediation:** Hong Kong and Singapore show very high, increasing RCAs in financial services. These two economies show a contrasting trend in GVC participations: Hong Kong has recessed, whereas Singapore has expanded. After these two leaders, there is a group with modest RCAs, which comprises Fiji, Nepal, and Bangladesh. It is noticeable that PR China is improving RCAs steadily with increasing participation in GVCs. It is also noticeable that high-tech manufacturers including Japan, the ROK, and the ROC do not show comparative advantages in financial services.
- **Trade services:** Trade services include three subsectors: wholesale trade, retail trade, and sale of motor vehicles and retail sale of fuel. Singapore leads trade services both in terms of GVC participation and RCAs, with these two indicators moving substantially outwards. Hong Kong and Malaysia are very strong in transport services, but their GVC participations have lowered. Fiji, the Philippines, Pakistan, Lao PDR, and Sri Lanka show moderate RCAs in trade services.

## GVCS PARTICIPATION AND RCAS IN SERVICES.

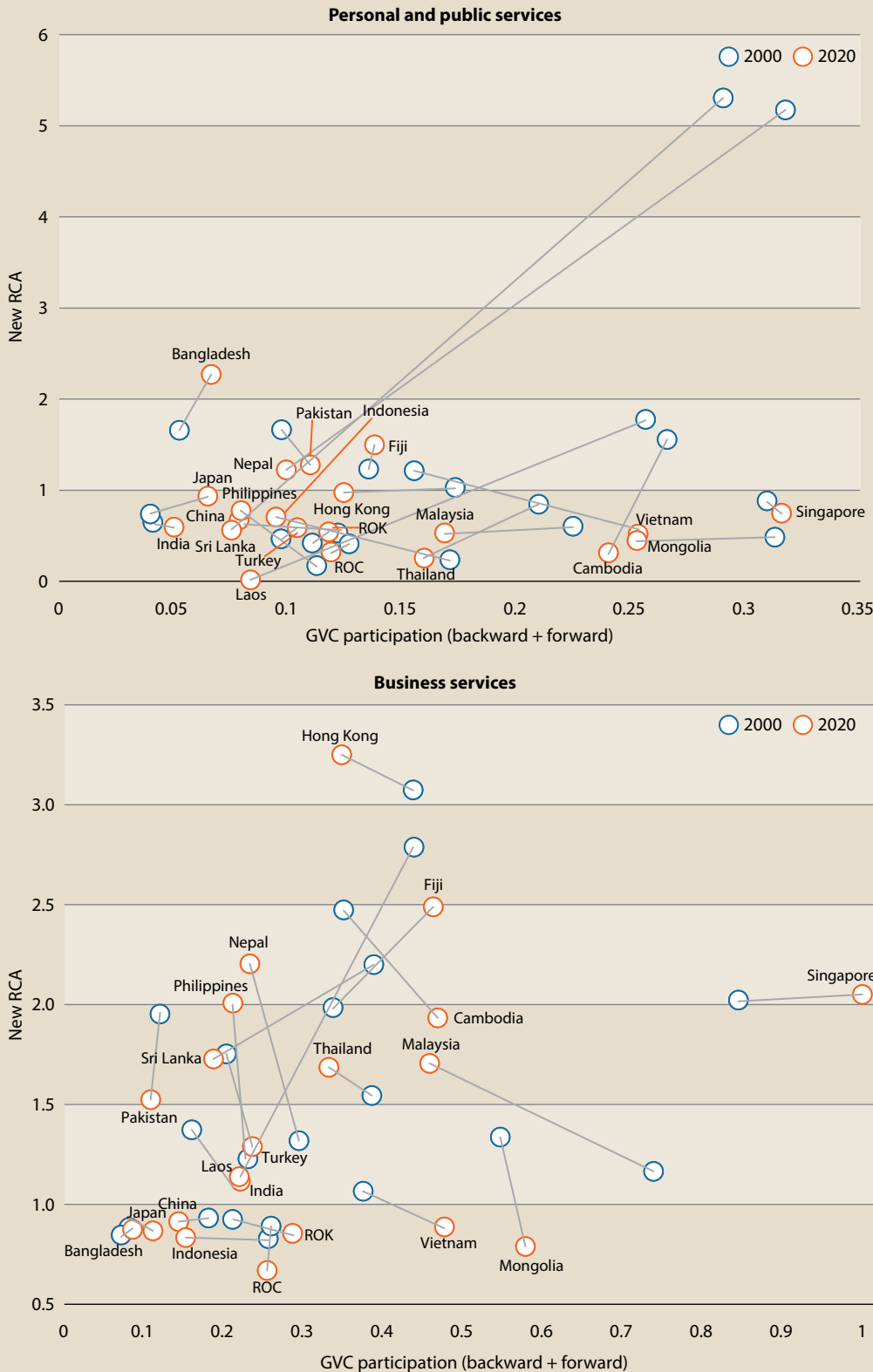


FIGURE 5B

## GVCs PARTICIPATION AND RCAS IN SERVICES.

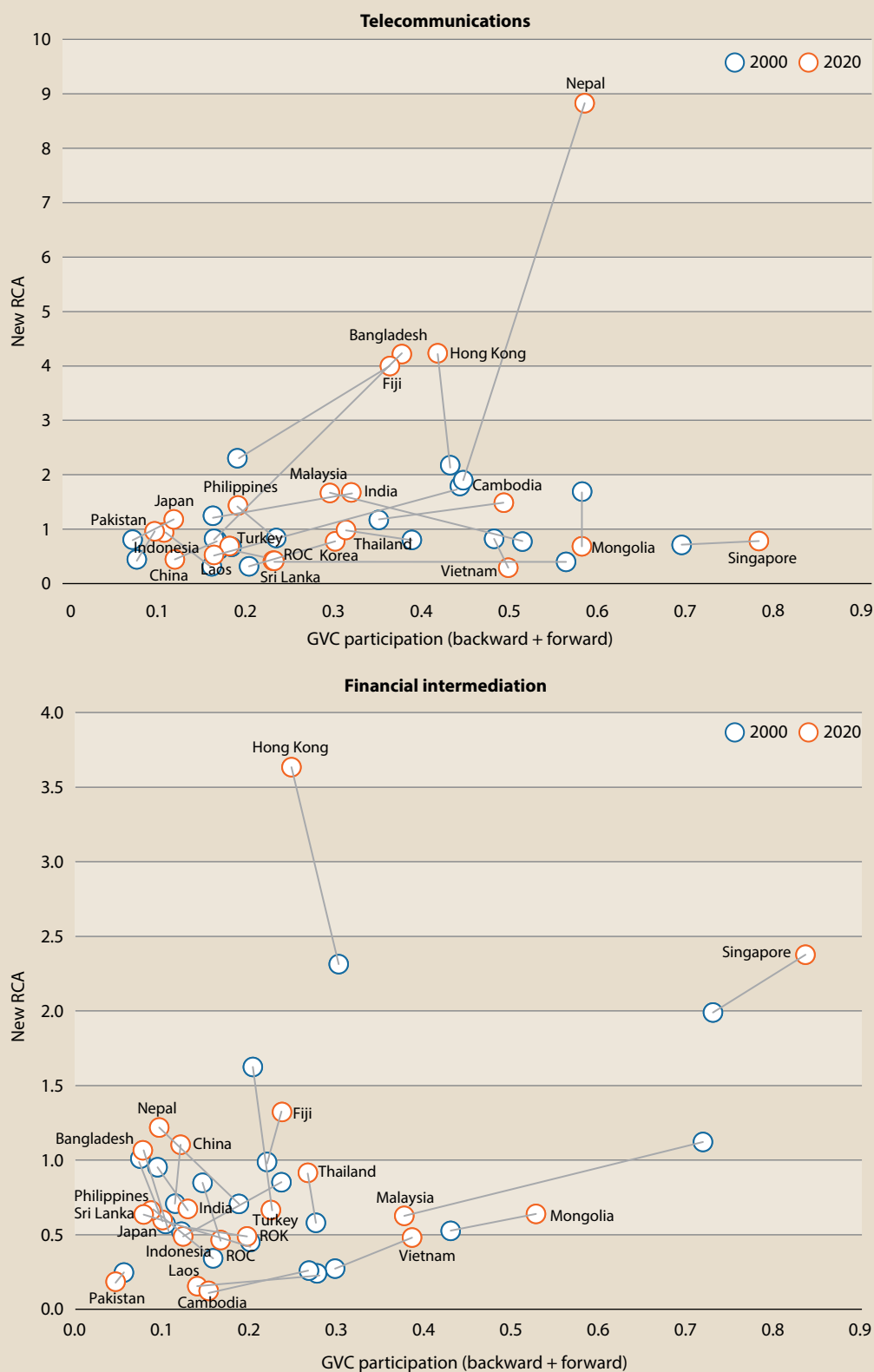
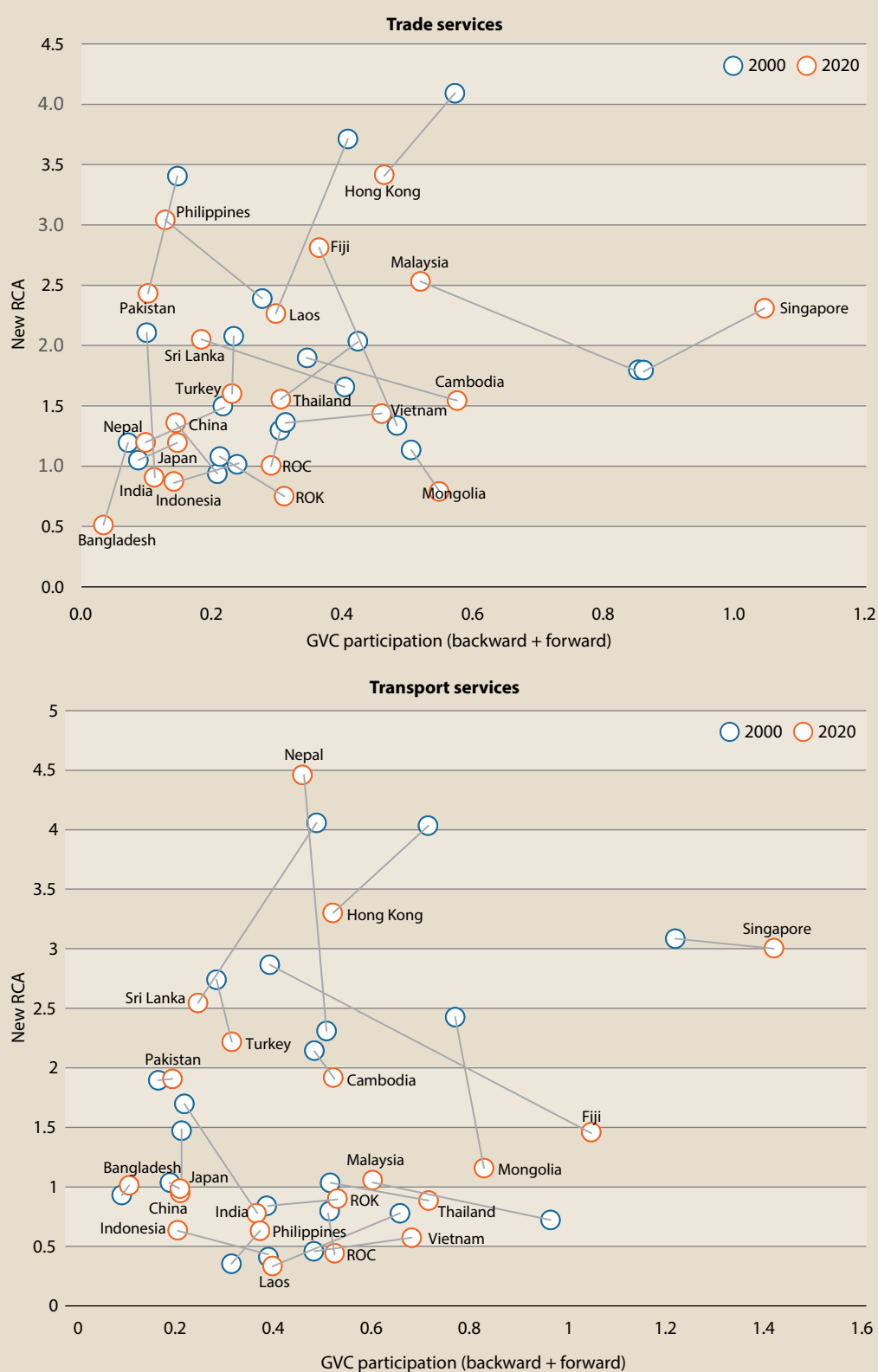


FIGURE 5C

## GVCs PARTICIPATION AND RCAS IN SERVICES.



- **Transport services:** Transport services include inland transport, water transport, air transport, and other supporting transport and travel services. Singapore is outstanding in transport services both in terms of RCAs and GVC participation. As in trade services, transport services in Hong Kong show a similar trend: high RCAs with falling participation in GVCs. Nepal has very high RCAs in transport services, especially inland transport services. Sri Lanka, Türkiye, Cambodia, and Pakistan form another group that has moderate RCAs in transport services.

### Summary

At the outset of this section, the research team mentioned the limitation of using only two indicators, which are not enough for showing diverse facets of the complex relationship between participation in GVC and comparative advantage. Despite this limitation, it is possible to deduce a telescopic picture of economic development of APO member economies.

Table 4 presents a summary of characteristics revealed by the two indicators, GVC participation and RCA, across APO member economies and PR China. Individual countries are mapped as per classification into 35 sectors. The plots for 20 APO member economies and PR China are added in the appendix.

Compared with other regions, APO economies are doing very well. As recorded earlier, the average growth rate of commercial services exports of APO member economies between 2000 and 2019, at 9.4%, is much higher than the world average of 6.9%. It seems that strong industrial bases in APO economies, tightly linked with the PR China's economy, offer good conditions for advancing good quality, high-value-added services. Strong trade relations and networks among members will surely provide the potential for further growth within the region. Now the question is how to realize the potential as a way to sustain long-term economic growth.

One of the key factors in answering the above question is the role that services can play in sustaining economic growth. Business services in many APO member economies have high RCAs and increased GVC participation. In Table 4, business services show as many strongholds as in light manufacturing. This implies that business services are robustly contributing to economic growth in APO economies. Yet, when business services are broken down to subsectors, there were more differences than similarities in each member's position in international trade and GVCs.

There are many questions and issues that need further detailed investigation, by applying other data and specific case studies. For example, what causes Malaysia to lower its GVC participations at the national economy level? What impacts RCAs? Will it be sustainable, or does it need reversal? If business services are compared with personal/public services, those economies with high competitiveness in personal/public services raise questions demanding further study. For example, in what sense is Bangladesh competitive in personal/public services? Does it imply that Bangladesh is weak in other service sectors and other advanced sectors in manufacturing, thus inevitably staying at the level of low-value-added services? If this is indeed the reality, what strategy can Bangladesh apply to climb up the ladder of higher-value-added sectors?

A similar question can be raised with regard to those economies that are showing weak competitiveness in business services, such as Japan, the ROK, and the ROC. As described, these three economies are very strongly positioned with regard to high-technology manufacturing. They seem to be weak in business services, but they are relatively stronger in relation with other economic sectors, particularly with high-technology manufacturing. As implied by the principle of comparative advantage that no

country would be strong in all sectors of economy in an open -economy context, business services in these countries are relatively weak. The challenge facing these economies is to strengthen business services adequately to complement high-tech manufacturing. This implies that the policy options and development strategies of these countries must be very different from those of the economies where business services are the main engine of growth, such as Hong Kong and Singapore.

TABLE 4

## RCA AND GVC PARTICIPATION OF APO MEMBERS AND PR CHINA.

|             | Primary sectors         |                      | Manufacturing |       | Services                     |                   |          |                          |                |                    | Leading subsectors                                      |
|-------------|-------------------------|----------------------|---------------|-------|------------------------------|-------------------|----------|--------------------------|----------------|--------------------|---|
|             | Agriculture and fishing | Mining and quarrying | Light         | Heavy | Personal and public services | Business services | Telecomm | Financial intermediation | Trade services | Transport services |   |
| Bangladesh  | ○ →                     |                      | ⊙ →           |       | ⊙ →                          |                   | ⊙ ↗      | ○ ↘                      |                |                    | Telecommunications                                      |
| Cambodia    | ⊙ ↗                     |                      | ⊙ ↗           |       |                              | ⊙ ↗               | ○ ↗      |                          | ○ ↗            | ○ ↗                | Hotel and Restaurant                                    |
| Fiji        | ○ ↘                     |                      | ○ →           |       | ○ →                          | ⊙ ↗               | ⊙ ↗      | ○ →                      | ⊙ ↘            | ○ ↗                | Air transport   |
| Hong Kong   |                         |                      |               |       |                              | ⊙ ↘               | ⊙ →      | ⊙ ↘                      | ⊙ ↘            | ⊙ ↘                | Air transport   |
| India       | ○ →                     |                      |               |       |                              | ○ ↗               | ⊙ ↗      |                          |                |                    | Renting and other business services, telecommunications |
| Indonesia   | ⊙ ↘                     | ⊙ ↘                  | ⊙ ↘           |       |                              |                   |          |                          |                |                    | Hotel and restaurant                                    |
| Japan       |                         |                      |               | ⊙ ↗   |                              |                   |          |                          |                |                    | Personal household services                             |
| ROK         |                         |                      |               | ⊙ ↗   |                              |                   |          |                          |                |                    | Air transport   |
| Lao PDR     | ⊙ ↗                     | ○ ↘                  | ○ ↗           |       |                              | ○ ↘               |          |                          | ⊙ ↘            |                    | Retail  |
| Malaysia    | ○ ↘                     | ○ ↘                  | ○ ↘           | ○ ↘   |                              | ⊙ ↘               | ○ ↘      |                          | ⊙ ↘            |                    | Motor vehicle-related SRV, retail                       |
| Mongolia    | ○ ↗                     | ⊙ ↗                  |               |       |                              |                   |          |                          |                |                    | Air transport   |
| Nepal       | ○ →                     |                      | ○ →           |       | ○ ↘                          | ⊙ ↘               | ⊙ ↗      | ○ ↘                      |                | ⊙ ↘                | Telecommunications                                      |
| Pakistan    | ⊙ →                     |                      | ⊙ →           |       | ○ →                          | ○ →               |          |                          | ⊙ ↘            | ○ ↗                | Health, education, retail                               |
| Philippines | ○ ↘                     |                      | ⊙ ↘           |       |                              | ⊙ ↘               | ○ ↘      |                          | ⊙ ↘            |                    | Retail, hotel and restaurant                            |
| Singapore   |                         |                      |               | ○ ↘   |                              | ⊙ ↗               |          | ⊙ ↗                      | ⊙ ↗            | ⊙ ↗                | Water transport   |
| Sri Lanka   | ○ ↘                     |                      | ⊙ ↘           |       |                              | ⊙ ↘               |          |                          | ⊙ ↘            | ⊙ ↘                | Hotel and restaurant, retail, inland transportation     |
| ROC         |                         |                      |               | ⊙ ↗   |                              |                   |          |                          |                |                    | Hotel and restaurant                                    |
| Thailand    | ⊙ ↗                     |                      | ○ ↘           | ⊙ ↗   |                              | ⊙ ↘               | ○ ↘      |                          | ○ ↘            |                    | Hotel and restaurant, retail                            |
| Turkiye     | ○ →                     |                      | ⊙ ↗           | ○ ↗   |                              | ○ ↗               |          |                          | ○ →            | ⊙ →                | Inland/water transportation, retail                     |
| Vietnam     | ⊙ ↗                     |                      | ⊙ ↗           |       |                              |                   |          |                          | ○ ↗            |                    | Personal household services                             |
| PR China    | ○ →                     |                      | ○ →           | ○ →   |                              |                   |          | ○ →                      | ○ ↘            |                    | Retail  |

**Symbols:** RCA in 2020 is moderate ○, high ⊙, and very high ⊙; GVC participation between 2000 and 2020 is increasing ↗, constant →, and decreasing ↘.

**Source:** Authors' calculations based on ADB MRIO Database.

## Implications for Productivity-led Economic Growth

The previous section highlighted the relationship between participation in GVCs and RCAs across sectors in APO member economies. The exercise is one way of using newly available indicators for investigating important aspects of economic growth. However, it only illustrates one of the many possible channels that services contribute to sustain economic growth over multiple years. With the hope of undertaking more detailed, intensive works later, this section will sketch key aspects of productivity-led economic growth in relation with global services value chains.

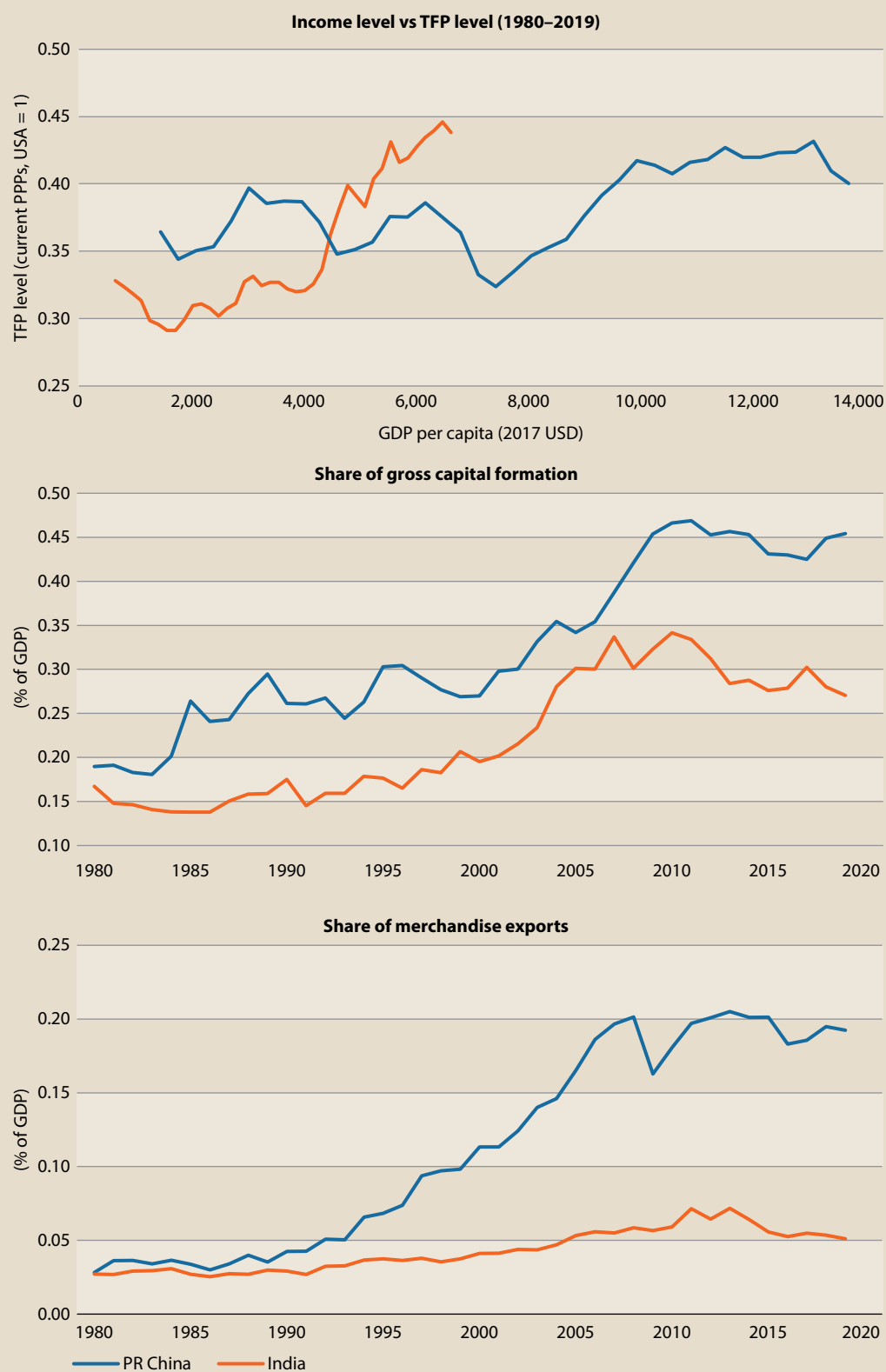
### Productivity-led Economic Growth<sup>4</sup>

The macroeconomic approach to long-term economic growth generally identifies three sources of economic growth: growth in the size and quality of labor force; growth in the amount of physical capital available for workers; and growth in productivity. Productivity is a measure of how well an economy produces goods and services with a given number of workers and amount of physical capital. Termed “residual” in the framework of macroeconomic growth accounting, productivity growth comes from many diverse sources. Aiming for technological advances, research and development activities are considered the most direct contributor to productivity growth. The education system contributes to enhancing the quality of workers, just as improved health conditions do. From the perspective of international trade, additional sources of productivity growth could generally include such factors as inter-industry specialization and intra-industry reallocation of resources.

Based on the macroeconomic framework outlined above, Figure 6 compares some features of growth paths of India and PR China over the long term. India is regarded as a prime example of services-led development whereas PR China’s rapid economic growth has been propelled by manufacturing-based industrialization. India and PR China stand in contrast in many aspects of their growth performances, and a noticeable feature of the big contrast is India’s rapid growth of TFP, which has been much faster than that of PR China. Using data from the Penn World Table and World Development Indicators, Figure 6 shows key aspects of the two countries’ economic growths. The first panel plots GDP per capita and TFP levels, which are normalized at the level of the USA. For the period between 1980 and 2019, India’s per capita GDP grew 5.1 times (from USD1,272 to USD6,547), while PR China’s GDP grew 8.3 times (from USD1,680 to USD13,988). However, India’s TFP level moved from 32.8% of the USA’s TFP level in 1980 to 43.8% in 2019, while that of PR China’s grew from 36.4% in 1980 to 40.0% in 2019.

Compared with PR China, India’s better performance in TFP growth cannot be explained in terms of capital formation (a proxy for capital accumulation) shown in the second panel and merchandise exports (an indicator of export orientation) shown in the third panel. The fourth panel shows the employment share of services (solid line) and industry (dotted line). As of 2019, the shares of employment in services were 47.3% in PR China and 32.3% in India. For the same year, shares of employment in industry were 27.4% in PR China and 25.1% in India. The fifth panel plots relative LP, measured as the percentage ratio of value added per worker in services over that in industry. PR China’s relative LP has declined rapidly, reaching 78.5% in 2019. India’s relative LP has increased steadily, reaching 151.9% in 2019. The last panel compares services trade, as percentage of GDP, in two countries. India has shown higher percentage of around 12% since the mid-2000s. PR China shows a declining trend in the share of services trade since the early 2000s.

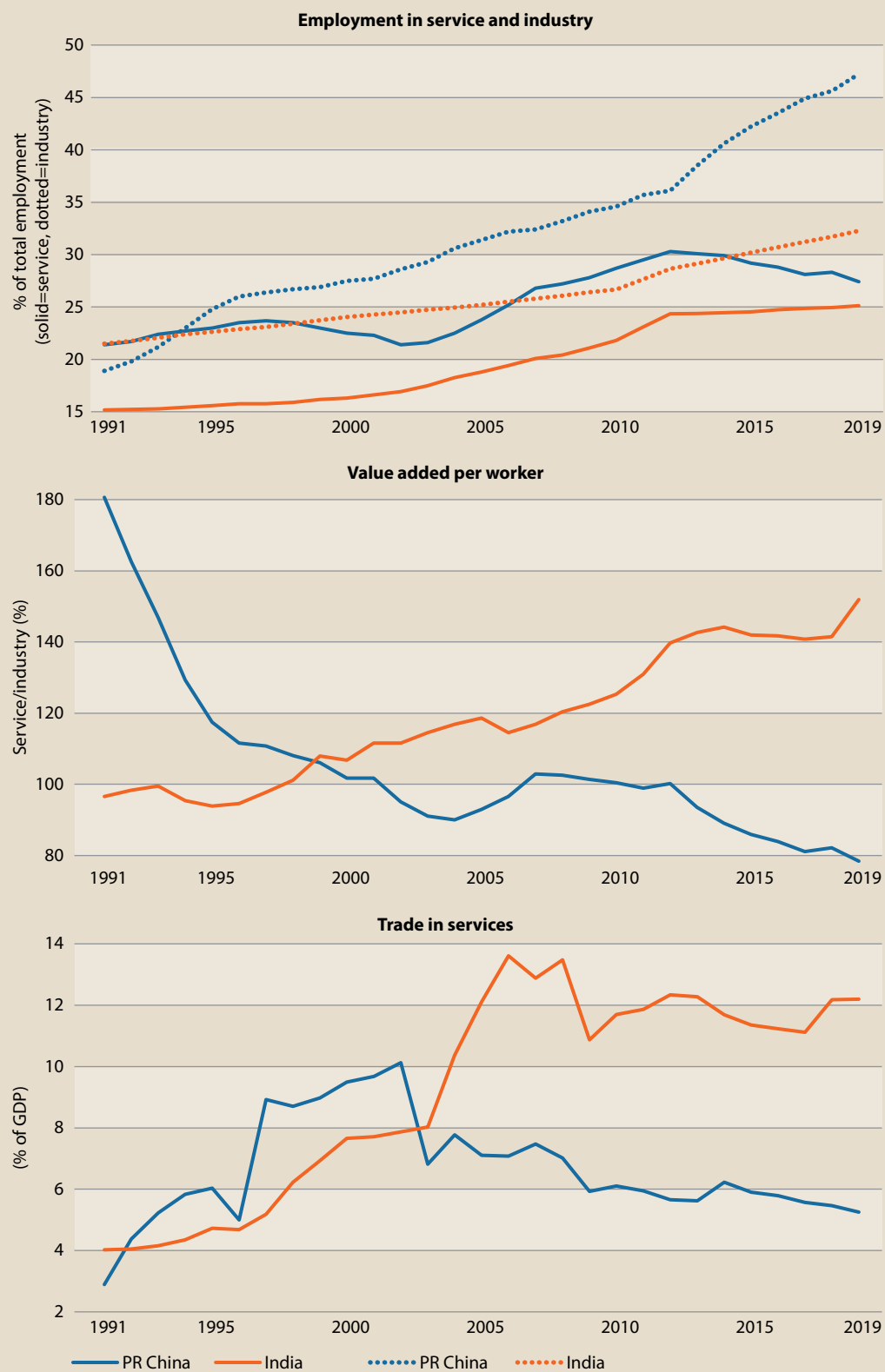
<sup>4</sup> A recent report produced by the World Bank made a very comprehensive analysis about the various aspects of service-led development. [17] The report, among other things, examined the very important issues in services and productivity growth, such as the segments of services in which potential productivity gains lie. The report drew the implications for productivity and jobs that are changing with the advent of digital technologies. It assigned a very positive role in this regard to services.

**FIGURE 6A****GROWTH PATHS OF INDIA AND PR CHINA.**

Source: Penn World Table Version 10.0 and World Development Indicators.

FIGURE 6B

## GROWTH PATHS OF INDIA AND PR CHINA.



Source: Penn World Table Version 10.0 and World Development Indicators.

The increasing share of services employment in PR China has not been accompanied with increases in labor productivity. India shows an opposite trend. The last panel, which shows the steady growth of services trade, can provide the most plausible explanations for India's services-led economic growth, which has better achievements in TFP growth.

### GVC Participation and the Nexus between Services and Productivity Growth

GVCs are usually composed of diverse and complex networks of suppliers encompassing raw material providers, parts and components suppliers, end-product manufacturers, and specialized service providers, many of whom are crossing national borders. “The complex web of interactions among firms from different countries is the reason why GVC trade offers more opportunities for productivity growth than trade in final goods and services” [18]. Participation in GVCs provides opportunities in productivity growth for participating firms, which in turn triggers reallocation of resources toward more productive firms and sectors. Industry-wise and economy-wise effects are generally considered to be occurring through important channels such as enhanced specialization, access to foreign inputs and markets, knowledge spillovers from lead firms, and upscaling of firms themselves.

The framework of understanding outlined above is just a convenient snapshot of complex factors. The nexus between participation in GVCs and productivity growth is indeed much more diverse and complicated. As services play diverse roles in economic transformation, national economies experience different productivity effects, depending on where across the GVCs and in what kind of services they are specialized. Table 5 summarizes the effects of different service sectors on economic transformation. Induced productivity effects are revealing directly with regard to services such as information and communication. Furthermore, transport services produce important economy-wide productivity gains. In the long term, health and education are important for human capital, which provides productivity gains. Moreover, along with sectoral composition and locations along GVCs, economies' structural characteristics and institutional factors do cause differences in economic outcomes and productivity growth. Very often, these are more critical and important than factor conditions or specialization patterns [15].<sup>5</sup>

**TABLE 5**

### EFFECTS OF DIFFERENT SERVICE SECTORS ON ECONOMIC TRANSFORMATION.

| Effects on economic transformation                | Service sectors  |
|---|--|
| <b>Direct effect</b>                              |  |
| Major contributors to GDP                         | Education, finance and insurance, real estate, transport and storage, wholesale and retail trade   |
| Important revenue or foreign exchange earners     | Hydropower transmission services, tourism, ICT, transport, financial services  |
| Significant generators of jobs                    | Retail trade, accommodation (for less- to medium-skilled workers) ////Finance and insurance, professional services (for skilled workers) |
| <b>Indirect effects</b>                           |  |
| Supporters of productivity/trade in other sectors | ICT, transport (including air transport) and logistics, finance  |

(Continued on next page)

<sup>5</sup> See the discussions in Table 2 that summarizes OECD.

(Continued from previous page)

| Effects on economic transformation                      | Service sectors   |
|---|---|
| Visible linkages with the remaining part of the economy | Tourism (e.g., linkages with suppliers)   |
| Sectors with important productivity effects             | ICT, finance, transport (in the medium term), and health and education (in the long term) |

**Source:** Neil Balchin [19] in Hoekman and Willem te Velde [20]

### The Role of the Government

The traditional approach to international trade renders a clear policy implication: since lowering trade barriers and deregulation generally improve welfare, liberal trade and horizontal industrial policies are the most important factors. This perspective is still valid; however, from the GVC perspective, there appear to be many other important policy issues, owing to which markets or business enterprises alone cannot achieve the socially optimal state. Location advantages carefully carved out by national/regional governments serve as valuable incentives for leading firms in GVCs, and this tends to cause great differences in outcomes for local partners from participation in GVCs.

The recent renewal of industrial policies manifests a much nuanced view on the role of the government. In the aftermath of the 2008 global financial crisis, policymakers even in the advanced economies became deeply aware of market failure by observing the kind of problems that can arise when the market is left to its own discretion. In this case, they realized that it would be difficult to prevent the collapse of the economic system without active government intervention, and in the process of resolving the crisis, they had no choice but to implement various means of government engagements even in the market (frequently, these engagements take the form of industrial policies). For example, the federal government's support for the USA's financial sector is no different from the 'selective preference' abandoned by mainstream economics. In addition, the continued low-growth trend of the global economy after the crisis served as an important opportunity for the revival of the industrial policy.

Many global challenges facing the world economy require coordinated efforts from a vast majority of governments and citizens. The twin challenges facing the global economy, i.e., digital transformation and green transition (achieving the goal of carbon neutrality in response to climate change), call for more proactive engagement of governments in industrial and technological developments. Issues such as instability of the supply chain, which was partly caused by the COVID-19 pandemic and also exacerbated by the competition for technological hegemony between the USA and PR China, raise the question of which country would have the upper hand in the more strategic sectors. With the increase in the number of policy agendas in which the promotion and protection of specific technologies and industries becomes an important task, industrial policy has become an essential agenda for all governments.

Macroeconomic policies such as monetary and fiscal policies as well as all other economic policies, including the 'horizontal industrial policy' targeting all industries, have an impact on industrial sectors. This means that, in the sense that no policies are sector-neutral, all economic policies already function as industrial policies [21]. Therefore, since all governments are already implementing industrial policies, regardless of whether they explicitly set forth industrial policies or not, it would be more appropriate to expose and manage industrial policies transparently. As industrial policies become legitimate in mainstream economics, the discussion on industrial policy will shift from 'why' (legitimacy) or 'whether' (to implement it or not) to 'how' (how to implement it).

TABLE 6

## INDUSTRIAL STRATEGIES AND THEIR RATIONALES.

| Rationale                          | Explanations/examples   | Types of industrial strategies |                  |                    |             |
|------------------------------------|---|--------------------------------|------------------|--------------------|-------------|
|                                    |   | Sectoral                       | Mission-oriented | Technology-focused | Place-based |
| Learning by doing                  | Productivity increases with experience  | ✓                              |                  | ✓✓                 |             |
| External economies of scale        | Firm's productivity increases with increase in sector size (as opposed to the firm's size)                        | ✓                              |                  |                    |             |
| Informational externalities        | Experimentation by early investors reveals sector-specific information  | ✓                              |                  | ✓✓                 |             |
| Creation of competition            | Support to entering firms can be welfare-improving by more competition and increase of consumer surplus           | ✓                              |                  |                    |             |
| Upstream sectors in value chains   | Upstream services can be particularly important for the productivity of downstream manufacturing                  | ✓                              |                  | ✓✓                 |             |
| Coordination failures              | Some projects may require several (compatible) simultaneous investments   | ✓                              | ✓✓               | ✓                  |             |
| Societal benefits                  | There are paths that are preferable to others because of a higher level of well-being in the long term            |                                | ✓✓               |                    |             |
| Acceptability of public investment | Conducive to higher and wider stakeholders/citizens engagement  |                                | ✓                |                    |             |
| Regulatory uncertainty             | Imperfect commitment that derails private decision-making   |                                | ✓                |                    |             |
| Marshallian externalities          | Supporting the specialization of regions in some sectors and technologies where they have a comparative advantage |                                |                  |                    | ✓           |

Source: OECD [22].

Notes: ✓ means relevant; ✓✓ means especially relevant.

## Directions for Further Study

This chapter reviewed services trade in relation with GVCs. Even though undertaken by using a small number of readily available indicators, mainly participation in GVC and RCAs, the review could produce a snapshot of complex relations between services trade and GVCs.<sup>6</sup>

This exercise, though simple in the use of only a couple of indicators, is a beginning point for deducing a comprehensive view of the picture. It also provides clues for further study, which will complement and enrich the current review. This section enlists those themes for further study under five headings as follows:

- (1) **New challenges and development strategies:** Once hailed as the new source of global economic growth, globalization nowadays faces a new phase. Some commentators mention ‘deglobalization’ or ‘decoupling’ as the catchwords for the new phase. It is apparent that the COVID-19 pandemic added momentum to the deglobalization trend. However, as Kornprobst and Wallace [24] emphasize, “it would be wrong to say the world is in a period of deglobalization. It is better to understand the issue as one of balance between globalizing and deglobalizing forces.”<sup>7</sup> For the immediate future, countries need to cope with disturbances in global supply chains, partly caused by the pandemic and also partly by the consequence of conflicts among national governments including the USA and PR China.

The recent technological breakthroughs, especially automation and artificial intelligence, are expected to affect the global industrial landscape in significantly different ways. Job displacement by robots has given rise to widespread concerns about jobless growth. The promise that new technologies generally bring new jobs that could not be conceived before has not yet materialized in most regions of the world economy. This has triggered worries about worsening inequalities not only within nations but also between nations. Will, what Baldwin [27] termed as the “globotics upheaval,” usher the global economy into a new world that is more biased toward labor-displacing technologies and much favoring the already-advanced regions?<sup>8</sup>

Green transition (achieving the goal of carbon neutrality in response to climate change) is another challenge that deserves priority attention and, more importantly, requires immediate actions by national governments and international organizations. The success of green transition depends on today’s decisions on institutional setup, which guides the direction and rate of technological change. The global industrial landscape will also be influenced along the path of green transition. Together with digital transformation, what will be the shape of the global industrial landscape in the coming years? Participation in GVCs would be one way of coping with these global changes.

- (2) **Comparative analysis of the services and GVCs with regard to long-term economic growth:** The comparative study can highlight the role played by GVCs and related

<sup>6</sup> A recent study by Mishra, Tewari, and Toosi [23] incorporates the role of service globalization to present a more complete picture of the economic complexity of nations. They show that modern technology-enabled service exports demand fairly complex specializations but are becoming increasingly ubiquitous. Developing countries show greater economic strength accounting for the growing tradability of services.

<sup>7</sup> The September 2021 edition of International Affairs covers many diverse issues pertaining to deglobalization: international political economy, the global trade order under the current WTO regime, global health system, and others. The guest editors of the special issue describe the interconnectedness of the globalization and deglobalization processes on one hand and delineate the trajectory of the liberal international order on the other hand [25]. Goldman Sachs [26] gives an excellent review on the diverse aspects of deglobalization, over which experts have different views.

<sup>8</sup> [28] Chapter 6 deals with issues pertaining to digital economy, GVCs and SMEs.

measures. An analysis below of three pairs of countries, for example, will explain the value of comparative analysis.

- **Vietnam versus the Philippines:** The size of the population is similar in these two countries, and their per capita GDPs also reached almost equal levels as of 2020. The development paths of these two countries show similarities and differences. They have actively pursued industrialization by first gaining advantages in light manufacturing and then trying to strengthen high-tech manufacturing. In services trade, the Philippines have shown good records in business services, especially in telecommunications services. Vietnam is weak in most business services, except personal household services. What role has participation in GVCs played in the growth paths of these two countries?
- **Turkiye versus Malaysia:** After the rapid rise until the first decade of the twenty-first century, the growth in GDP per capita for Malaysia has remained stagnant in the recent decade. In parallel, Malaysia's GVC participation has come down between 2000 and 2020. What caused Malaysia's retreat from participation in GVCs? How is it related to the stagnant GDP growth? What is Türkiye's strategic value as producer of light manufacturing and trading posts linking Asia and the European continent?
- **The ROK versus Singapore:** These two high-income countries show contrasts in their positions in GVCs. As illustrated by the snapshots that were summarized in Table 4, the ROK has strong RCAs in high-tech manufacturing but is weak in most of the business services. Among services subsectors, only air transport, and marginally the hotel and restaurant services, in the ROK have moderately high RCAs. Singapore is strong in business services, which further implies that the country is the *de facto* trading hub in the region. While differently specialized in the international division of labor, the two countries enjoy high-income status. What role does GVC play in these two countries? What kind of policies have they implemented? What lessons can be learnt for other countries?

- (3) **Network aspects of GVCs and services trade:** Vast studies on networks in social, biological, and environmental systems converge to share some general features: networks are evolving and not staying in equilibrium; there are some regularities in network formations; and network structures affect the behaviors of actors therein in significant ways. The last feature, the effects of network topology on actors' behavior, is fundamentally crucial, as a conceptual framework for the study on the impacts of GVCs on participating countries. Studies on trading networks have accumulated for a long period (for a representative work, see De Benedictis and Tajoli [29]). However, studies on GVCs as networks are a relatively recent achievement (for a review, see Ponte *et al* [30] and Kano *et al* [31]).<sup>9</sup>

The governance of GVCs attracts further attention, since the issue is closely related to, among other things, who wins the fruits. Further, as actors' capabilities and the engagement of agents will influence the evolution of networks, what are the prerequisites for successful formation of GVCs in the home country?

<sup>9</sup> For a snapshot view of cross-border production network, see [16] and for the network pictures on the recent patterns of GVC participation, see [27] in Chapter 1.

As summarized in Table 4, APO member economies have shown diverse paths for moving through GVCs. Some economies are strong in primary and light manufacturing with increasing participation in GVCs. Some others are strongly specialized in high-technology manufacturing, but show relative weakness with regard to business services. Furthermore, only a small number of economies are actively going global by winning the status as trading hubs of global networks. Economies will experience different costs and benefits according to their positions, for example, backward or forward; the segments of supply and value chains they are located in; and more importantly, the partners with which they are linked. Moreover, the formation and positions over GVCs are, frequently, the outcomes of intentional policy engagements. The policy issue will be exposited further under the last point.

- (4) **GVC participation and productivity growth (modes, channels, and case studies):** It is hard to obtain a comprehensive, universal picture of the complex networks of GVCs. It usually depends on the scale and purpose of the study. A highly aggregated level offers a good approximation of the complex phenomenon, but is frequently limited in offering specific strategic options for response. Case studies offer a complementing perspective to overcome this limitation. For a meaningful case study, it is necessary to specify the details in advance, and a list of the specifications would include the types of GVCs, channels of propagation, types of activities, and the relations between hosts and partners, along with the mode of engagement between parties.<sup>10</sup>

Here, naturally, the role played by multinational enterprises will be an area of due focus. Furthermore, naturally, since MNEs are mostly from advanced economies, this will be related to the issue of GVC governance across countries. What will be the best global governance structure that both ensures incentives for MNEs and offers benefits to the host countries as well? Sectoral compositions are also an important concern. It will also be natural here to introduce the government as a player or an overseer.

- (5) **Policy issues, tools, and their effectiveness:**<sup>11</sup> Renewed interests in governments' role in technology and industry, which were exposited earlier<sup>12</sup>, raise a fundamental challenge for policy practitioners: what kind of measures to implement and how?

It is generally accepted that economic coordination is best achieved through market mechanisms; but this tenet is not necessarily valid when (1) markets are non-existent; and (2) other mechanisms also prove to be doing well. Engagement of the government becomes pervasive in many areas of economic activities. Increasingly, it has become more crucial to view industrial development not as a linear process but as an evolutionary process of building an ecosystem in which many stakeholders participate with diverse roles and functions. This view is of particular importance in assisting the growth of viable global business networks.

There are many imminent, practical policy issues. Under what conditions will policies produce welfare-improving outcomes? What are the costs, benefits, and bottlenecks in implementing the

<sup>10</sup> The *Global Value Chain Development Report* [32] provides a good introduction to many issues mentioned here. For example, for the types of GVCs, see the entry of "Does types of GVCs matter?" GVCs are typed as market, modular, relational, and captive.

<sup>11</sup> The *Handbook on Global Value Chains* [33] includes eight chapters under the heading of "International Development and Public Policy." These chapters cover many important, diverse issues with regard to GVC-related policies, and offer a very valuable guide for future policy studies. The exposition here deals with rather practical issues in policy making.

<sup>12</sup> It is interesting to compare policy recommendations for enhancing innovation and productivity in services, proposed by OECD in 2001 [34] with the arguments in Table 6, which are released by OECD in 2022. The 2001 recommendations basically reflect a mainstream economics perspective; on the other hand, the 2022 study broadens its scope to include agglomeration effects and dynamic externalities.

policy (sometimes reform) agenda? The role of the state seems to go beyond that of facilitator and regulator (see Appendix 2). A much more important issue is how to design the policy frameworks that will formulate the evolutionary paths of institutions. It seems that GVC-related policies consider the state as system designers, rather than as facilitators or regulators. How will today's bureaucracy be able to achieve this aspiration?

There are not many studies on policy effectiveness. Mostly studies are undertaken at rather abstract levels. A good example in this regard is an econometric analysis of policy involvement. This is a necessary step to obtain a basic notion of policy involvement and can also function as a guiding principle. However, policy design necessitates more than principles. Collection of best, or better, practices is one way to assist policy design. Dialogs between stakeholders, especially including business enterprises, will pave the path for a viable ecosystem for GVCs and facilitate symbiotic development.

## Appendix

TABLE A1

## EMPLOYMENT AND VALUE ADDED IN SERVICES.

| Economy                       | Employment (% of total) |      | Value added (% of GDP) |      | Value added per worker |          | Value added per worker in industry | Relative LP (%) |
|-------------------------------|-------------------------|------|------------------------|------|------------------------|----------|------------------------------------|-----------------|
|                               | 2000                    | 2019 | 2000                   | 2019 | 2000                   | 2019     | 2019                               | 2019            |
| Bangladesh                    | 24.5                    | 40.4 | 50.6                   | 50.8 | 4,140.8                | 4,973.3  | 5,648.9                            | 88.0            |
| Cambodia                      | 18.0                    | 37.6 | 37.1                   | 38.8 | 2,218.3                | 2,664.2  | 2,898.3                            | 91.9            |
| Fiji                          | 46.8                    | 68.3 | 53.3                   | 54.0 | 11,883.1               | 11,573.0 | 16,977.9                           | 68.2            |
| Hong Kong                     | 79.4                    | 88.8 | 83.8                   | 90.0 | 59,400.3               | 88,770.0 | 48,222.4                           | 172.3           |
| India                         | 24.0                    | 32.3 | 42.7                   | 50.1 | 3,651.1                | 8,806.6  | 5,795.9                            | 151.9           |
| Indonesia                     | 37.3                    | 49.1 | 33.4                   | 44.2 | 3,965.1                | 7,286.8  | 13,791.5                           | 52.8            |
| IR Iran                       | 45.6                    | 51.2 | 51.4                   | 50.4 | 15,433.4               | 17,981.4 | 15,523.7                           | 115.8           |
| Japan                         | 63.5                    | 72.4 | 66.0                   | 69.4 | 66,555.8               | 64,961.3 | 83,127.8                           | 78.1            |
| ROK                           | 61.3                    | 70.3 | 51.6                   | 57.2 | 32,814.8               | 47,614.8 | 74,123.7                           | 59.6            |
| Lao PDR                       | 13.6                    | 25.6 | 42.2                   | 41.5 | NA                     | 8,215.2  | 11,627.8                           | 70.7            |
| Malaysia                      | 49.5                    | 62.7 | 46.3                   | 54.2 | 12,460.9               | 20,916.8 | 32,447.0                           | 64.5            |
| Mongolia                      | 37.2                    | 53.1 | 39.2                   | 39.7 | NA                     | 9,516.9  | 14,156.5                           | 67.2            |
| Nepal                         | 14.2                    | 20.5 | 34.7                   | 52.0 | 3,652.1                | 4,754.9  | 1,749.5                            | 271.8           |
| Pakistan                      | 36.1                    | 38.1 | 50.3                   | 53.6 | 4,521.5                | 6,482.2  | 3,296.7                            | 196.6           |
| Philippines                   | 47.0                    | 58.0 | 51.1                   | 60.9 | 5,527.1                | 9,312.9  | 14,511.1                           | 64.2            |
| Singapore                     | 71.9                    | 84.4 | 60.7                   | 70.8 | 61,424.0               | 83,842.5 | 129,525.9                          | 60.7            |
| Sri Lanka                     | 35.4                    | 47.2 | 52.8                   | 58.2 | 7,405.5                | 13,656.3 | 10,845.6                           | 125.9           |
| Thailand                      | 32.2                    | 45.7 | 54.8                   | 58.3 | NA                     | 12,943.7 | 15,850.0                           | 81.7            |
| Turkiye                       | 45.1                    | 56.6 | 52.8                   | 56.4 | 25,697.1               | 34,045.8 | 36,800.3                           | 92.5            |
| Vietnam                       | 22.3                    | 35.3 |                        |      | 3,483.1                | 5,108.9  | 5,744.8                            | 88.9            |
| APO average                   | 40.2                    | 51.9 | 50.3                   | 55.3 | 19,072.6               | 23,171.4 | 27,133.3                           | 103.2           |
| PR China                      | 27.5                    | 47.3 | 39.8                   | 54.3 | 6,559.4                | 21,526.8 | 27,436.4                           | 78.5            |
| Low-income countries          | 21.2                    | 30.2 | 40.4                   | 39.1 | 2,496.0                | 2,913.7  | 4,879.8                            | 59.7            |
| Lower-middle-income countries | 30.4                    | 40.1 | 44.5                   | 49.0 | 4,708.3                | 8,016.0  | 8,163.9                            | 98.2            |
| Upper-middle-income countries | 36.2                    | 53.3 | 50.8                   | 55.7 | 10,699.2               | 20,331.5 | 26,310.0                           | 77.3            |
| High-income countries         | 66.9                    | 74.1 | 66.8                   | 70.1 | 74,812.0               | 83,002.5 | 87,072.0                           | 95.3            |
| World                         | 39.4                    | 50.6 | 63.6                   | 64.7 | 30,339.1               | 32,675.7 | 29,354.7                           | 111.3           |

Source: World Development Indicators.

TABLE A2

## TYPOLOGY OF STATE ROLES WITHIN GLOBAL VALUE CHAINS.

| Role        | Definition  | Examples  |
|-------------|---|---|
| Facilitator | Assisting firms in GVCs in relation to the challenges presented by the global economy | Tax incentives, subsidies, export processing zones, incentives for R&D, implementing and negotiating favorable trade policies, and interstate lobbying  |
| Regulator   | Measures that restrict the activities of firms within GVCs                            | State marketing boards, price controls, restrictions on foreign investment, trade policy (tariffs, quotas), patent laws, labor regulations, quality controls, and implementation of standards |
| Producer    | State-owned firms, which compete for market share with other firms within GVCs        | State-owned companies, e.g., in oil and mining; these constitute less visible supply chains that may be shaped by the political objectives of the state                                       |
| Buyer       | State purchases output produced within GVCs   | Public procurement, for example, of military equipment, or pharmaceuticals. These distinct value chains may be shaped by particular economic, social, or environmental requirements.          |

Source: Horner and Alford [35].

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# CONCLUSION

The role of the services sector has been enhanced and is expected to be more in APO member economies. The present outlook report consists of five chapters, which cover important aspects and phenomenon of productivity for heightened productivity of APO member economies.

The first chapter presents trends and challenges in the services sector. Services have become a dominant sector not only for the global economy, but also for APO member economies. Production and employment in the services sector appears to be increasing at a rapid pace, similar to the trend once observed in the manufacturing sector. In particular, services appear to be growing rapidly because they are highly interlinked with other sectors. In some APO member economies, the services sector's growth has even surpassed that of the manufacturing sector. The development of services will be crucial for increasing overall productivity and enhancing national competitiveness. Therefore, there is a need to implement a comprehensive set of policies based on the characteristics of each country, taking account of the interlinkages between industries, instead of sector-specific policies. In addition, it is necessary to consider not only industrial policies but also efforts to promote education and technology investment. Trade policies that promote market competitiveness also need to be included to promote productivity in the services sector.

The second chapter explores the relationship between financial development and productivity. Financial services help improve productivity by enabling firms with more opportunities. Studies have shown that reduced financial friction or constraint has a positive impact on firms' productivity. As more funds are allocated to investments, firms can make fruitful innovations through research and development with ease and afford to hire skilled workers. A mature financial market can help allocate resources to enhance financing efficiency and promote productive R&D decisions. As more innovations occur, productivity is boosted.

The two main components that drive financial development are financial institutions and financial markets, both of which are improved through depth, access, and efficiency. While the IMF provides an index for financial development, this chapter utilizes indicators provided by the World Bank. The study considers three channels through which financial development influences productivity. The first is the credit channel. The total amount of credit in the domestic private sector and broad money (also called M3) represent the availability of credit. The second is the equity channel. It measures the size of the financial market where firms can raise funds through equity. The total market capitalization and stocks traded are used as indicators of the equity channel. Lastly, the fiscal channel considers the role of the government. Government expenditure is used to assess the fiscal role.

Using APO member economies, the second chapter verifies that financial development has varying impact on different types of productivity, based on income levels and country characteristics. This study uses three different measures of productivity: labor productivity, capital productivity, and total factor productivity. Using the productivity measures, this research team confirmed that financial development benefits LP for lower-income countries and capital productivity for higher-income countries. Total factor productivity is impacted by financial liberalization, similar to capital productivity. The difference in results can be explained by the goods and services in which a

country has comparative advantage. Some countries produce more capital-intensive products, while some produce labor-intensive goods and services.

The third chapter reviews the relationship between business services and productivity through case studies of two countries, Vietnam and the Philippines. In the case of Vietnam, consulting projects for small and medium-sized enterprises are supported and are based on Vietnamese customs that value trust between partners as much as formal contractual relationships. Such consulting projects help build trust between Vietnamese companies and revitalize the business services market.

In the case of the Philippines, it has world leading IT-BPM capabilities and has established and implemented policies to further deepen its business process industry in response to the changing environment and circumstances such as the fourth industrial revolution and the emergence of a data economy. By expanding the services sector, which used to be represented by call centers in the past, this chapter establishes and suggests knowledge-based non-voice growth policy implementations.

To improve business services in APO member economies, the following policy implications are provided: First of all, in order to enhance productivity of business services, APO economies should establish and strengthen a high-level knowledge base by leveraging professional manpower. While this has the advantage of a relatively lower fiscal expenditure in fostering business services, there is a disadvantage that a high level of knowledge base cannot be achieved in a short period of time. In particular, KIBS has already secured professional manpower in overseas markets, and competition against large professional companies with international competitiveness is steeply intensifying. Therefore, policymakers in each country need to establish mid- to long-term policies to foster competent human resources and support projects with policy priorities in fostering business services. For example, KIBS is mostly occupied by small and medium-sized companies, which are limited in terms of resources for planning and operating quality education and training programs on their own. Measures such as supporting joint education programs and establishing specialized educational institutions can help ease limitations.

Second, KIBS should find new opportunities in systems, production methods, and services that have so far been influenced by the COVID-19 pandemic. A new system that utilizes increasingly complex and high-level technologies often allows first movers to enjoy all the advantages but leaves nothing for late comers. In order for KIBS to enjoy the first-mover advantage and have a competitive advantage at the same time, policy authorities in each country must establish and implement measures to improve related policies ease regulations that hinder first access to the new system while dramatically increase information access to KIBS suppliers in the region.

Finally, policies for fostering business services must be set in connection with the level of knowledge base of a country and the characteristics of that country. The effect of productivity improvement will differ depending on the proportion of employment and added value of business services in the context of a national economy. Therefore, it is necessary to establish detailed policy goals or action plans for business service promotion policies that also consider income levels by country and development stages by sector.

The fourth chapter explores whether reforms promote productivity, analyzes the channels through which regulatory reforms can boost productivity, and examines how different types of reforms affect productivity differently. The chapter also examines two different regulatory policies, i.e., reducing the number of regulations, and improving the quality of regulations; and analyzes their

complementary effects on productivity. To this end, this study begins by reviewing the literature on the regulations–productivity nexus. Next, it investigates trends and key characteristics of regulatory reforms among APO members. Here, “regulatory reforms” are to be understood as either a liberalization or a tightening of the regulation (i.e., deregulating or adjusting the number of regulations). In the following sections, the linkages between regulatory reforms and productivity growth are explored empirically and extensively, including details of methodological approaches and results of the analyses.

In the fourth chapter, the findings provide evidence that regulatory reforms have served the essential role of boosting LP in APO member economies. Specifically, benefits for productivity enhancement have stemmed from both the intra-sectoral and inter-sectoral channels. However, the former has a greater impact than the latter. Among many service subsectors, in particular, reforms have been beneficial in boosting trade service productivity. Most notably, regulatory reforms where quantity and quality complement each other in a sequential manner are seen to have consistently positive effects on productivity growth, which provide profound implications.

Increasingly, it is being recognized that with the impacts of the COVID-19 pandemic still lingering, it is imperative to initiate multipronged regulatory reforms to revitalize the depressed economy in APO member economies. However, the findings suggest that priority should be given not to temporary and/or partial reforms, but to building a well-developed regulatory management system that could reinforce resilience for more robust recovery from shocks by making it easier to allocate resources for the best use. Moreover, such a well-designed system should be able to proceed with concerted and continuous reforms in terms of quantity and quality in a complementary way in response to fast-changing market conditions, ultimately achieving sustained productivity growth.

The fifth chapter covers services and GVC issues around productivity. Transition to a services economy can be ascertained through APO economies. In relation with services trade, three facts are confirmed: (1) services are more tradable than in the past; (2) the composition of services trade is changing in that business services tend to play more important roles; and (3) services trade and productivity growth are strongly correlated. Furthermore, the review on international competitiveness of APO member economies that was carried out using two indicators, GVC participation and RCAs, reveals that APO economies are doing well compared with other regions. In particular, business services in many APO member economies have high RCAs and increased GVC participations. Business services have many strongholds in light manufacturing, which implies that business services are contributing robustly to economic growth in APO economies. Yet, when business services are broken down to subsectors, there are more differences than similarities in each member’s position in international trade and GVCs.

This chapter presented an introductory work for understanding the complex phenomenon that has become increasingly important for sustained economic growth. The review in this chapter reaffirmed that (1) services and services trade have great potential to be main contributors to productivity-led economic growth, but also that (2) the government’s active engagement is also required in order to realize the potential. Here, the government’s role extends from the conventional facilitator or regulator to the system builder. This new requirement raises a fundamental challenge in policymaking/practicing: to implement policies effectively.

The fifth chapter gives a concise picture of the very complex phenomenon overlapping services trade, GVC participation, and services-led development. As a starting point toward a comprehensive

view, five directions for further study were outlined: (1) development strategies facing new challenges in digital economy; (2) cross-country comparative analysis of the services and GVCs from the perspective of long-term economic growth; (3) network analysis of GVCs and services trade; (4) modes and channels of GVC participation and their relations with productivity growth, with specific case studies thereabout; and (5) policy studies, especially on the effectiveness and good practices.



# COUNTRY PROFILES



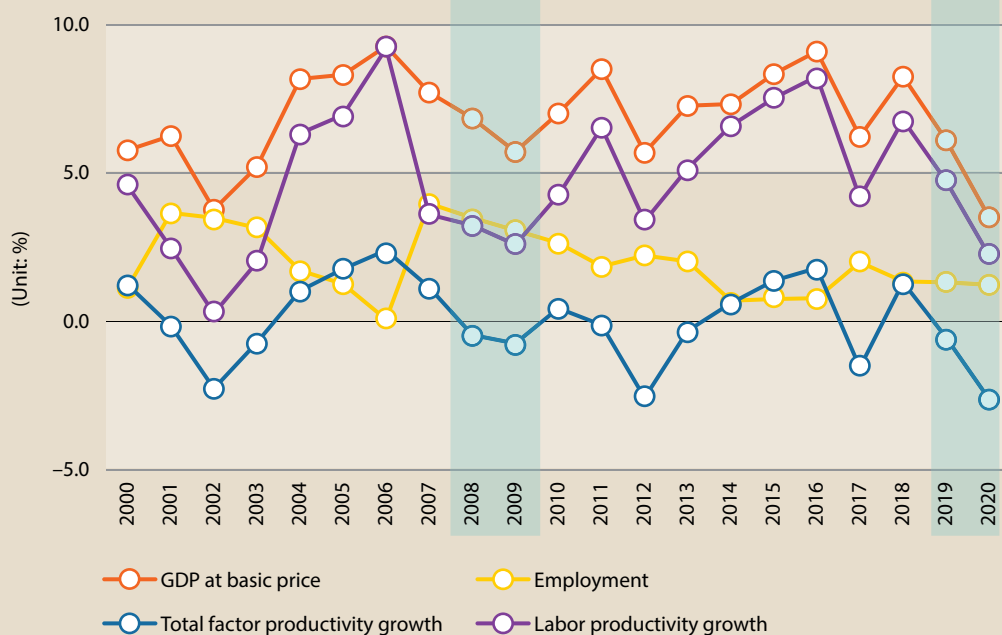
# BANGLADESH

## Services Sector's Productivity

- Macroeconomic variables in Bangladesh generally show a large fluctuation, with an economic growth rate of 6.87% since 2000s, and an increase in labor productivity growth of 4.8%. On the other hand, employment (2.0%) and total factor productivity (−0.1%) present low or negative growth rates in the same period. Trade in services accounts for a low proportion of the economy, but it shows steady growth in service imports.
- The growth rate of labor productivity in services grew by 3.88% annually during the 2000–20 period. The change in services sector's productivity is due to a large change in output compared with a steady increase in employment. On the other hand, productivity in the manufacturing sector decreased due to a sharp increase in employment in 2010, but it appears that it has grown significantly with an increase in output since then.
- Bangladesh's input of intermediate goods increased 8.55 times in 2020 compared with 2000, and it grew about twice as much between 2000–10 and 2010–19. In particular, the use of intermediate inputs of 'Service C' has increased about 10 times over the entire period. However, the small initial input of intermediate goods is believed to be the cause of the large growth rate.

**FIGURE 1**

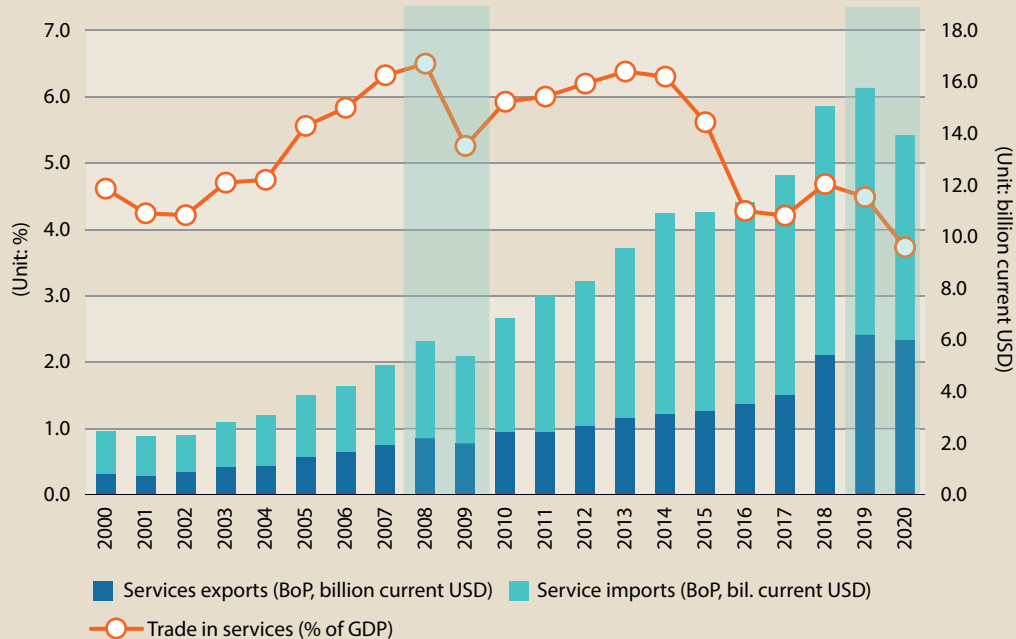
### ECONOMIC AND PRODUCTIVITY-RELATED INDICATORS.



Source: APO Productivity Database 2022.

FIGURE 2

TRADE IN SERVICES SINCE 2000.

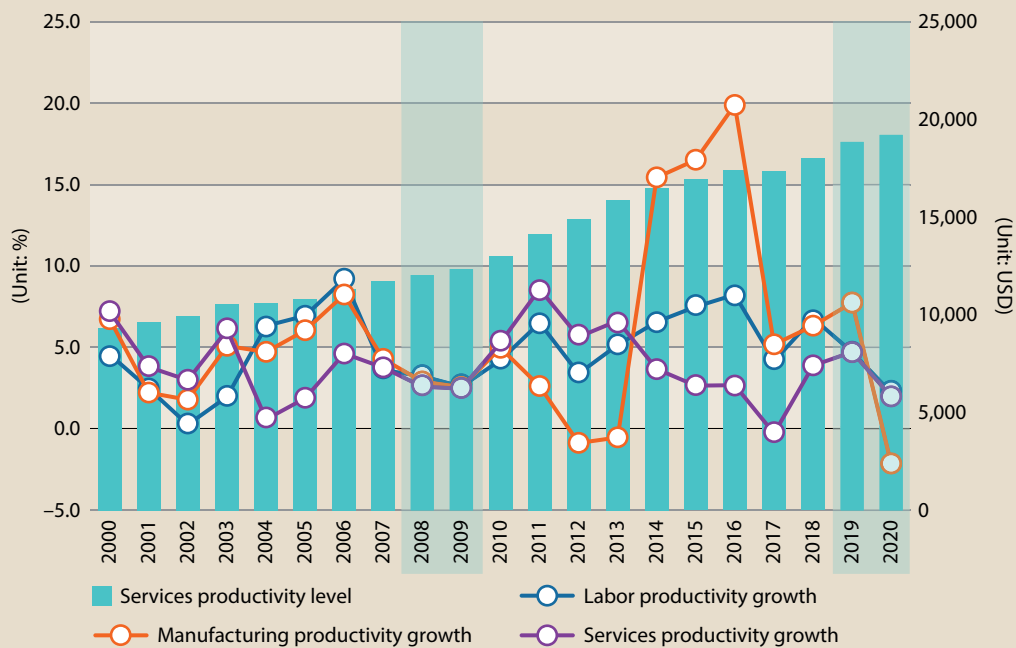


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.

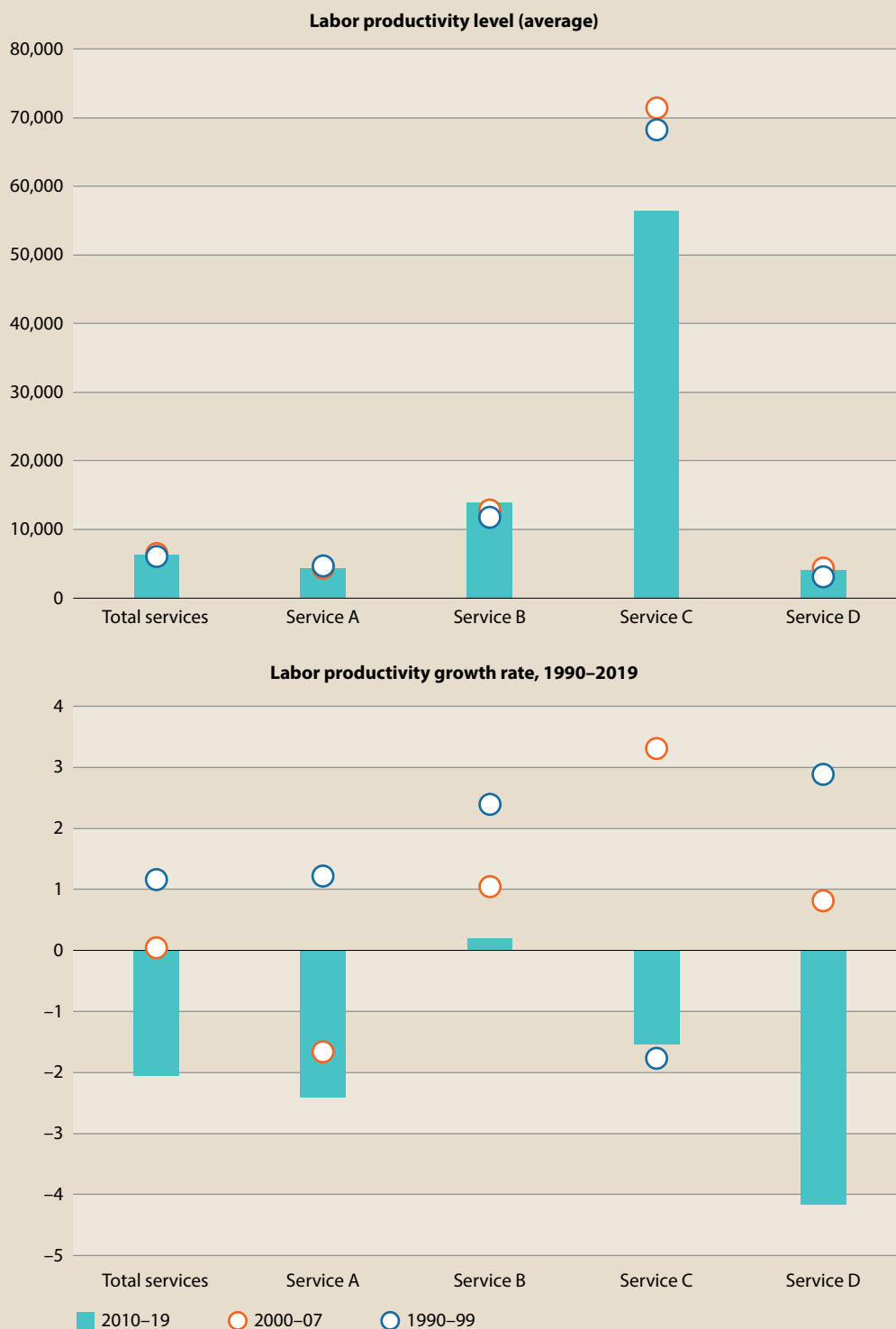


Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



Source: Authors' calculations using APO Productivity Database.

Notes: Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage and communication.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000  | 2010  | 2019   | 2020   |
|-----------|----------------------|-------|-------|--------|--------|
| Total     | Intermediate inputs  | 1,296 | 4,084 | 12,350 | 10,360 |
|           | Net backward linkage | 0.787 | 0.799 | 0.736  | 0.755  |
|           | Net forward linkage  | 0.642 | 0.634 | 0.631  | 0.564  |
| Service A | Intermediate inputs  | 490   | 1,559 | 3,794  | 2,350  |
|           | Net backward linkage | 0.814 | 0.809 | 0.820  | 0.732  |
|           | Net forward linkage  | 0.565 | 0.559 | 0.503  | 0.518  |
| Service B | Intermediate inputs  | 219   | 720   | 1,854  | 1,737  |
|           | Net backward linkage | 0.220 | 0.265 | 0.228  | 0.279  |
|           | Net forward linkage  | 0.417 | 0.402 | 0.396  | 0.332  |
| Service C | Intermediate inputs  | 189   | 563   | 1,858  | 1,740  |
|           | Net backward linkage | 0.932 | 0.927 | 0.775  | 0.974  |
|           | Net forward linkage  | 0.991 | 0.972 | 1.051  | 0.860  |
| Service D | Intermediate inputs  | 103   | 396   | 896    | 839    |
|           | Net backward linkage | 1.162 | 1.193 | 1.121  | 1.097  |
|           | Net forward linkage  | 0.820 | 0.815 | 0.784  | 0.730  |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies, post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

- Bangladesh was classified as a low-income country till 2013. In 2014, it advanced to become a lower-middle-income country. However, while its national income may have increased, its productivity has decreased. Bangladesh's income growth was not mainly due to financial development. As seen from graphs in earlier figures, the finance sector's productivity and total factor productivity have declined throughout the sample period.

## Regulatory Reforms Intensity

- The reform progress of the overall product market has greatly slowed down since 2000. In particular, regulatory reforms intensity has decreased by a significant margin over the decade under consideration (2010–19).
- An observed stagnant reform can be attributed to a significant fall in both trade and business reform progress, especially with the former showing a larger contribution to the slowing progress in reforms.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN BANGLADESH BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote the median growths of the respective groups.

## GVC Participation

- Bangladesh is hyperspecialized in textile and leather manufacturing. Agriculture is still one of leading exporting sectors, but dependence on agriculture has greatly decreased. Other manufacturing sectors are still struggling for gaining international competitiveness.
- Most services remain at low levels of GVC participation, though with exceptions. The telecommunications sector has made great progress in GVC participation and increase in revealed comparative advantage (RCA). The air transport service has also increased GVC participation, while improving RCA.

# CAMBODIA

## Services Sector's Productivity

- In Cambodia, macroeconomic variables have been on the decline since the global financial crisis (GFC). Prior to the GFC, Cambodia showed a high economic growth rate of 9.95%, which has fallen to around 5.25% since 2010. On the other hand, employment has showed a stable growth rate of 2.74% from 2000 to 2020. However, it appears that productivity has declined as output in the services sector plummeted in 2020. For services, trade accounts for a low proportion of the economy, but it shows steady growth centered on service exports.
- During the 2000–20 period, the annual growth rate of services sector's productivity was 0.31%. In particular, the sector's productivity had decreased significantly in 2013, due to a rapid increase in employment.
- Cambodia's input of services as intermediate goods increased 6.9 times in 2020 compared with 2000, and it increased by about twice between 2000–10 and 2010–19. In particular, it appears that the intermediate input of Service C increased by about 8.2 times and Service D by 7.1 times from 2000 to 2020. However, the reason of this high increase was the initial low level of intermediate inputs in the 2000s.

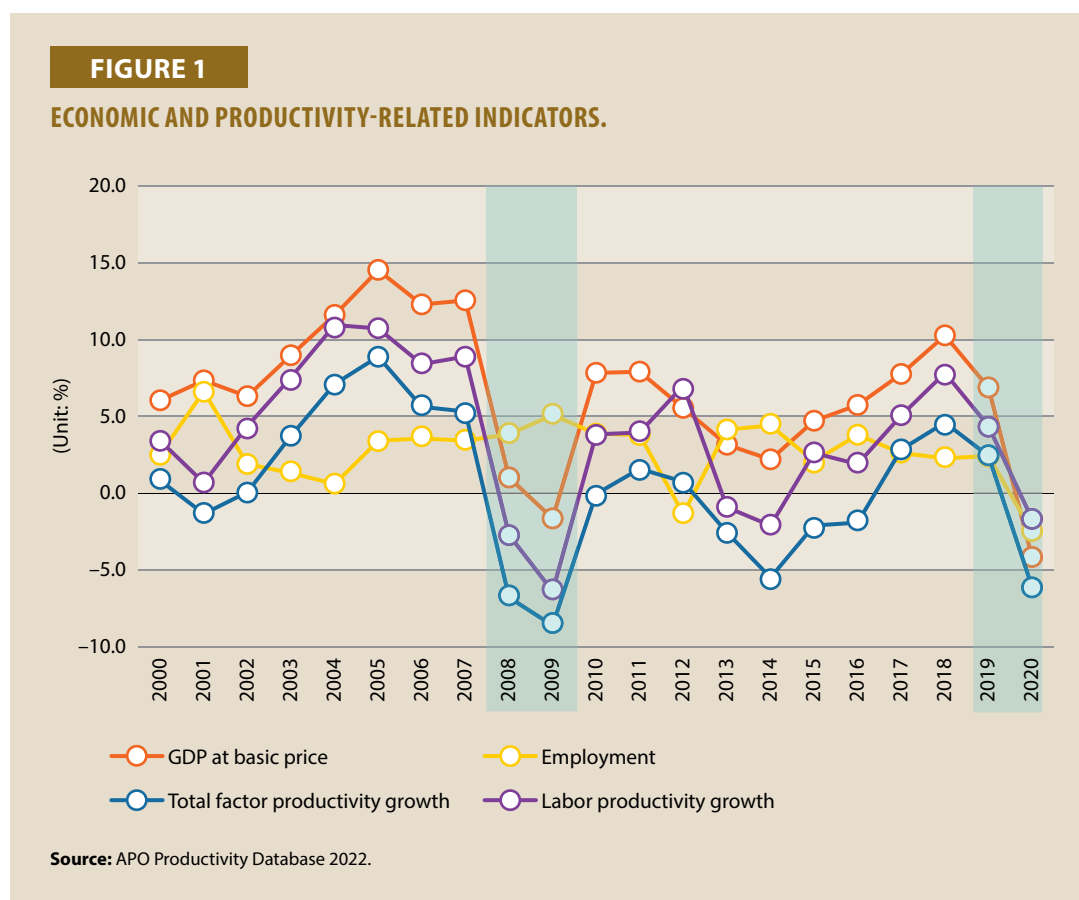
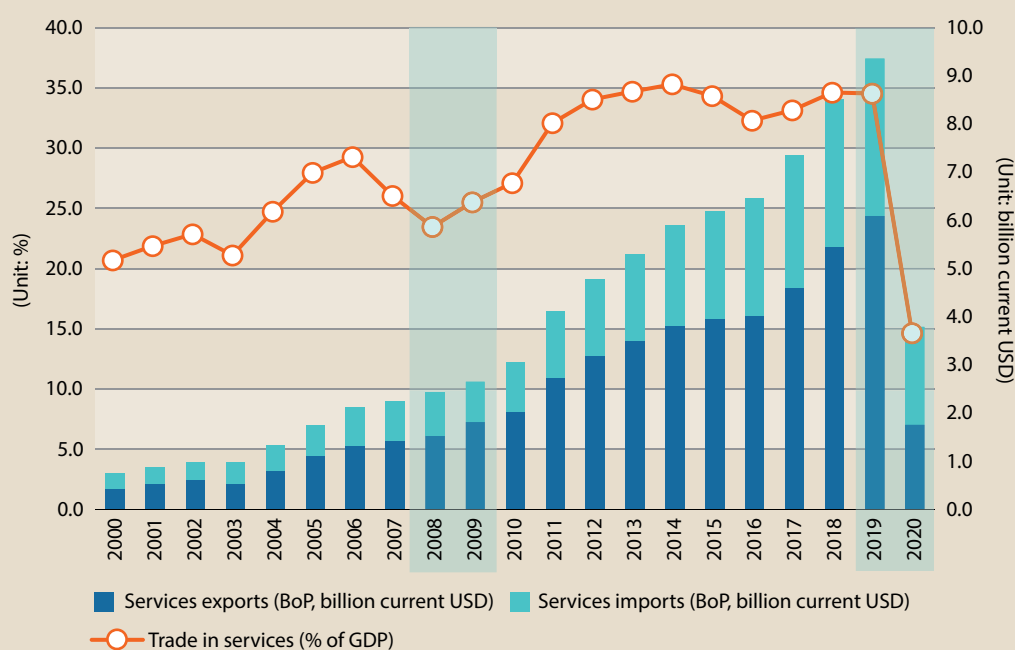


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

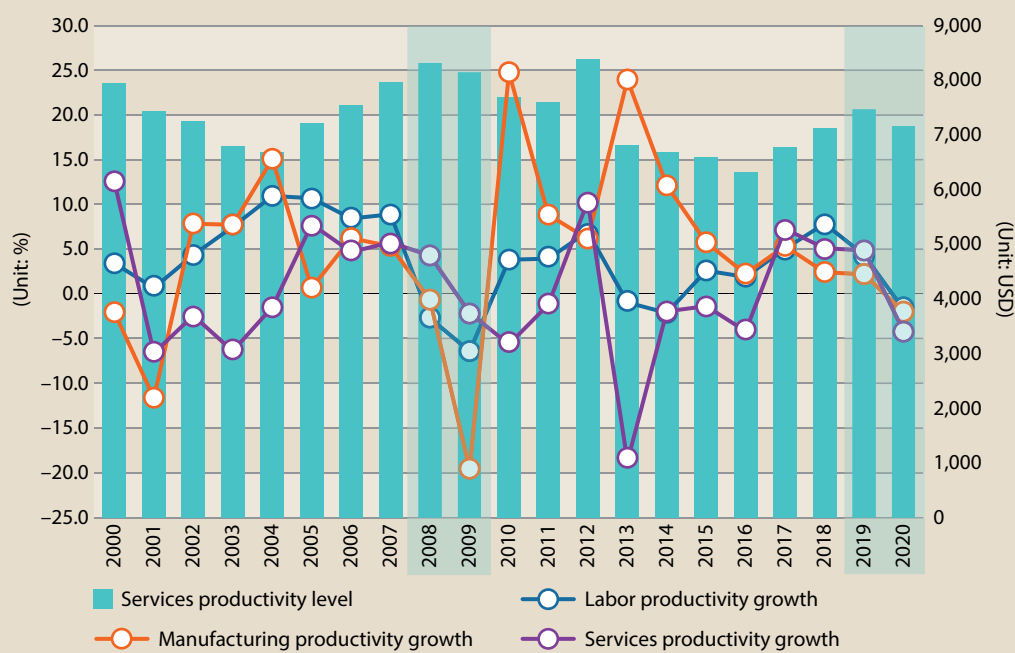


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.

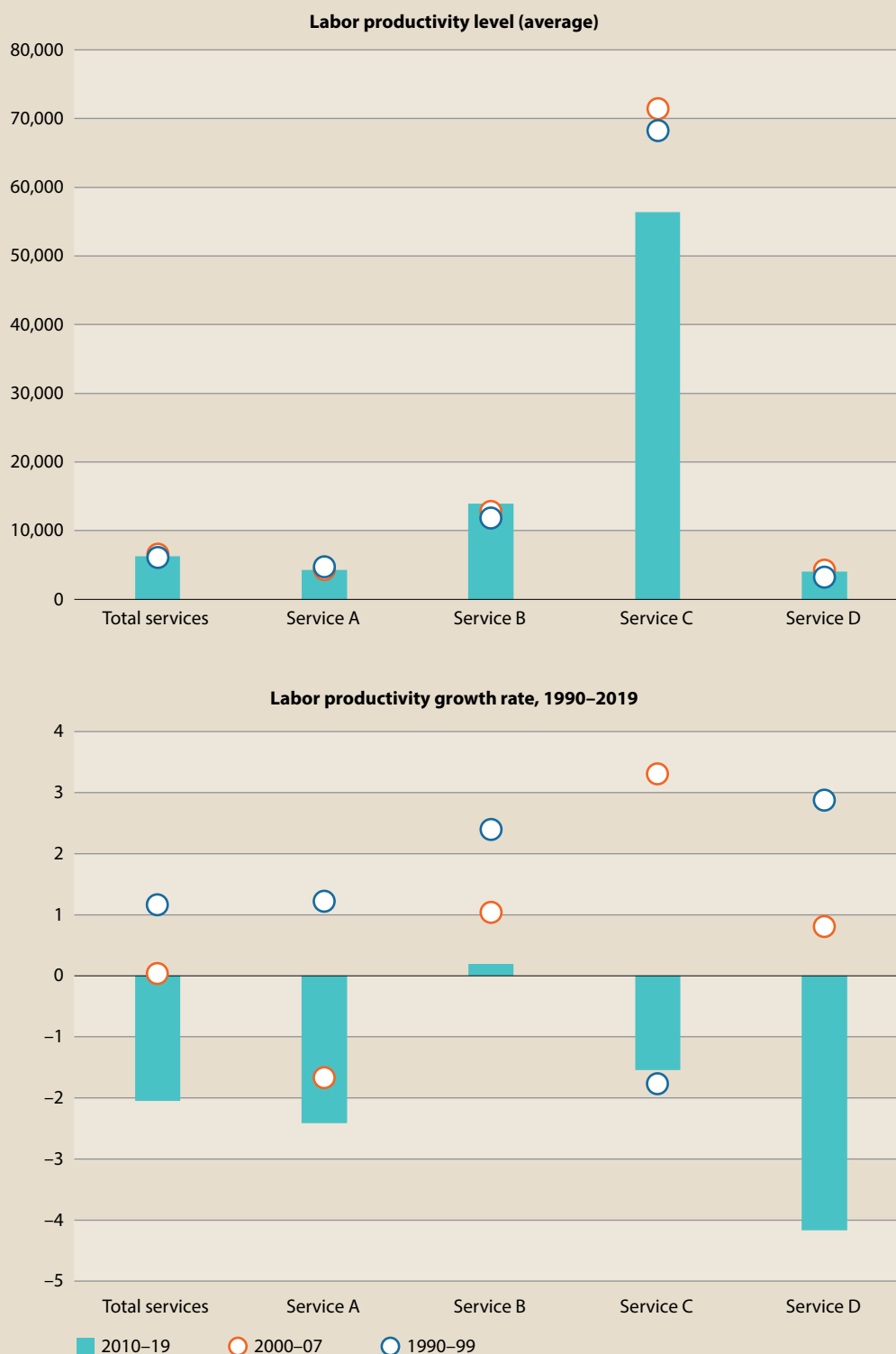


Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

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Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

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(Unit: Million current USD)

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|           | Net forward linkage  | 0.820 | 0.815 | 0.784  | 0.730  |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; repair of household goods.

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## Finance Sector's Productivity

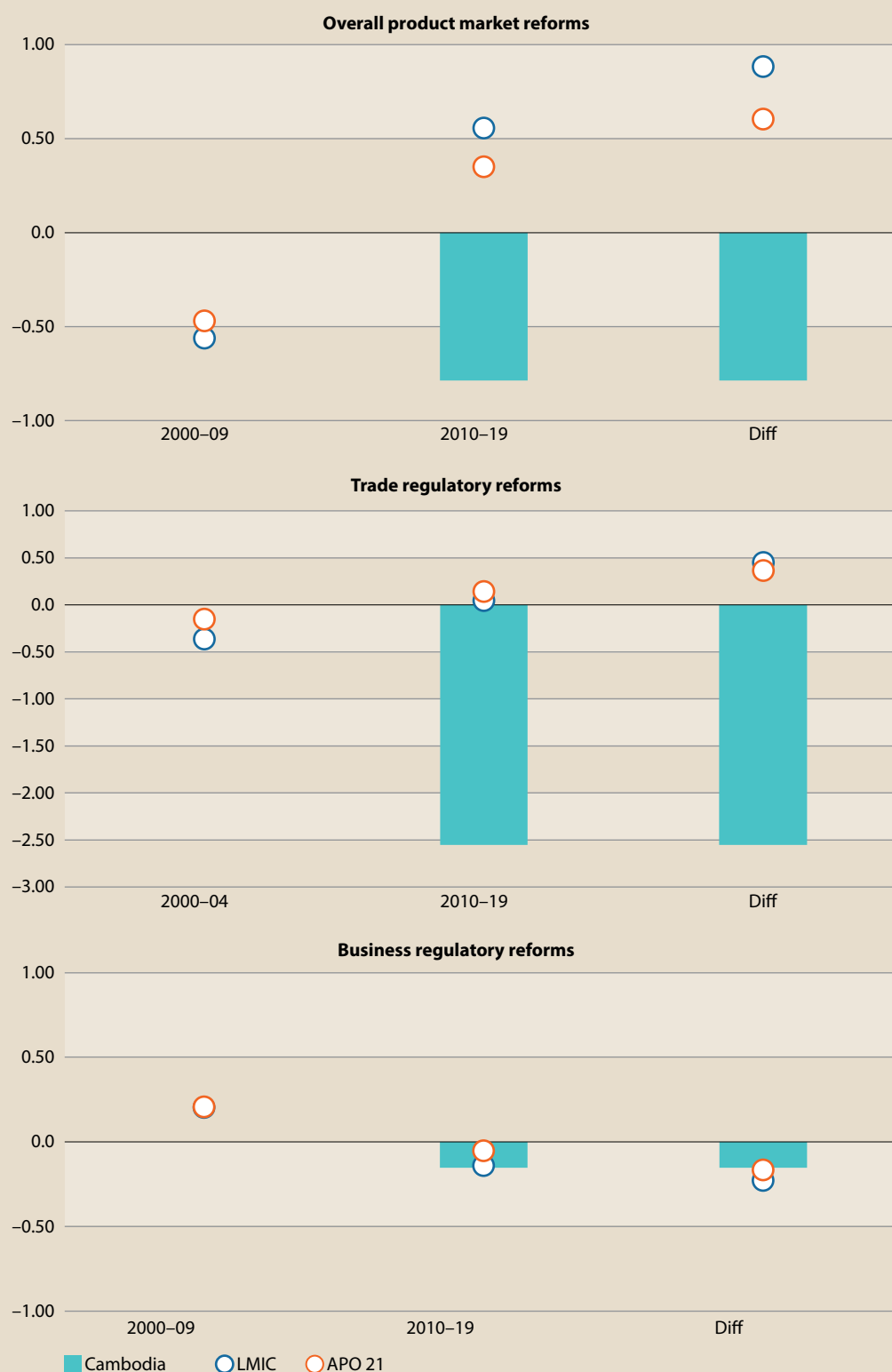
- Cambodia was classified as a low-income country until 2014. In 2015, it advanced to the stage of a lower-middle-income country. However, Cambodia's growth in productivity was not due to financial development (the graphs show no clear pattern between the finance sector's productivity and total factor productivity throughout our sample period). Particularly, after 2000s, total factor productivity and the finance sector's productivity have stagnated.

## Regulatory Reforms Intensity

- With no significant change in overall product market reform during 2000–09, Cambodia showed a sluggish pace of overall regulatory reforms in the subsequent period of 2010–19.
- A major contributing factor for the stagnant reform progress in the recent decade can be found in trade-related reforms that show a significant drop in the reform progress.

FIGURE 5

## OVERALL, TRADE, AND BUSINESS REFORMS IN CAMBODIA BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups. (3) Due to data availability limitations, trade regulatory reform shows different time periods (e.g., 2000-04 and 2010-19).

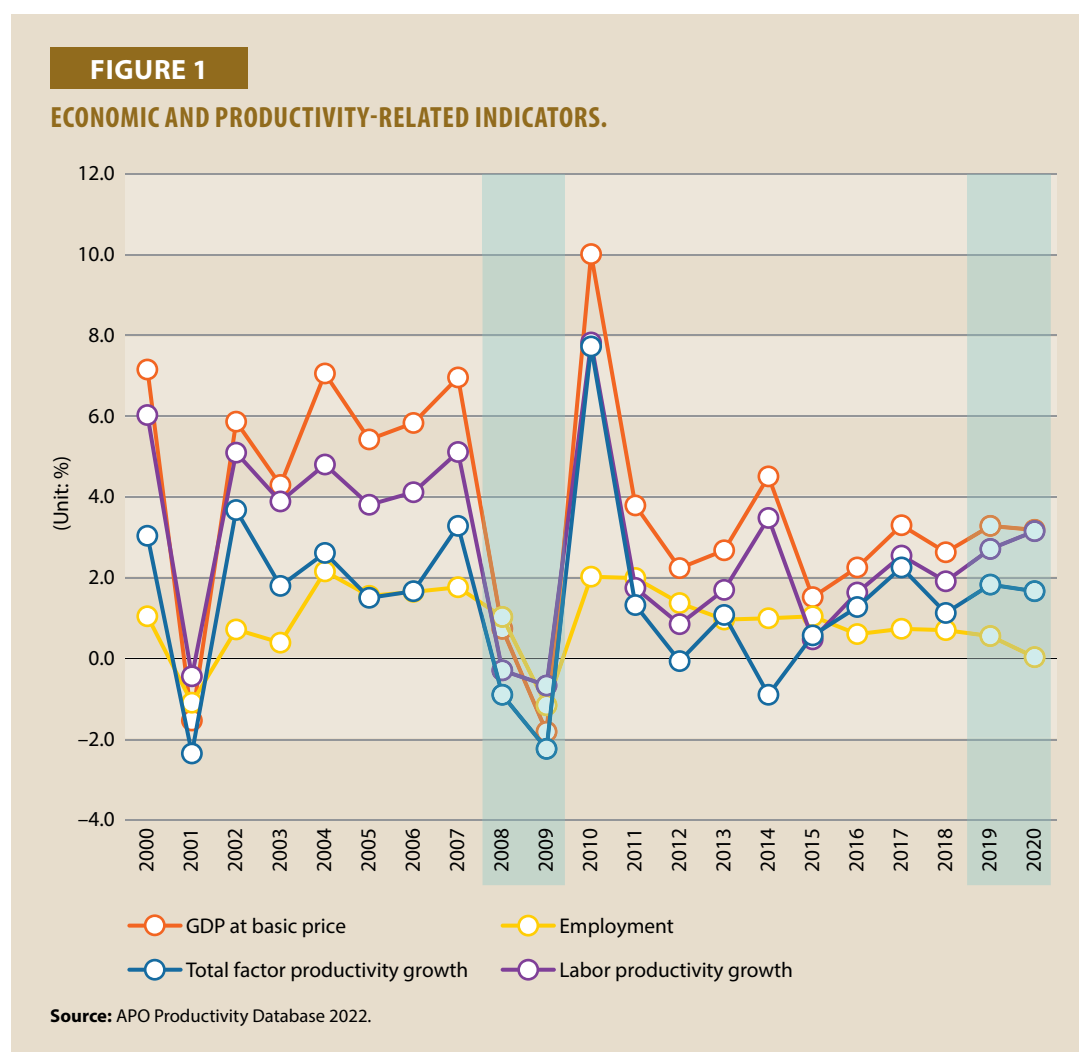
## GVC Participation

- Cambodia is a hyperspecialized economy with increasing international ties. In merchandise trade, Cambodia is hyperspecialized in textiles and agriculture; and in services trade, it is hyperspecialized in hotel and restaurant services. In terms of RCAs, these three sectors (agriculture, textiles, and hotel services) are far above other sectors. After these three sectors, there are three other services, namely, inland transport, wholesale, and telecommunications that are high in terms of RCA. Construction and food products sector are among these group after hyperspecialized sectors.
- It is worth noting that GVC participations in all these sectors have increased, implying that Cambodia's leading sectors are strengthening their international ties.

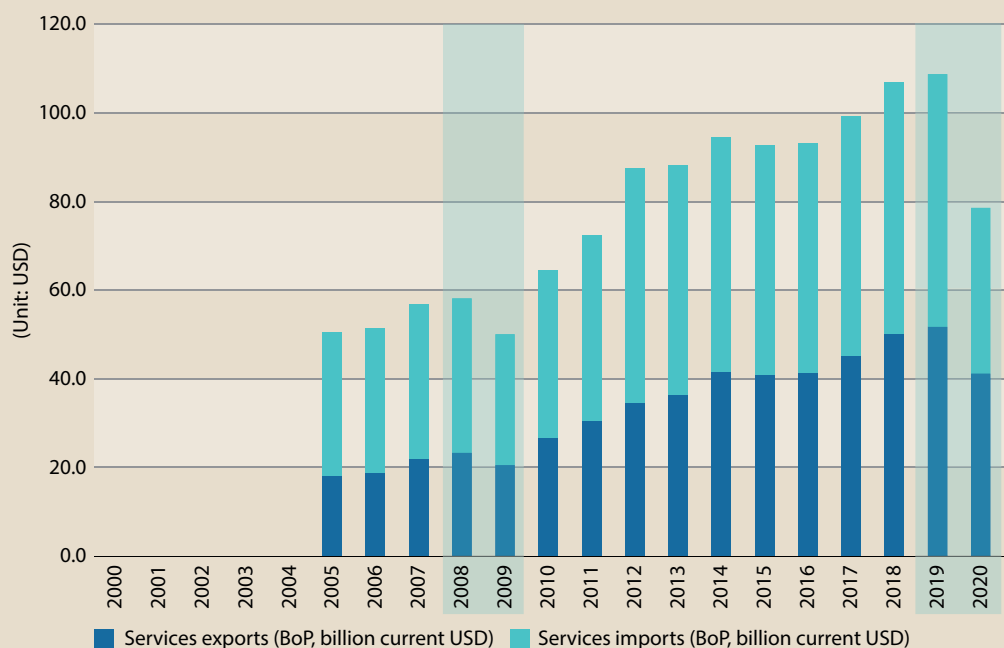
# REPUBLIC OF CHINA

## Services Sector's Productivity

- The Republic of China (ROC)'s economy showed a solid growth of 6% before the GFC, but the growth slowed afterwards due to the impact of the crisis. In contrast, the overall impact of COVID-19 was not significant. Rather, it shows a form of growth recovery due to low employment growth.
- The ROC recorded a low level of productivity growth from the Asian financial crisis in the late 1990s and the GFC in the 2000s. In spite of that, the ROC experienced an increase in growth of over 1.42% in the services sector between 2000 and 2020, with a marked increase in the level of productivity from USD83,723 in 2000 to USD108,358 in 2020.
- In 2020, the intermediate input of the overall services sector increased by about 0.94 times compared with 2000. Despite the impact of COVID-19, the input of intermediate goods in all sectors has increased steadily.

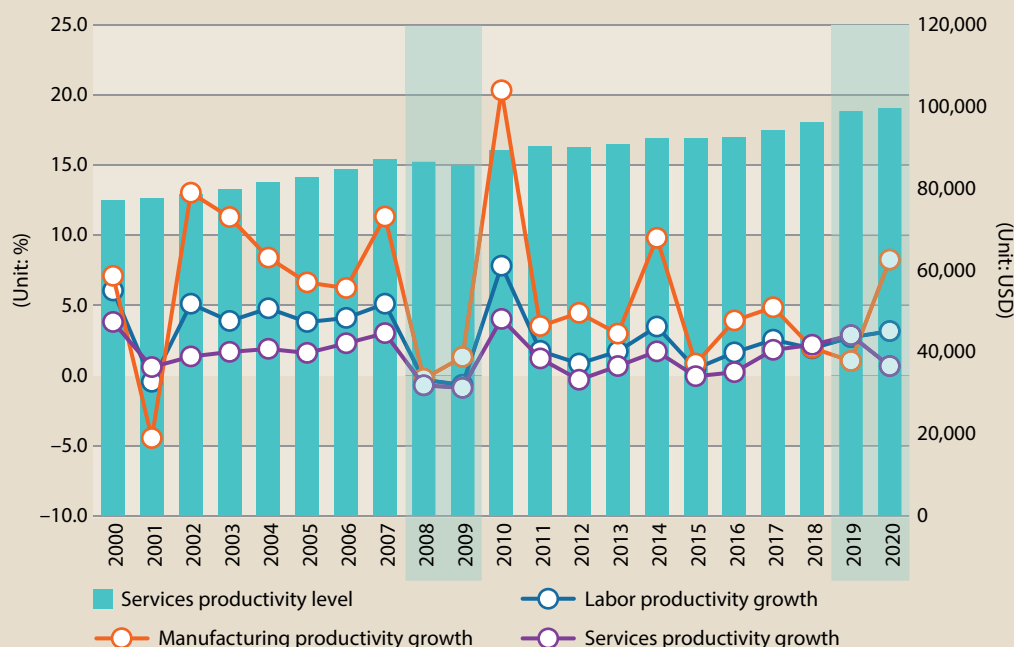


**FIGURE 2**  
**TRADE IN SERVICES SINCE 2000.**



**Source:** World Development Indicators.  
**Note:** The right side refers to service exports and imports.

**FIGURE 3**  
**LABOR PRODUCTIVITY IN SERVICES SINCE 2000.**



**Source:** Authors' calculations using APO Productivity Database.  
**Note:** The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000    | 2010    | 2019    | 2020    |
|-----------|----------------------|---------|---------|---------|---------|
| Total     | Intermediate inputs  | 121,865 | 165,178 | 219,203 | 235,814 |
|           | Net backward linkage | 1.024   | 1.061   | 1.018   | 1.030   |
|           | Net forward linkage  | 0.907   | 0.846   | 0.884   | 0.891   |
| Service A | Intermediate inputs  | 28,629  | 40,677  | 53,550  | 54,710  |
|           | Net backward linkage | 1.019   | 1.017   | 0.913   | 0.942   |
|           | Net forward linkage  | 0.916   | 0.919   | 1.092   | 0.998   |
| Service B | Intermediate inputs  | 16,359  | 25,492  | 31,451  | 33,817  |
|           | Net backward linkage | 0.914   | 1.020   | 0.977   | 1.001   |
|           | Net forward linkage  | 0.942   | 0.737   | 0.734   | 0.798   |
| Service C | Intermediate inputs  | 25,681  | 33,375  | 51,632  | 54,717  |
|           | Net backward linkage | 0.701   | 0.810   | 0.824   | 0.816   |
|           | Net forward linkage  | 1.195   | 1.140   | 1.127   | 1.154   |
| Service D | Intermediate inputs  | 17,203  | 25,968  | 31,703  | 33,249  |
|           | Net backward linkage | 1.211   | 1.208   | 1.195   | 1.166   |
|           | Net forward linkage  | 0.786   | 0.793   | 0.796   | 0.824   |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

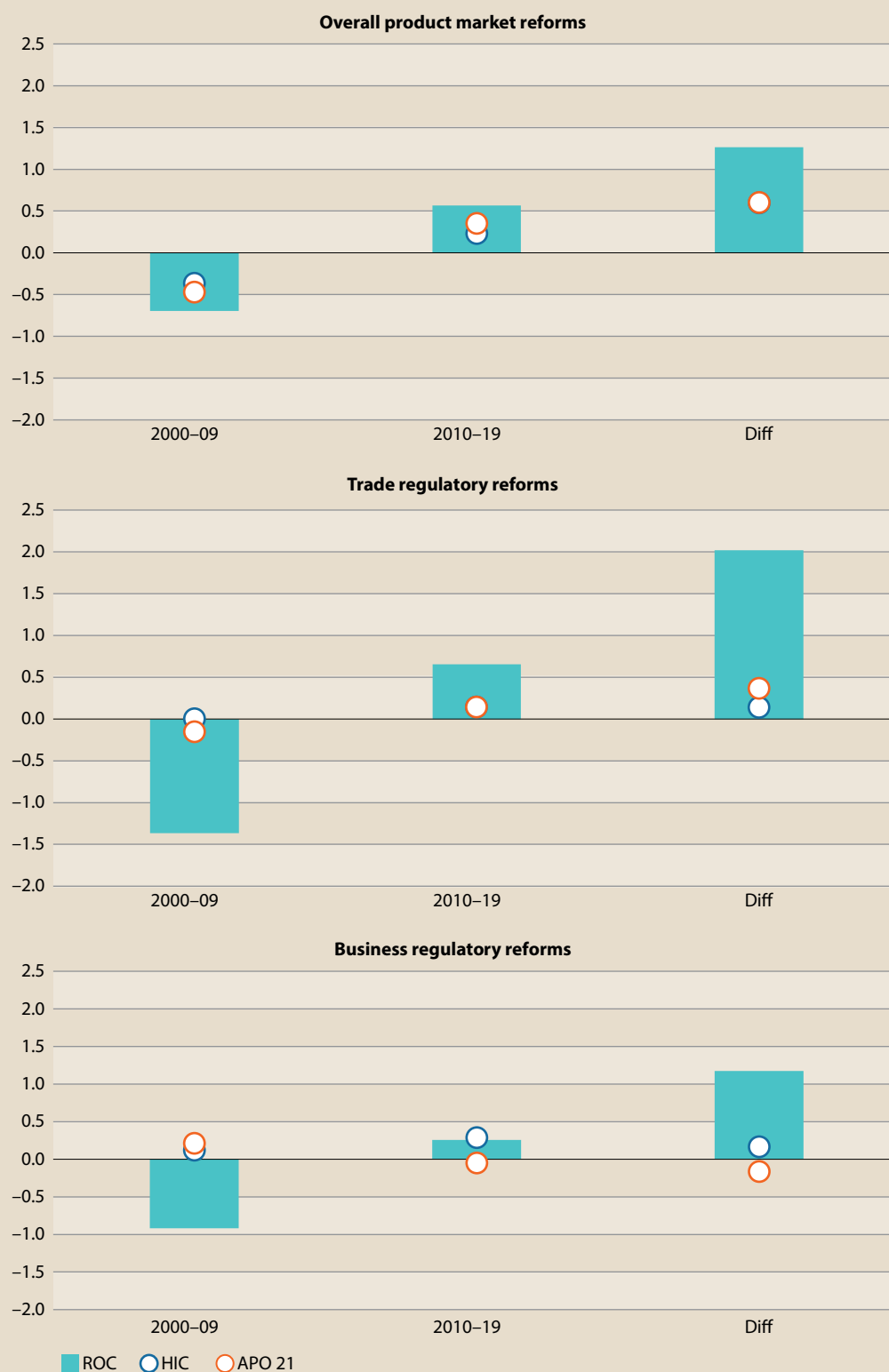
- The ROC has been a high-income country in the entire sample period. The finance sector has supported its productivity increase. Policies should encourage further development of financial services to promote more innovations and investments.

## Regulatory Reforms Intensity

- The ROC has shown gradual progress in reforming product market regulations from 2000 through 2019, thereby leaping forward after the year 2009.
- In the same period, a similar pattern can also be found in both trade- and business-related regulations, with a greater fall in the trade barriers in the period of 2010–19.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN THE ROC BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) HIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- The ROC appears to experience big industrial changes. Notably, (1) the ROC is becoming hyperspecialized in electrical/optical equipment; (2) most other manufacturing sectors have shown decreases in RCAs; and (3) except for hotels and wholesale, services do not show much international competitiveness.
- It is worth further noting that despite increases in GVC participation, the declining manufacturing sectors such as rubber and plastic, basic metal, textiles, and refined petroleum do not see improvements in their RCAs.

## Services Sector's Productivity

- Fiji has remained at a low growth level since 2000; and has recently experienced a sharp economic downturn of around –15% due to the COVID-19 pandemic.
- Fiji shows low productivity levels and growth rates. Its services sector's productivity growth rate was around –0.4% until 2019, and productivity level remained almost similar to that a decade ago (USD25,546 in 2000, and USD26,517 in 2020).
- Nevertheless, services as intermediate inputs in Fiji increased slightly between 2000 to 2020. Although Service C increased relatively more by about 2.5 times, that can be attributed to the very low initial level of inputs in 2000.

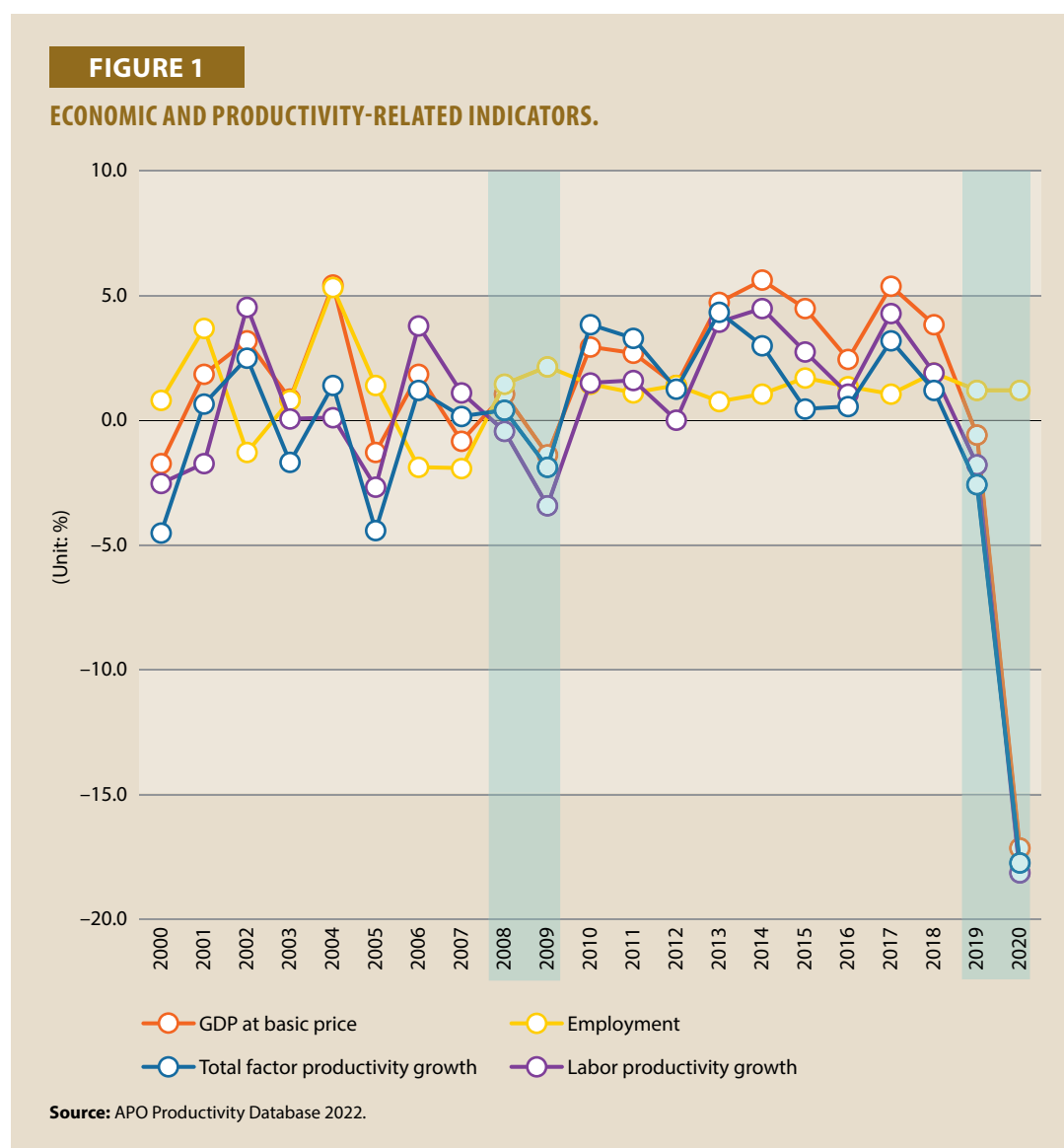
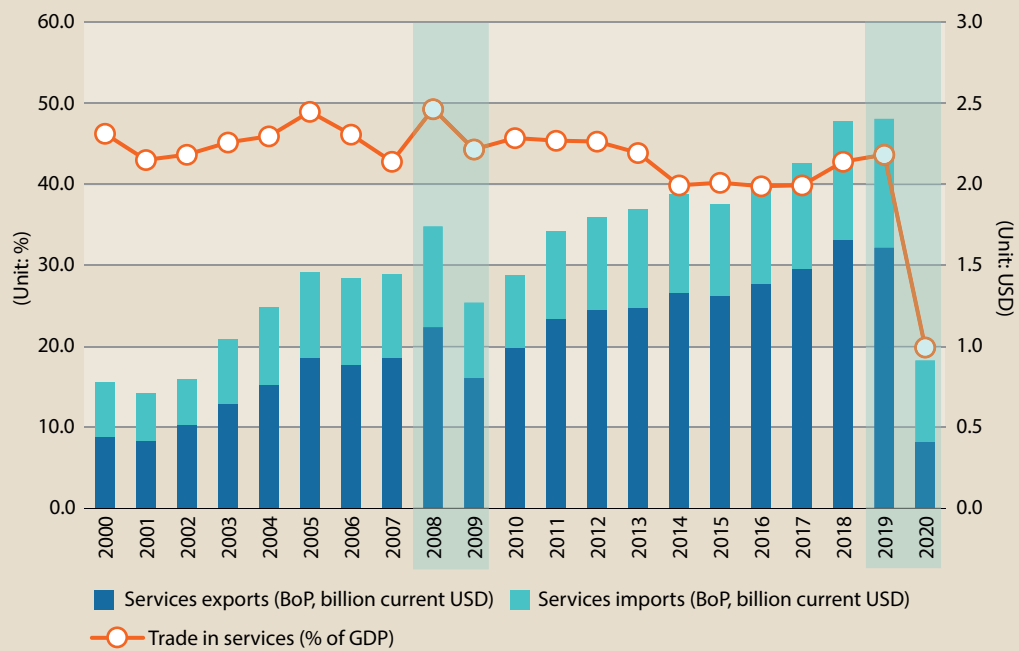


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

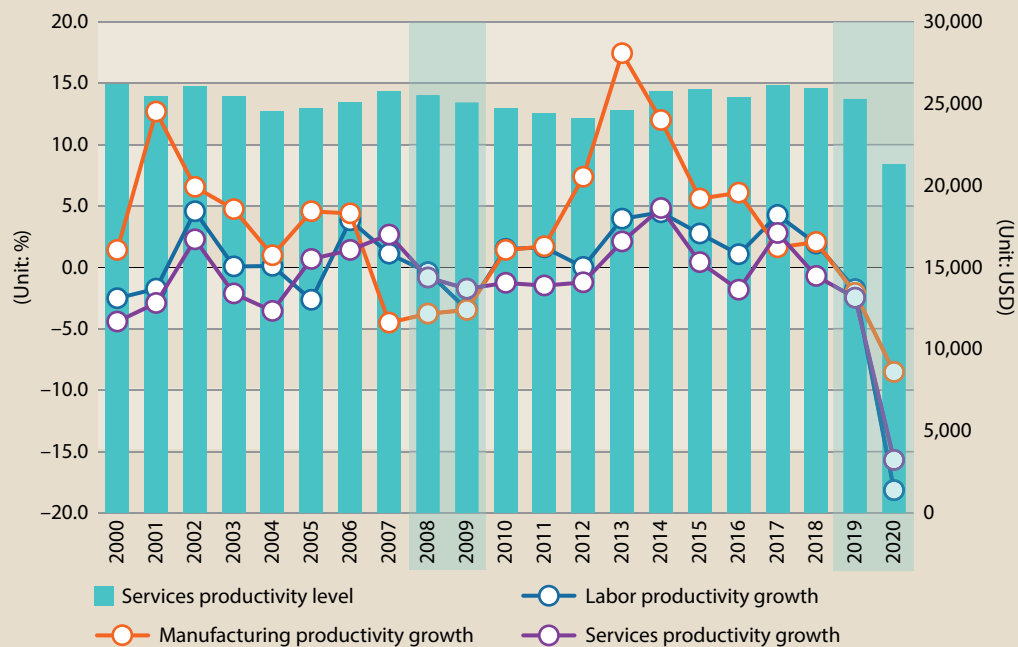


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Author calculation using APO Productivity Database.

Note: The right side denotes productivity level.

**FIGURE 4**

**LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.**



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000  | 2010  | 2019  | 2020  |
|-----------|----------------------|-------|-------|-------|-------|
| Total     | Intermediate inputs  | 1,079 | 1,487 | 2,062 | 1,572 |
|           | Net backward linkage | 0.831 | 1.061 | 0.905 | 0.924 |
|           | Net forward linkage  | 1.072 | 0.766 | 0.899 | 0.927 |
| Service A | Intermediate inputs  | 345   | 451   | 518   | 395   |
|           | Net backward linkage | 0.996 | 1.14  | 0.823 | 0.92  |
|           | Net forward linkage  | 0.893 | 0.76  | 1.002 | 0.969 |
| Service B | Intermediate inputs  | 360   | 501   | 527   | 416   |
|           | Net backward linkage | 0.556 | 0.948 | 0.925 | 0.743 |
|           | Net forward linkage  | 1.058 | 0.684 | 0.75  | 0.965 |
| Service C | Intermediate inputs  | 81    | 273   | 345   | 291   |
|           | Net backward linkage | 0.49  | 0.689 | 0.733 | 0.795 |
|           | Net forward linkage  | 1.698 | 1.143 | 1.152 | 1.091 |
| Service D | Intermediate inputs  | 126   | 80    | 212   | 219   |
|           | Net backward linkage | 1.025 | 1.277 | 1.013 | 1.004 |
|           | Net forward linkage  | 0.972 | 0.665 | 0.898 | 0.86  |

**Source:** Author's calculations based on ADB MRIO Database.

**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.  
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 Service C includes financial intermediation; real estate activities; renting of M&E; and other business activities.  
 Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

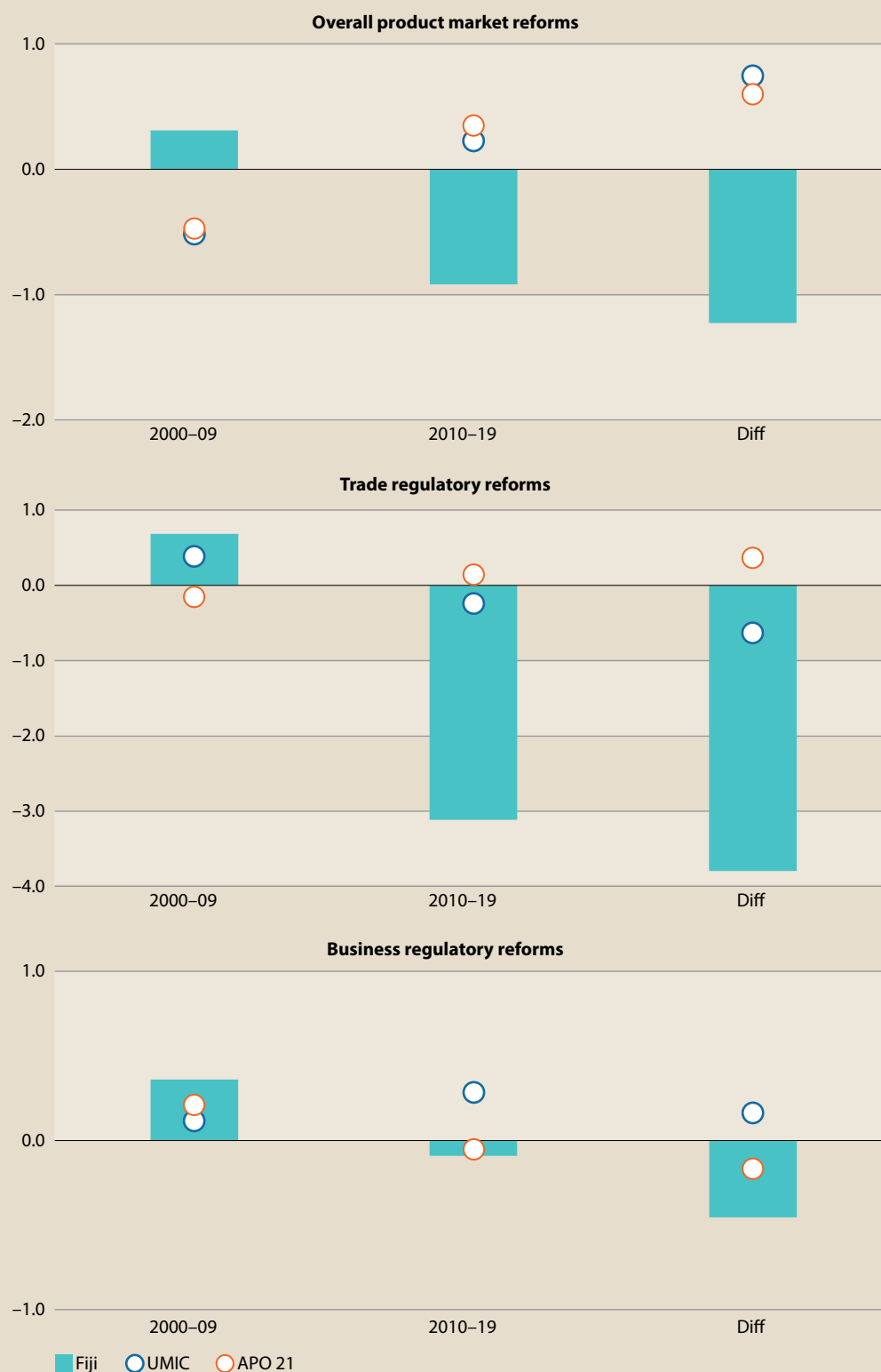
- Fiji was classified as a lower-middle-income country until 2006. In 2007, it was reclassified as an upper-middle-income country. However, the productivity of the finance sector seems to have had little influence in increasing total factor productivity.

## Regulatory Reforms Intensity

- Fiji showed moderate progress in overall product regulatory reforms from 2000 through 2009, but the progress stagnated during the 2010s.
- In the same period, a similar pattern was revealed for both trade- and business-related regulatory reforms; yet a greater fall in the reforms intensity was found in the business reforms areas.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN FIJI BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups. (3) Due to data availability limitations, trade regulatory reform shows different time periods (e.g., 2004-09).

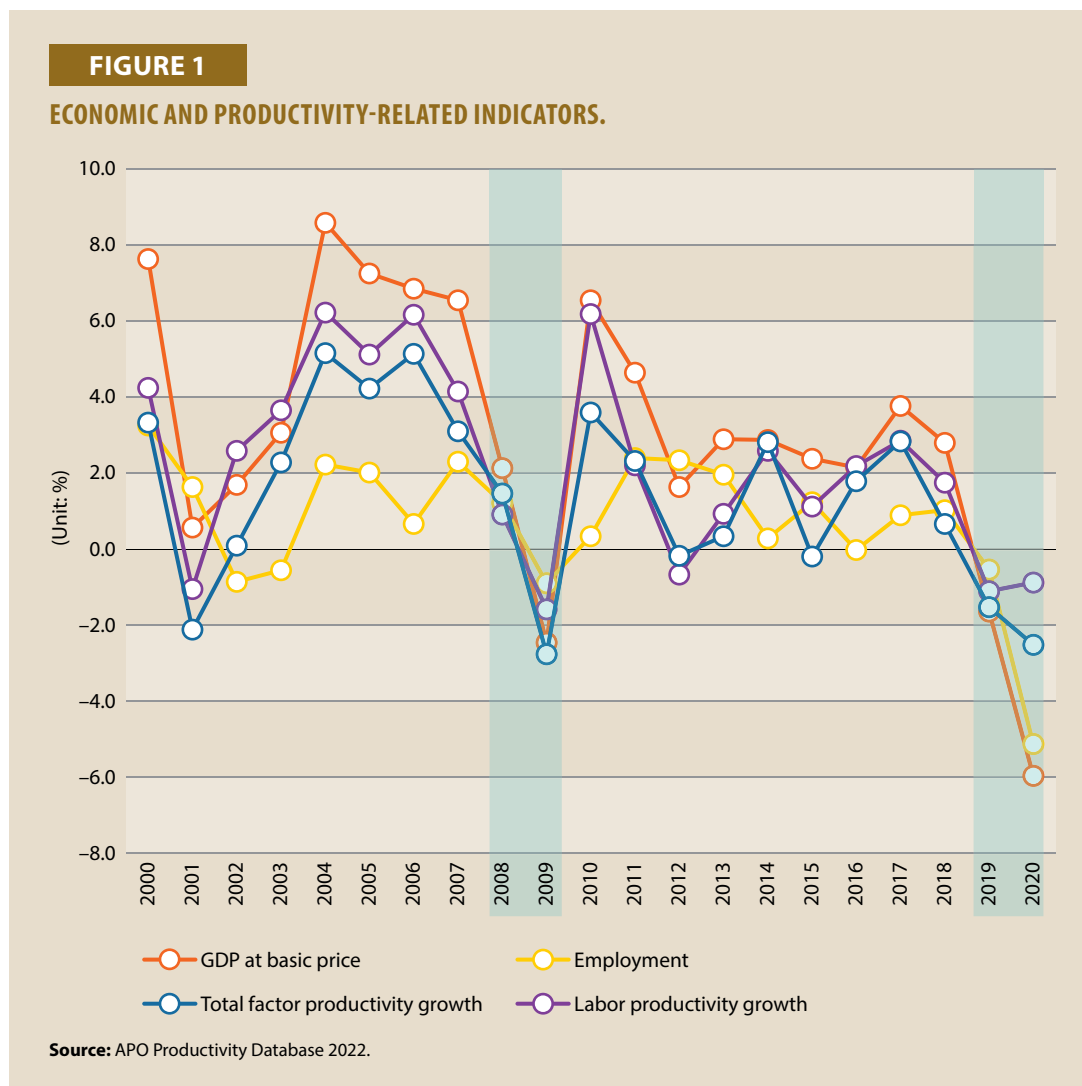
## GVC Participation

- Fiji is a services economy specialized in transport and travel services. It is also noticeable that telecommunications and health services are strong in international competitiveness.
- Fiji is the only APO member economy that has an internationally competitive education sector.
- Agriculture and wood products and food manufacturing are the leading sectors other than services.

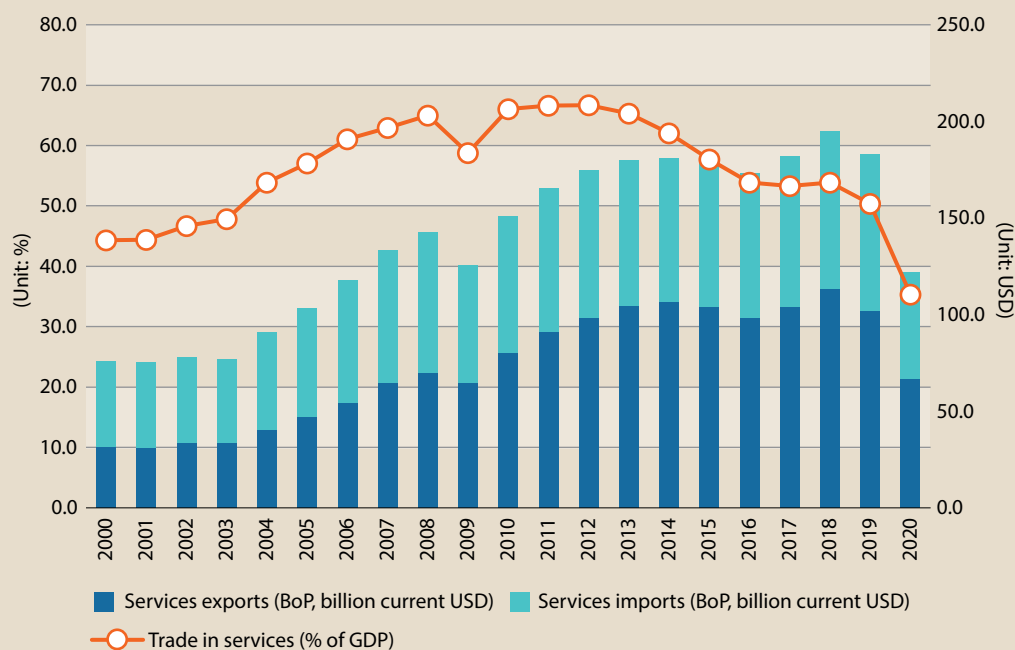
# HONG KONG

## Services Sector's Productivity

- Hong Kong's economy, which has been on a sharp rebound since 2000, showed a high growth until the GFC, but after the crisis, productivity growth has declined. In particular, it has recently experienced a –6% decrease in employment.
- Notwithstanding the GFC, Hong Kong experienced an average annual productivity growth of over 1.84% in the services sector between 2000 and 2020, showing a marked increase in the level of productivity from USD86,004 in 2000 to USD123,767 in 2020.
- In 2020, the intermediate input of the overall services sector increased by about 1.2 times compared with 2000. In particular, service sector C, financial intermediation, and other business activities recorded 2.1 times increase compared with 2000. Conversely, Service D, composed by community services, showed a relatively small growth.

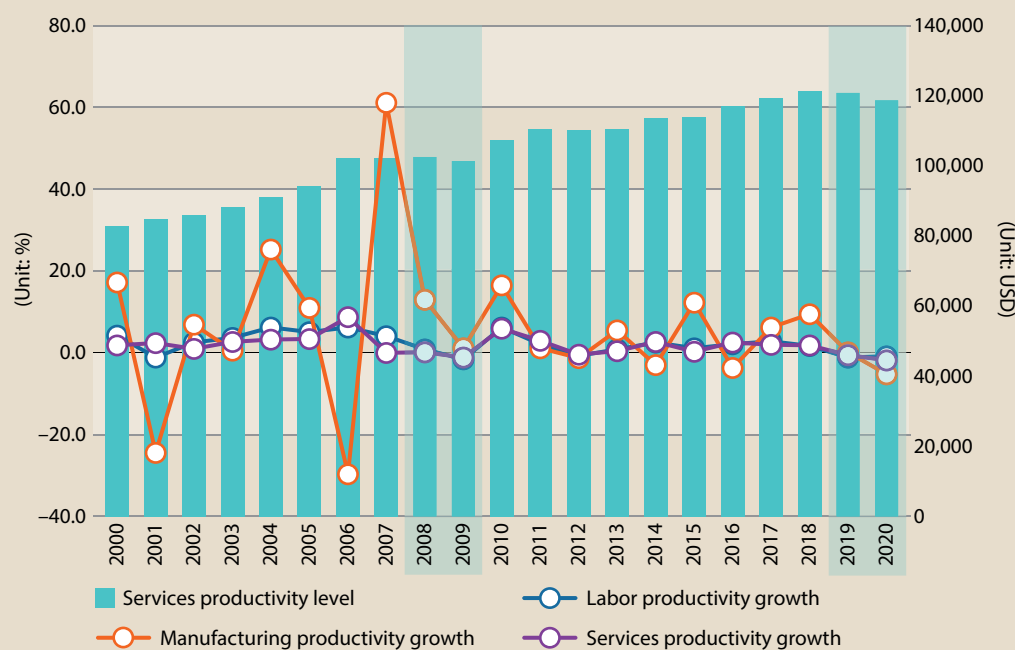


**FIGURE 2**  
**TRADE IN SERVICES SINCE 2000.**



**Source:** World Development Indicators. Note: Right side refers to service exports and imports.

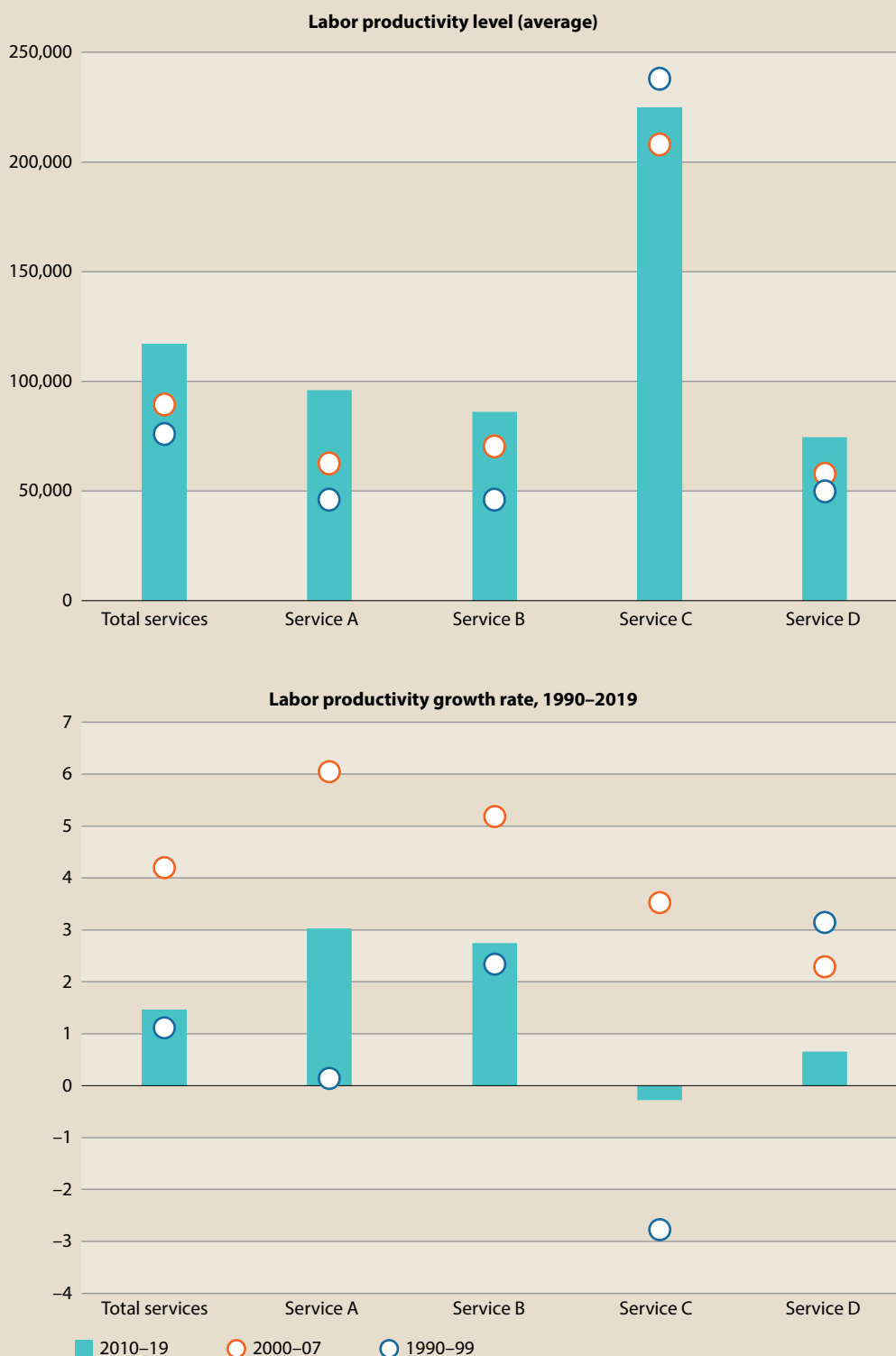
**FIGURE 3**  
**LABOR PRODUCTIVITY IN SERVICES SINCE 2000.**



**Source:** Author calculation using APO Productivity Database. Note: Right side denotes productivity level

FIGURE 4

LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



Source: Authors' calculation using APO Productivity Database.

Note: Service A includes wholesale, retail trade, repair of vehicles and household goods, hotels and restaurant. Service B includes transport, storage and communication, Service C includes financial intermediation, real estate, renting and business activities, Service D includes community, social and personal services. Total services are the sum of all.

TABLE 1

## TRENDS OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000    | 2010    | 2019    | 2020    |
|-----------|----------------------|---------|---------|---------|---------|
| Total     | Intermediate inputs  | 118,917 | 187,788 | 289,093 | 262,592 |
|           | Net Backward linkage | 0.911   | 0.934   | 0.893   | 0.898   |
|           | Net Forward linkage  | 0.802   | 0.757   | 0.811   | 0.826   |
| Service A | Intermediate inputs  | 44,613  | 76,529  | 104,232 | 95,302  |
|           | Net Backward linkage | 0.995   | 0.995   | 0.89    | 0.89    |
|           | Net Forward linkage  | 0.43    | 0.407   | 0.448   | 0.461   |
| Service B | Intermediate inputs  | 21,165  | 37,366  | 50,678  | 48,108  |
|           | Net Backward linkage | 0.877   | 0.963   | 0.842   | 0.859   |
|           | Net Forward linkage  | 0.822   | 0.711   | 0.819   | 0.834   |
| Service C | Intermediate inputs  | 20,153  | 40,006  | 74,345  | 62,497  |
|           | Net Backward linkage | 0.584   | 0.592   | 0.645   | 0.614   |
|           | Net Forward linkage  | 1.26    | 1.228   | 1.264   | 1.313   |
| Service D | Intermediate inputs  | 12,595  | 13,867  | 17,266  | 16,076  |
|           | Net Backward linkage | 1.026   | 1.031   | 1.075   | 1.091   |
|           | Net Forward linkage  | 0.863   | 0.859   | 0.867   | 0.871   |

**Source:** Authors' calculations based on ADB MRIO Database.

**Note:** Service A includes sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles, retail trade, except of motor vehicles and motorcycles; repair of household goods  
Service B includes hotels and restaurants, inland transport, water transport, air transport, other supporting and auxiliary transport activities; activities of travel agencies, post and telecommunications  
Service C includes financial intermediation, real estate activities, renting of M&E and other business activities  
Service D includes education, health and social work, other community, social, and personal services

## Finance Sector's Productivity

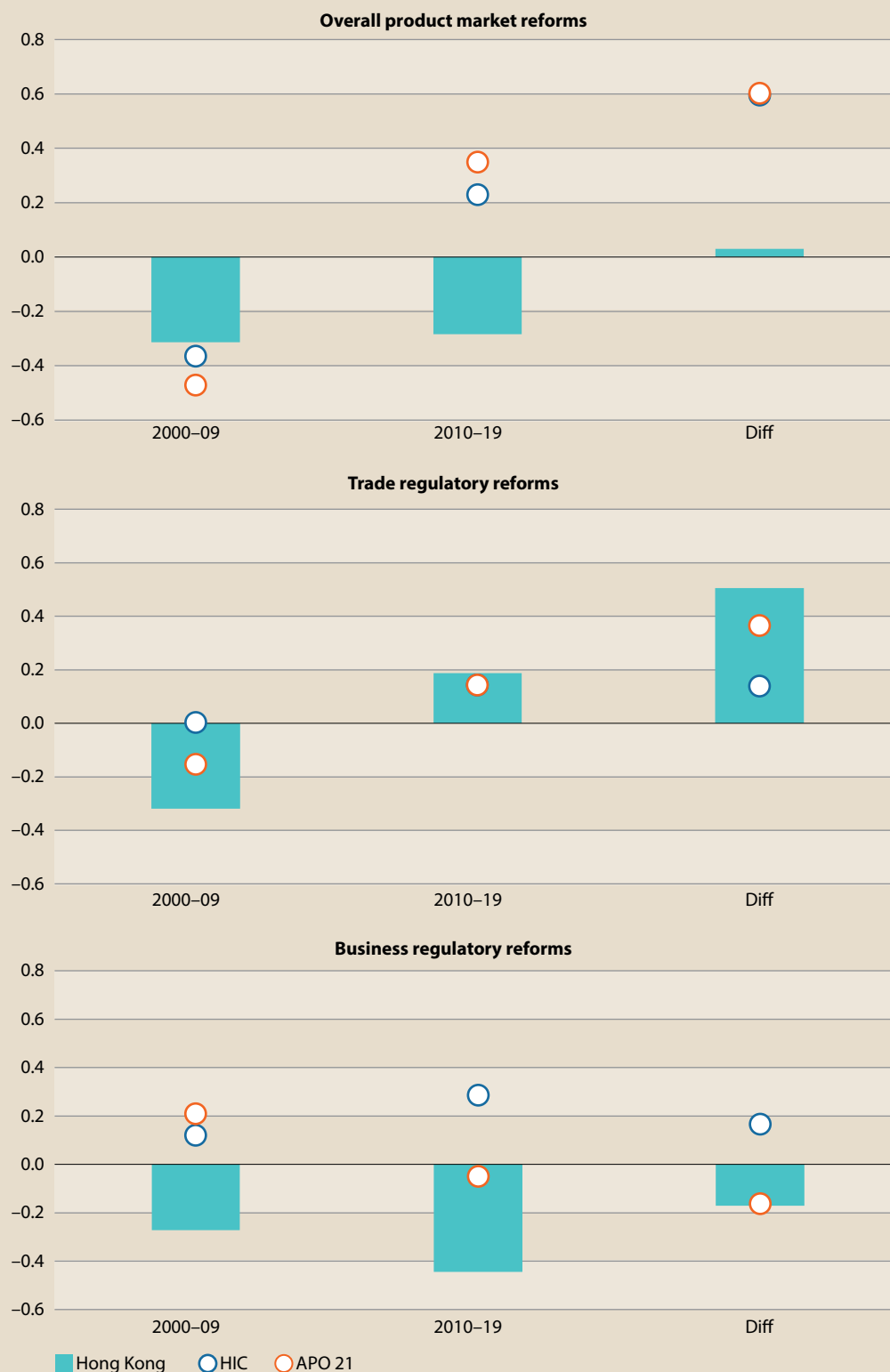
- Hong Kong is classified as a high-income country by the World Bank. Its graph shows that there are significant differences over decades. While it shows much variability between the finance sector's productivity and total factor productivity in the early stages, the relationship has stagnated in recent years.

## Regulatory Reforms Intensity

- The progress of overall product market reforms over the recent decade in Hong Kong lags both HIC and APO 21 groups between 2010 and 2019.
- In the same period, however, reforms intensity of reducing trade-related barriers demonstrates much greater progress as compared to the two groups.

FIGURE 5

REGULATORY REFORMS INTENSITY.



Note: 1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index 2) HIC and APO 21 denotes median growth of each group.

## **GVC Participation**

- Apparently, Hong Kong is a services hub in the world economy.
- The picture shows a sharp contrast between service sectors where Hong Kong has strong international competitiveness, and other sectors.
- It is noticeable that Hong Kong's participation in GVCs has decreased in many sectors for the period between 2000 and 2020.

# INDIA

## Services Sector's Productivity

- Despite the significant slowdown after the 2008–09 recession, India's services sector's productivity growth averaged 4.47% before 2019. Its productivity growth rose around 2.95 times, jumping from USD11,274 in 2000 to USD33,352 in 2019.
- The rapid growth of productivity appears to be due to the growth in value added rather than employment, and the significant improvements in productivity levels such as financial intermediation, real-estate activities, and business activities.
- India's services inputs as intermediate goods increased 5.11 times in 2020 compared with 2000, and about three times over the 2000–10 period. In particular, Service C, composed of financial services and business services, showed an increase in intermediate inputs by about 11.3 times, which exceeds the average of the entire period.

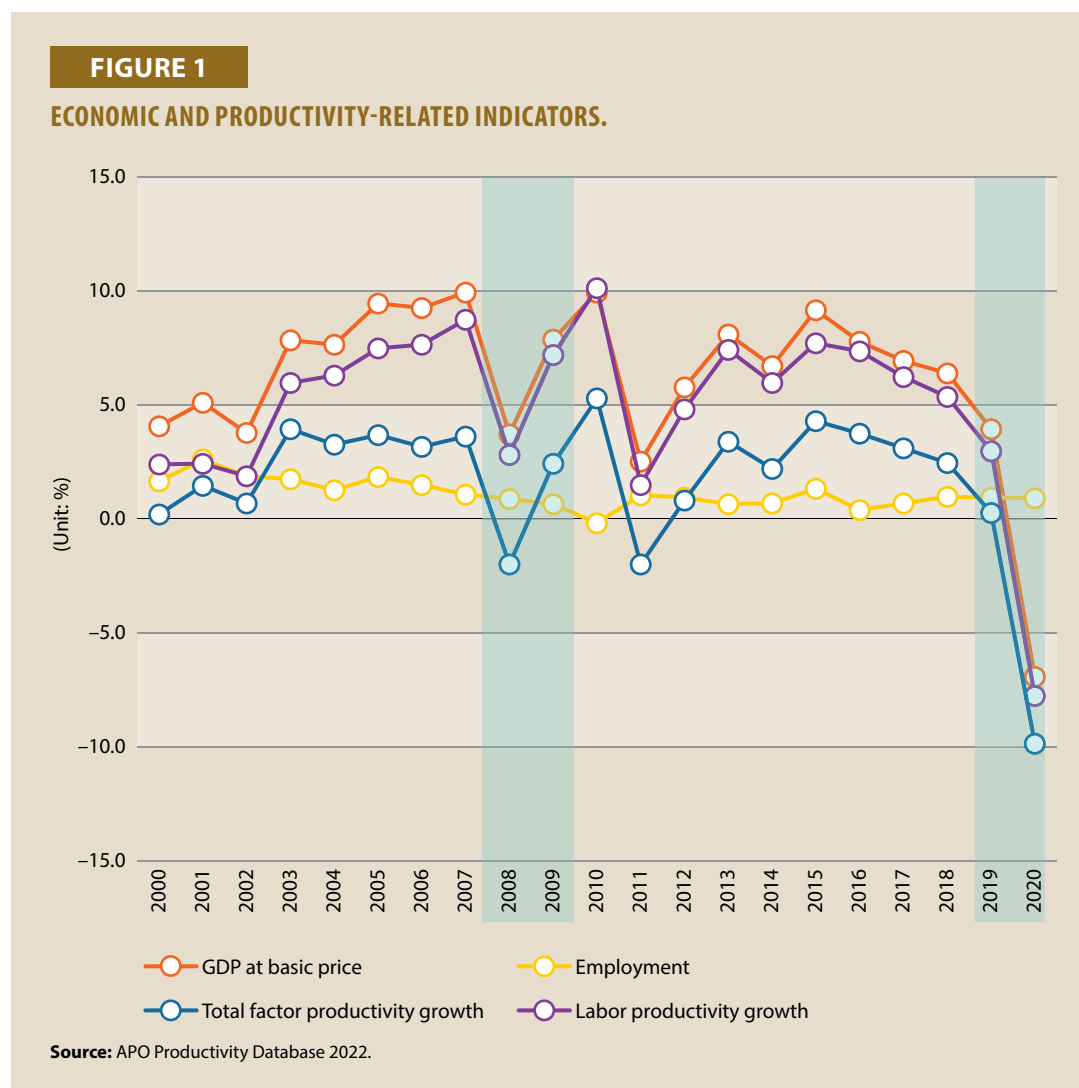
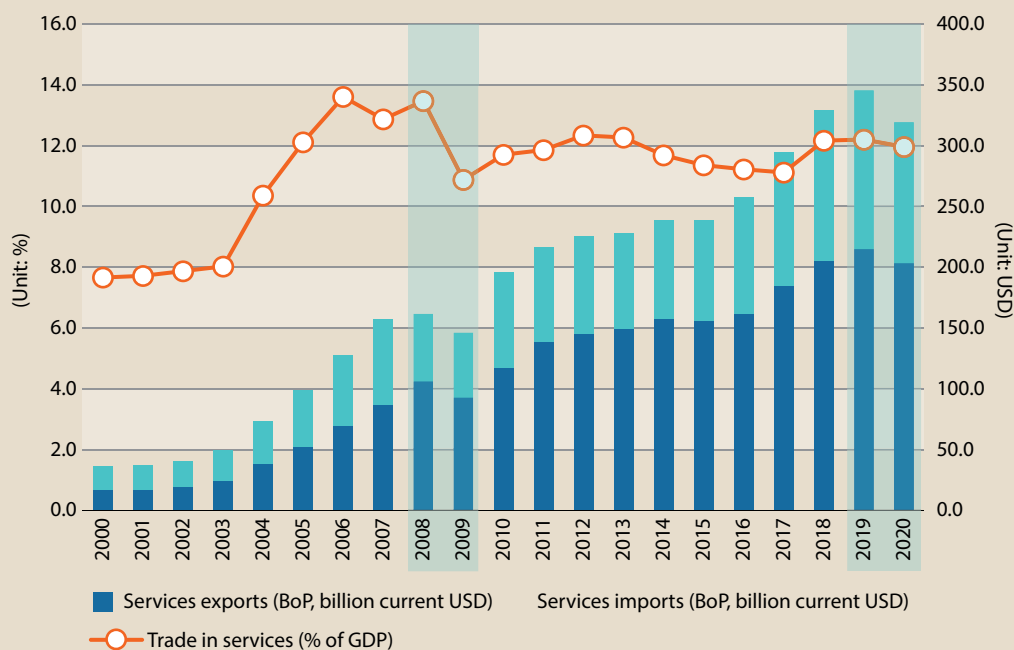


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

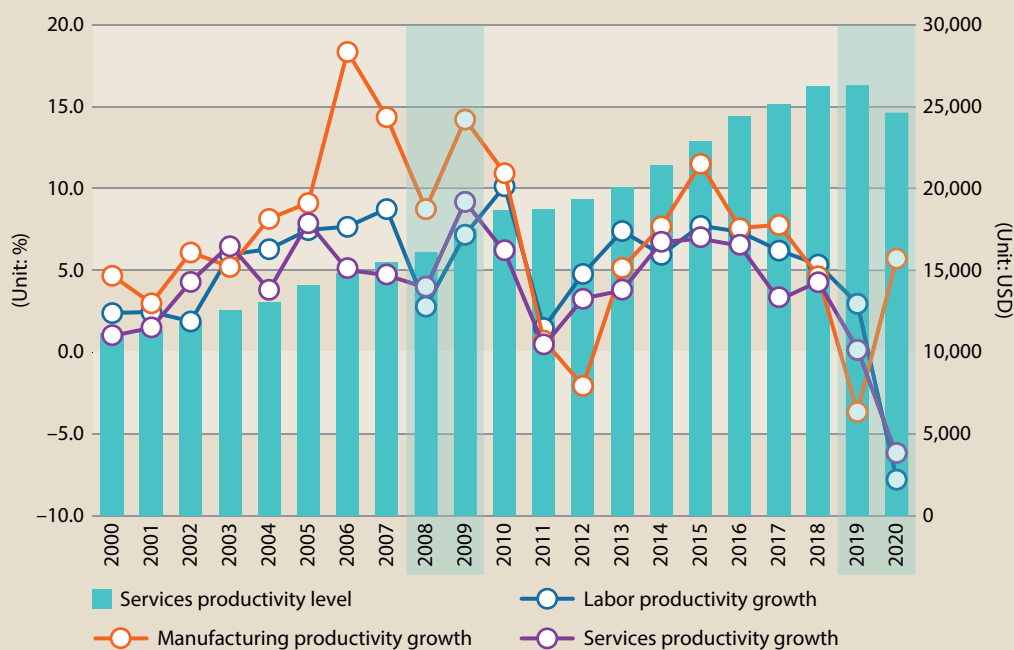


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000    | 2010     | 2019     | 2020     |
|-----------|----------------------|---------|----------|----------|----------|
| Total     | Intermediate inputs  | 126,674 | 533,155  | 895,859  | 774,629  |
|           | Net backward linkage | 1.025   | 1        | 1.05     | 1.057    |
|           | Net forward linkage  | 1.073   | 1.081    | 0.916    | 0.925    |
| Service A | Intermediate inputs  | 22,863  | 93,259   | 1,51,003 | 1,21,087 |
|           | Net backward linkage | 0.777   | 0.715    | 0.792    | 0.783    |
|           | Net forward linkage  | 1.325   | 1.385    | 1.106    | 1.131    |
| Service B | Intermediate inputs  | 32,471  | 1,25,111 | 1,84,165 | 1,46,942 |
|           | Net backward linkage | 1.086   | 1.084    | 1.24     | 1.27     |
|           | Net forward linkage  | 1.022   | 0.959    | 0.673    | 0.67     |
| Service C | Intermediate inputs  | 13,482  | 59,785   | 1,73,586 | 1,65,427 |
|           | Net backward linkage | 0.881   | 0.898    | 0.795    | 0.773    |
|           | Net forward linkage  | 1.199   | 1.21     | 1.205    | 1.232    |
| Service D | Intermediate inputs  | 11,303  | 29,203   | 76,548   | 73,021   |
|           | Net backward linkage | 1.227   | 1.147    | 1.203    | 1.218    |
|           | Net forward linkage  | 0.9     | 0.976    | 0.884    | 0.878    |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

- India was a low-income country until 2007. After 2007, India became a lower-middle-income country. Generally, the relationship between financial development and productivity has been positive, though there was some opposition during the 1990s. Recently, the finance sector seems to have played an important role in increasing productivity.

## Regulatory Reforms Intensity

- India has boasted a notable rise in reforms intensity in overall product market during the post-GFC period of 2010–19, far outpacing the median intensities of LMIC and APO 21 groups.
- Such remarkable progress of regulatory reforms can be attributed to marked deregulations in both trade- and business-regulatory reforms during the given period, with the latter being a larger contributing factor.

FIGURE 5

## OVERALL, TRADE, AND BUSINESS REFORMS IN INDIA BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups.

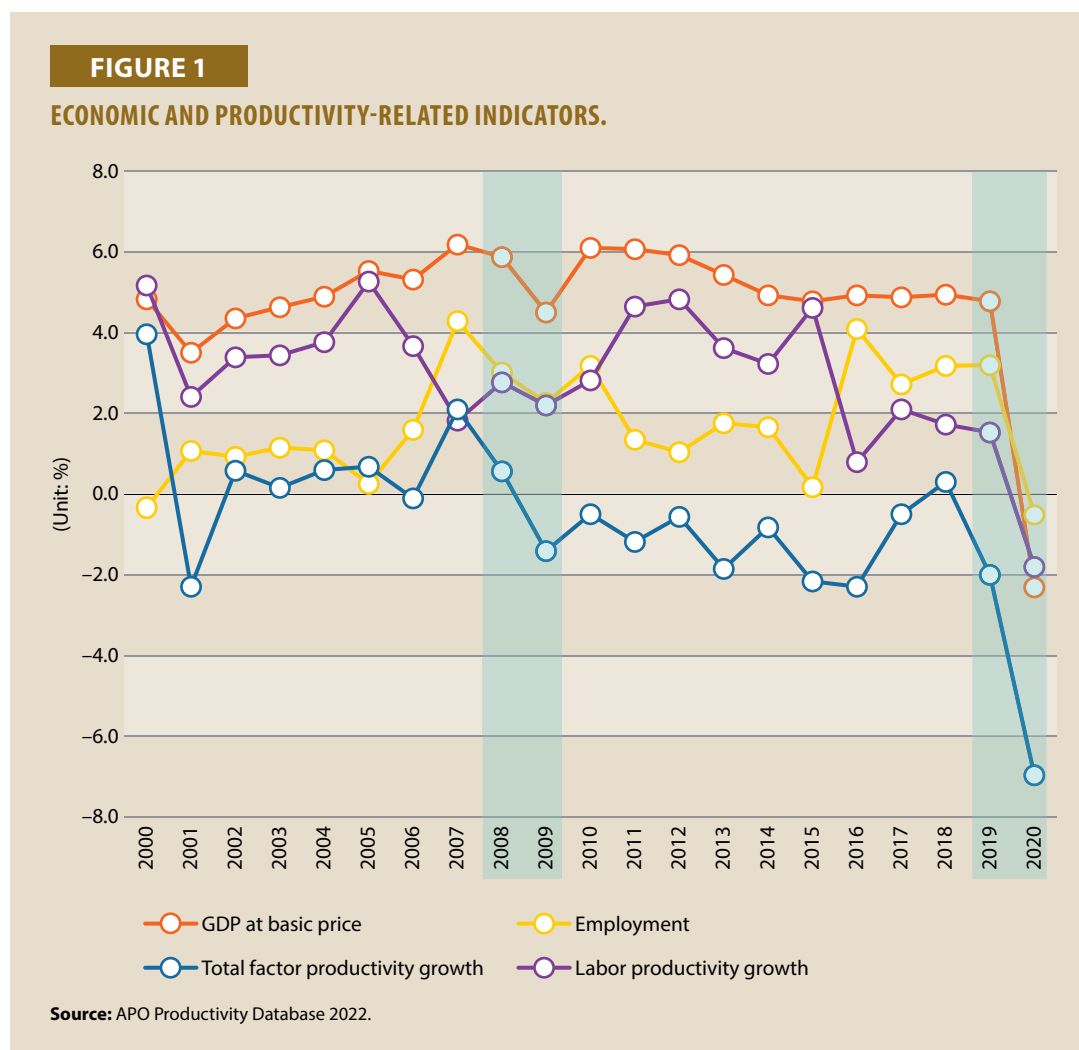
## GVC Participation

- India is broadly specialized across primary, manufacturing, and service sectors, with the specialization pattern changing for the last two decades. The leading role played by agriculture and light manufacturing such as textile and leather has considerably decreased, though these sectors still lead India's exports. In contrast, some sectors in high-end manufacturing such as refined petroleum and other chemicals are gradually gaining international competitiveness.
- India's telecommunications sector has steadily improved both in GVC participations and RCA gains.

# INDONESIA

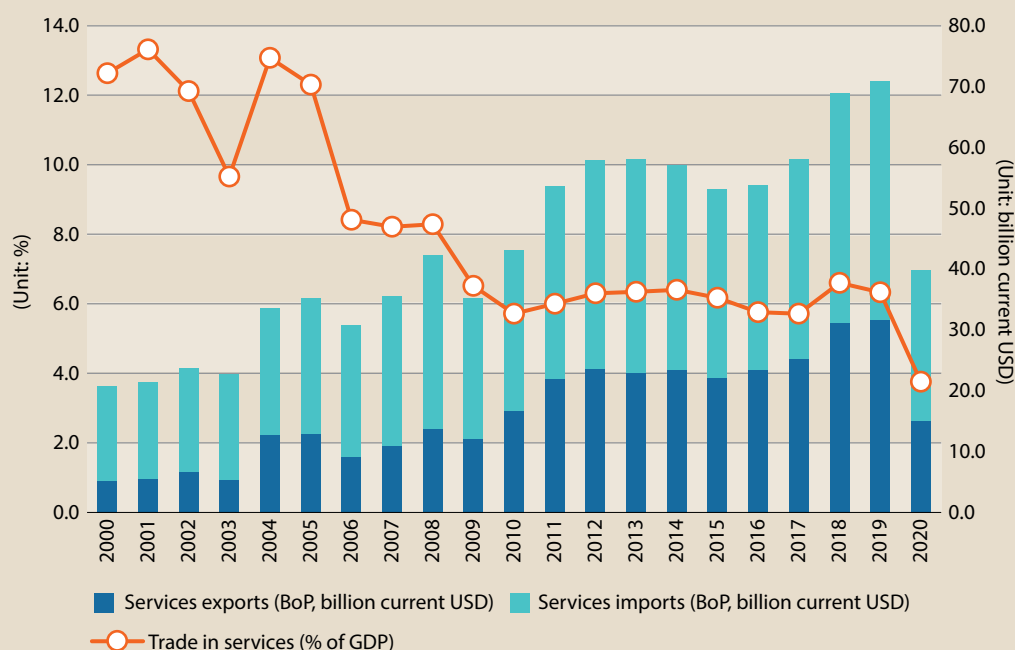
## Services Sector's Productivity

- During 2000 to 2019, Indonesia showed a steady positive growth (3%) in the services sector's productivity, which was higher than that in the manufacturing sector, from an initial productivity level of USD13,862 in 2000 to USD22,551 in 2019.
- However, since 2019 and after the outbreak of COVID-19, major macroeconomic indicators have been on the decline, affecting the productivity growth of the services sector compared with that of manufacturing.
- Indonesia's service input of intermediate goods increased 6.11 times in 2020 compared with 2000, and about 3.5 times during the 2000–10 period. In particular, Service D showed an increase in intermediate input by about 7.51 times, which exceeds the average of the entire period. On the other hand, Services B and C increased by 5.76 and 5.69 times, respectively.



**FIGURE 2**

**TRADE IN SERVICES.**

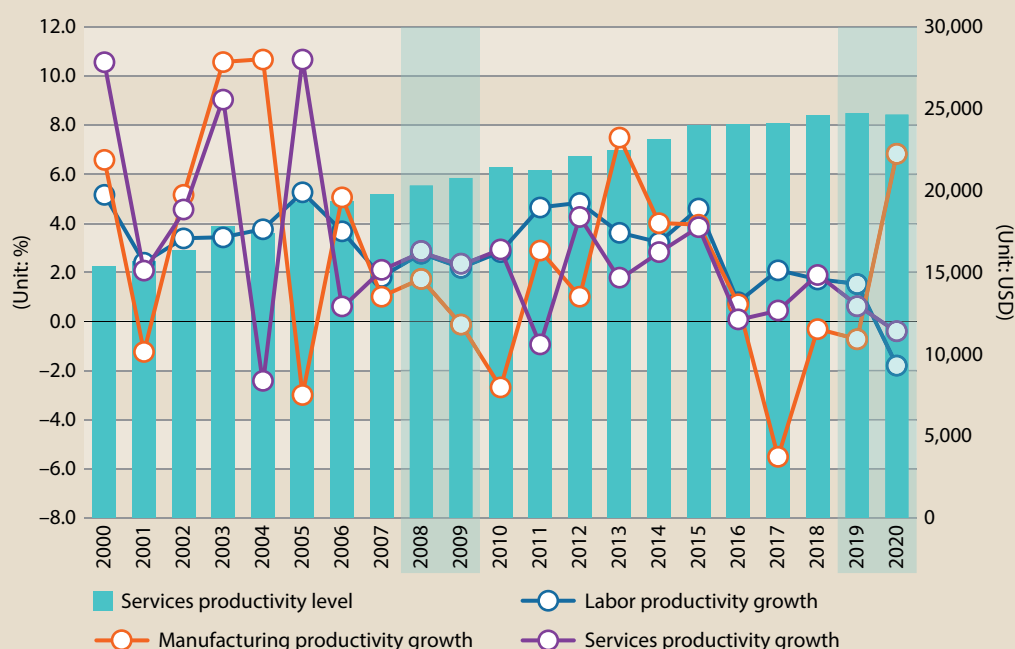


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

**FIGURE 3**

**LABOR PRODUCTIVITY IN SERVICES.**

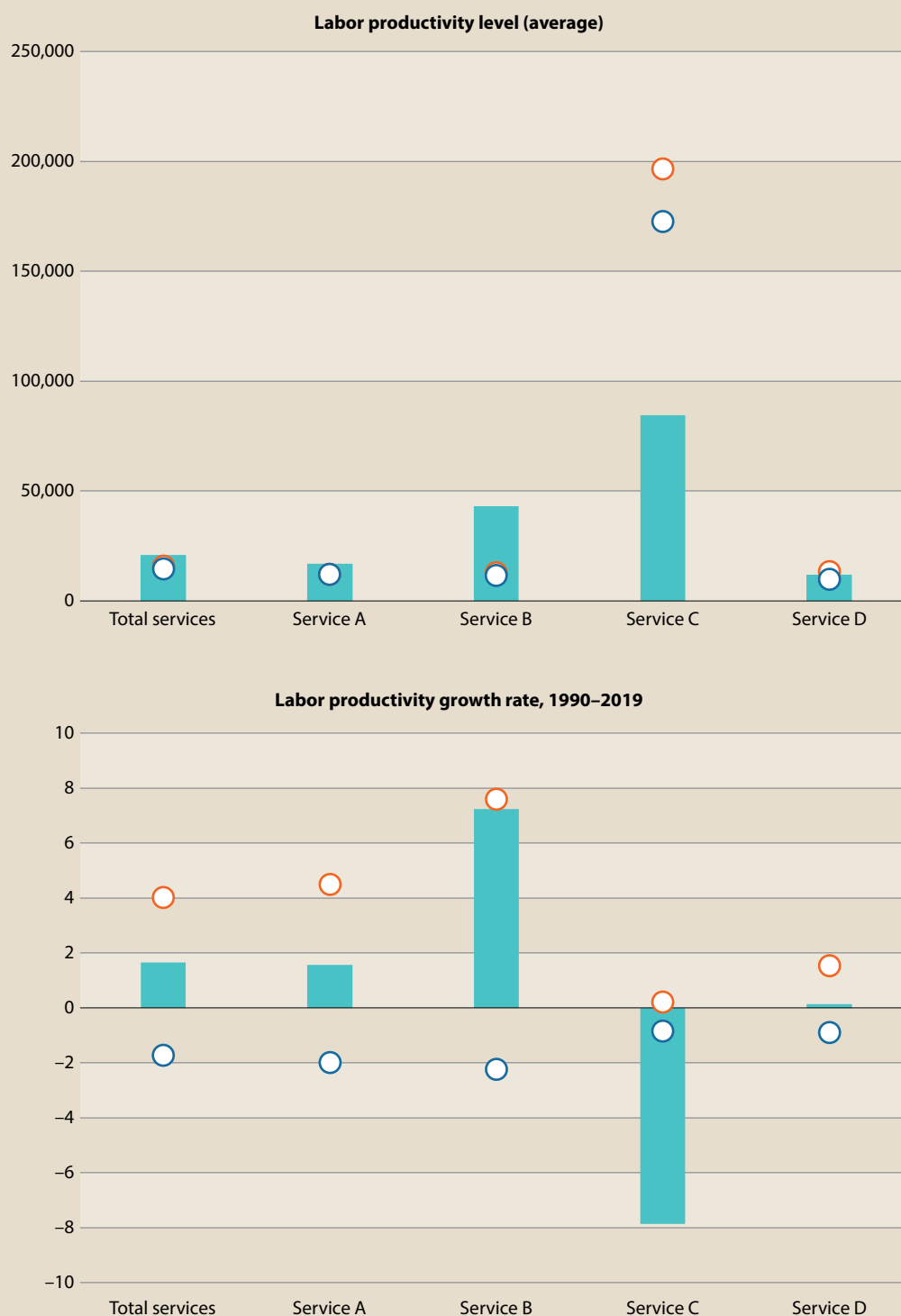


Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

LABOR PRODUCTIVITY IN SERVICE SUBSECTORS.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000   | 2010    | 2019    | 2020    |
|-----------|----------------------|--------|---------|---------|---------|
| Total     | Intermediate inputs  | 71,209 | 324,064 | 549,804 | 506,302 |
|           | Net backward linkage | 0.977  | 1.008   | 1.002   | 1.006   |
|           | Net forward linkage  | 0.898  | 0.933   | 0.949   | 0.96    |
| Service A | Intermediate inputs  | 26,422 | 74,706  | 103,379 | 94,965  |
|           | Net backward linkage | 0.895  | 0.819   | 0.923   | 0.914   |
|           | Net forward linkage  | 0.955  | 1.117   | 1.035   | 1.053   |
| Service B | Intermediate inputs  | 11,520 | 44,612  | 102,102 | 77,915  |
|           | Net backward linkage | 0.873  | 0.936   | 0.802   | 0.826   |
|           | Net forward linkage  | 0.824  | 0.848   | 0.954   | 0.954   |
| Service C | Intermediate inputs  | 6,418  | 24,050  | 42,519  | 42,940  |
|           | Net backward linkage | 0.443  | 0.69    | 0.576   | 0.543   |
|           | Net forward linkage  | 1.444  | 1.288   | 1.37    | 1.404   |
| Service D | Intermediate inputs  | 6,467  | 33,781  | 53,684  | 55,080  |
|           | Net backward linkage | 1.385  | 1.335   | 1.456   | 1.478   |
|           | Net forward linkage  | 0.654  | 0.722   | 0.656   | 0.656   |

**Source:** ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation, real estate activities, renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

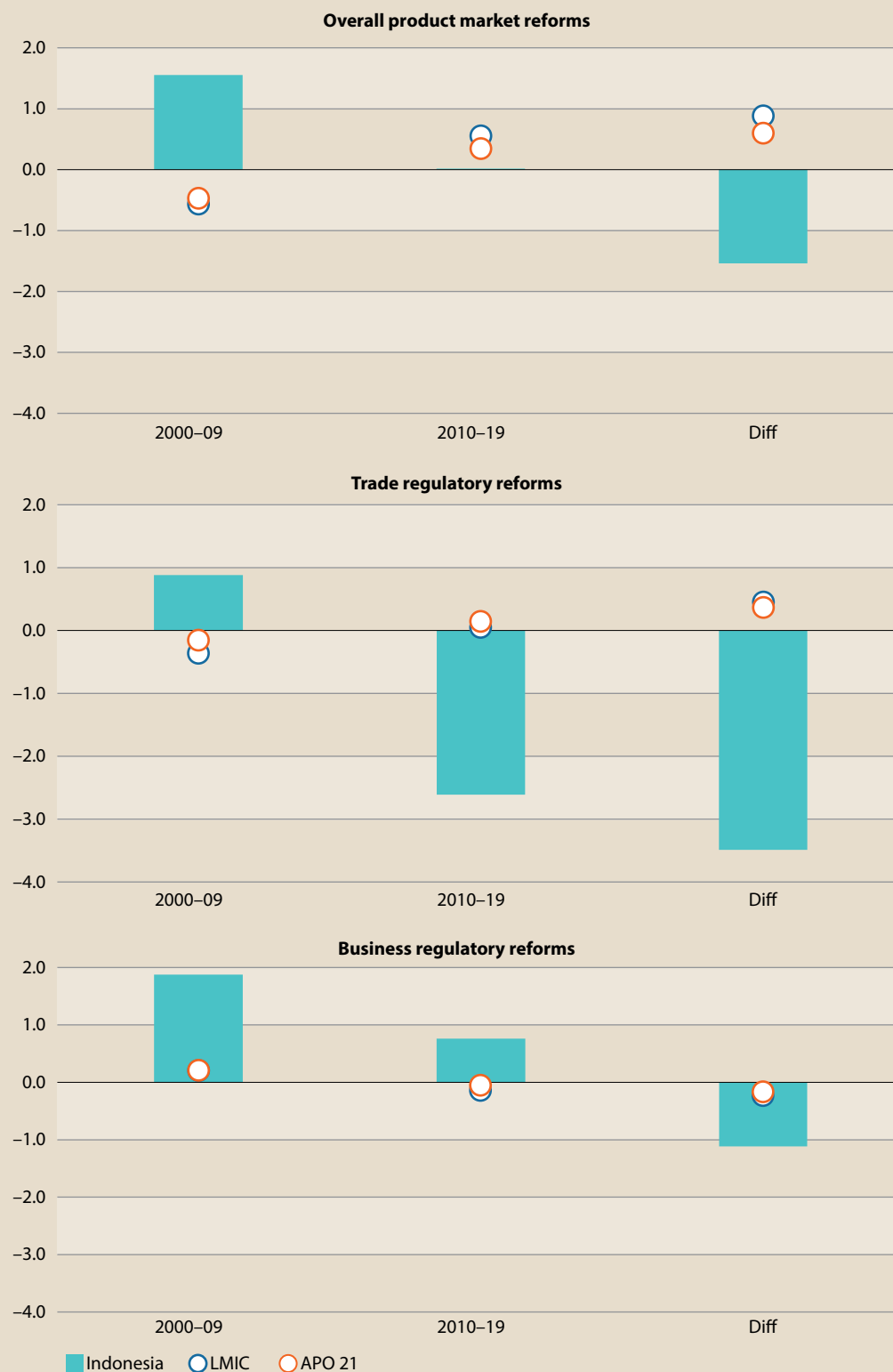
- Indonesia was initially a lower-income country but was reclassified as a lower-middle-income country in 2003. Total factor productivity and the finance sector's productivity show no general pattern. It is possible that there is another source driving economic growth in Indonesia.

## Regulatory Reforms Intensity

- Indonesia has experienced a slowing progress in overall product market reforms over the past decade (2010–19), which is in sharp contrast with the prior decade-long period (2000–09).
- Although both trade and business reform areas contributed to such delayed reforms process; the former, which significantly decreased in reform intensity, appears to be a major contributor.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN INDONESIA BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denotes median growths of the respective groups.

## GVC Participation

- Indonesia shows big changes in its industrial landscape: One, concentration on petroleum and mining/quarrying has become alleviated, it tends to specialize more in light manufacturing. Two, there have been big decreases in GVCs participation.
- Indonesia's services show far lower magnitudes both in RCAs and GVC participation than the manufacturing sector.

# IR IRAN

## Services Sector's Productivity

- IR Iran's economy had showed stable growth before the GFC. However, as economic sanctions were implemented in 2012, crude oil production and exports rapidly decreased, resulting in an economic decline afterwards. However, the economy rose sharply in 2016 due to the lifting of economic sanctions, but has been showing a decline due to COVID-19 and political issues.
- On the other hand, the services sector's productivity has shown a relatively small growth compared with that of manufacturing, but it is judged that this change was affected due to factors such as the economic crisis and economic sanctions. During the 2000–20 period, annual productivity growth in services averaged at around 2.1%, lower than manufacturing, with a 3.3% annual productivity growth,

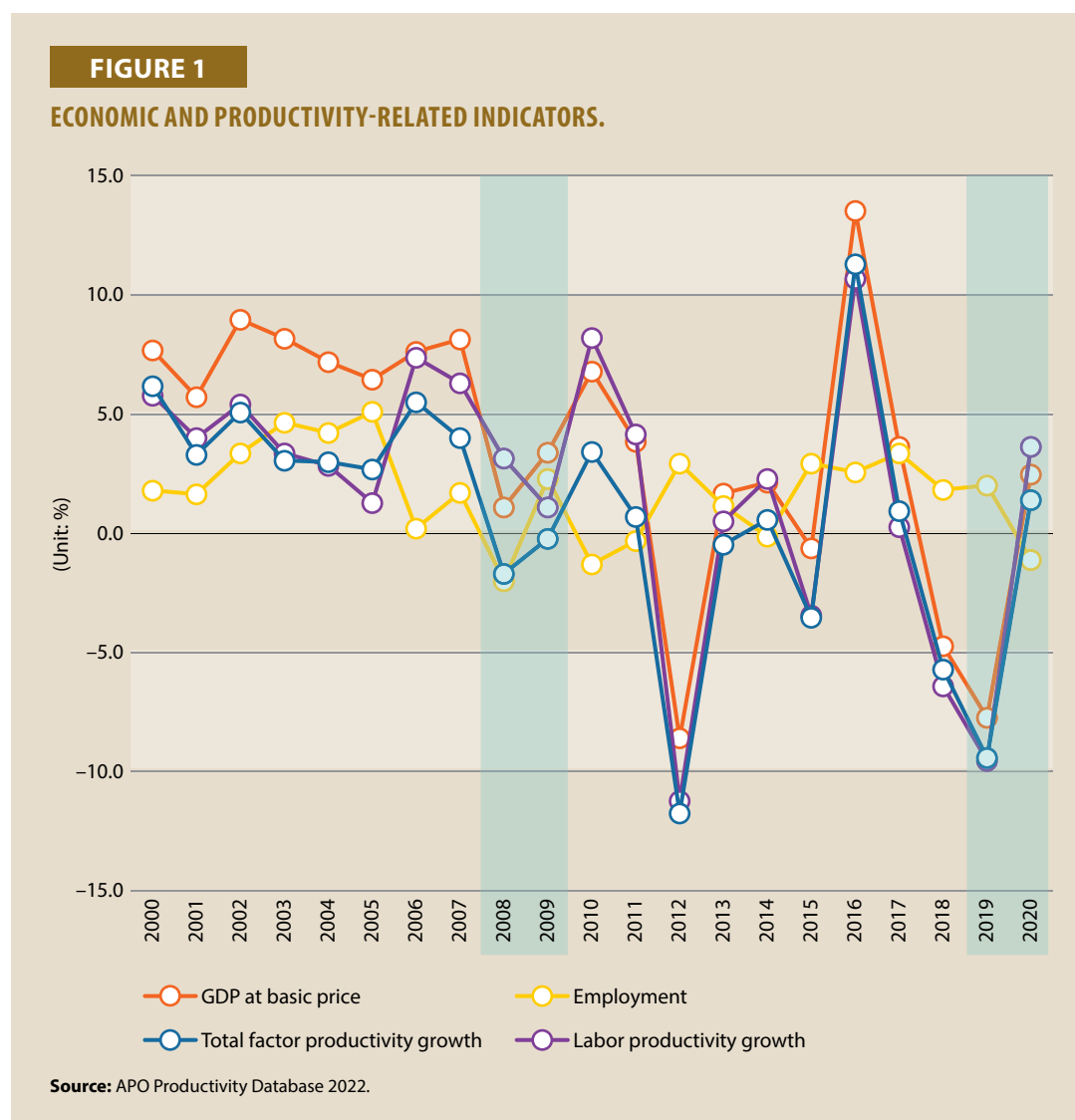
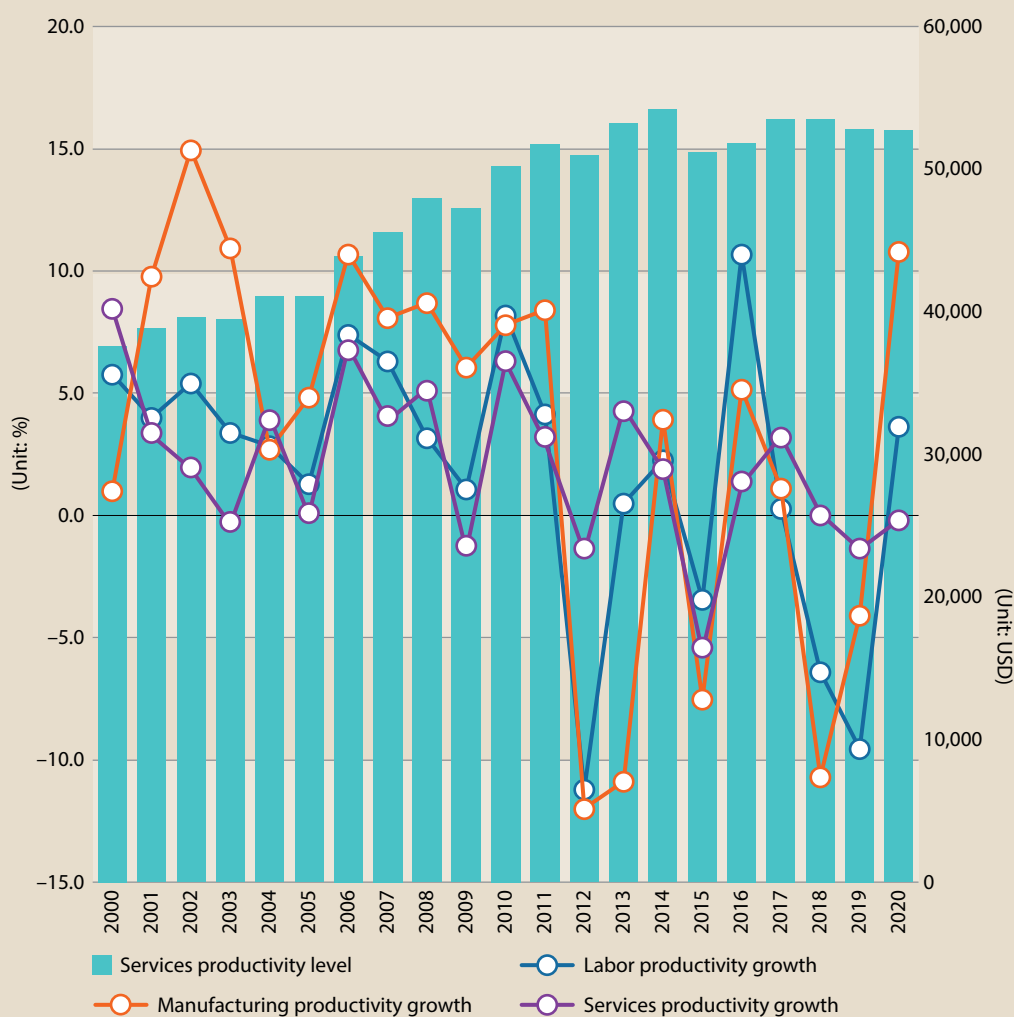


FIGURE 2

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

## Finance Sector's Productivity

- IR Iran began as a lower-middle-income country but advanced to an upper-middle-income country. No visible pattern is seen between the finance sector's productivity and total factor productivity.

## Regulatory Reforms Intensity

- A drop in regulatory reforms intensity in the products market was found over the 20-year period of 2000–19. However, the pattern of falling reforms intensity was greatly weakened during the recent decade (2010–19).
- A similar pattern emerges in trade and business reform realms, respectively, notwithstanding varying the degree of stagnant reforms intensity.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SUBSECTOR SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

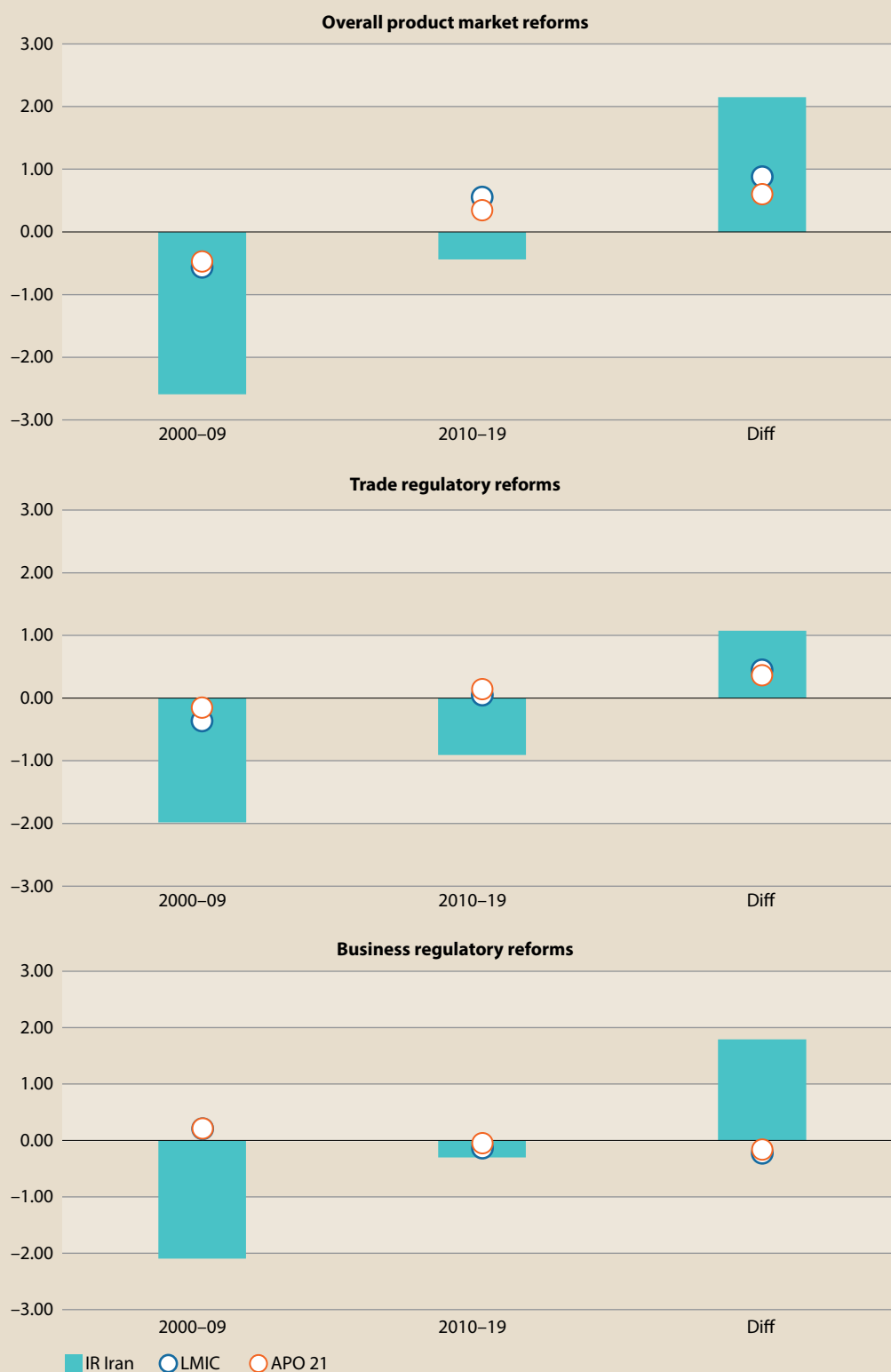
Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

FIGURE 4

## OVERALL, TRADE, AND BUSINESS REFORMS IN IR IRAN BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups. (3) Due to data availability limitations, trade regulatory reform shows different time periods (e.g., 2004-09).

# JAPAN

## Services Sector's Productivity

- Japan's productivity growth in services has remained stagnant since the 2000s with an average productivity growth rate of 0.1% from 2000 to 2019. With the outbreak of COVID-19, the productivity growth rate decreased to -3.4% compared with the previous year, recording a productivity level lower than a decade ago, from USD84,573 in 2000 to USD79,535 in 2020.
- In 2019, the intermediate input of services in the economy increased by about 13% from 2000. In particular, services such as hotels and restaurants, financial intermediation, and other business activities were relatively less affected by COVID-19 in 2020, compared with other service subsectors.

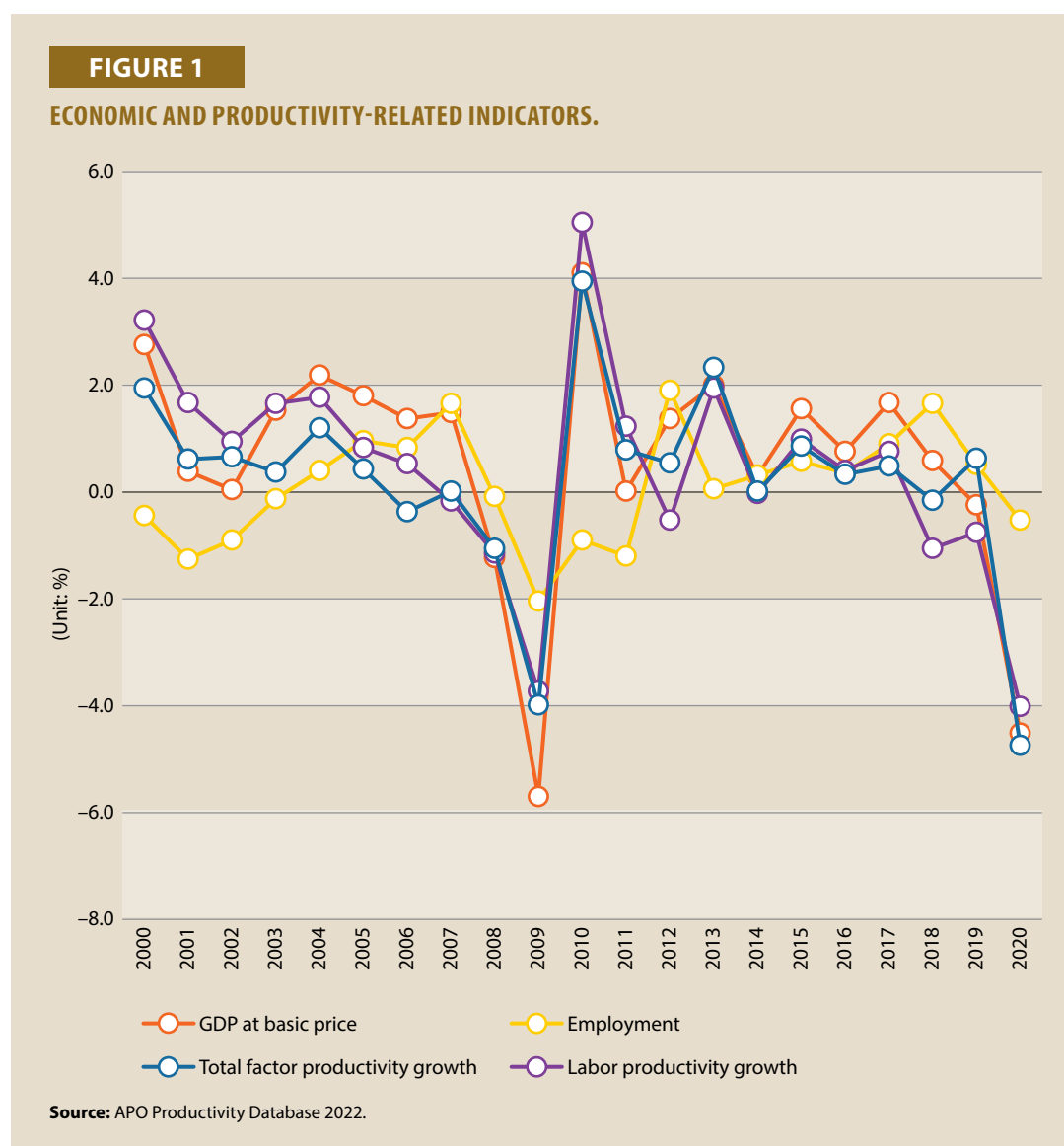
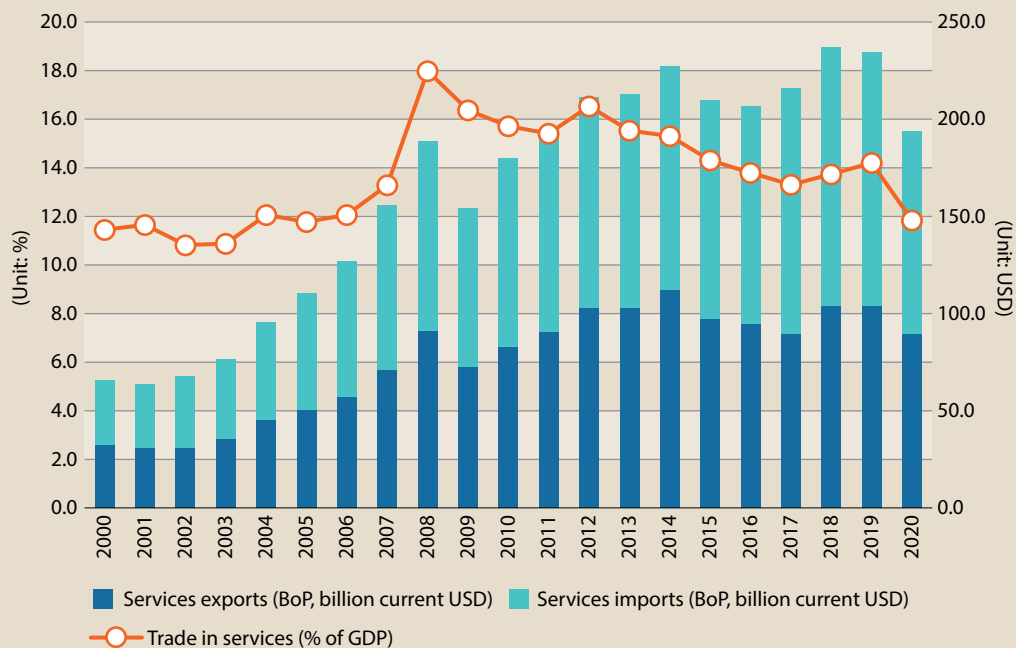


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

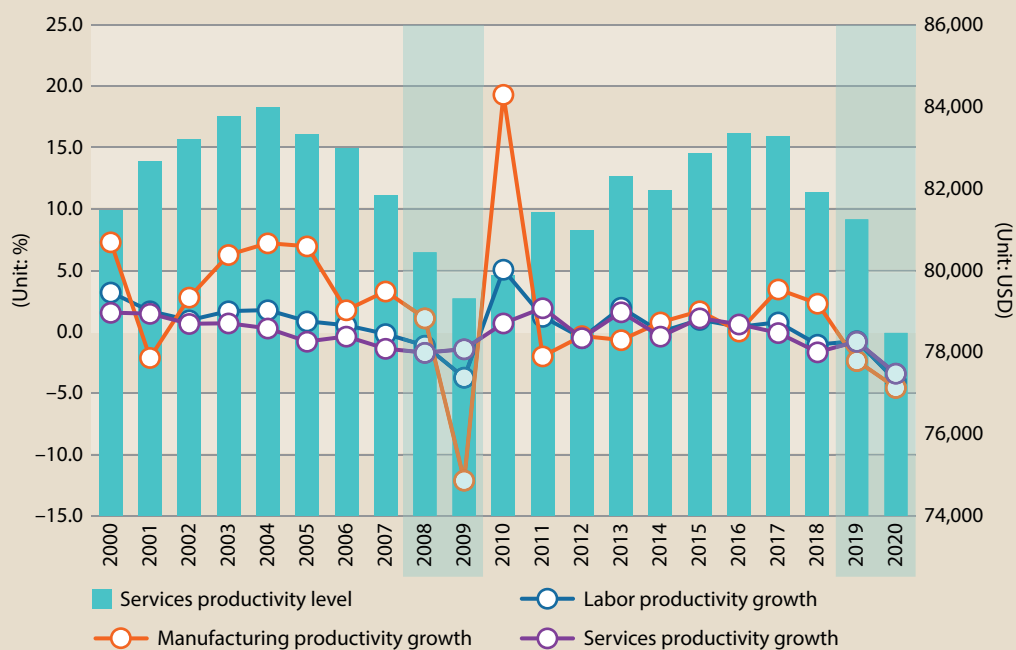


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES COMPARED WITH MANUFACTURING SINCE 2000.

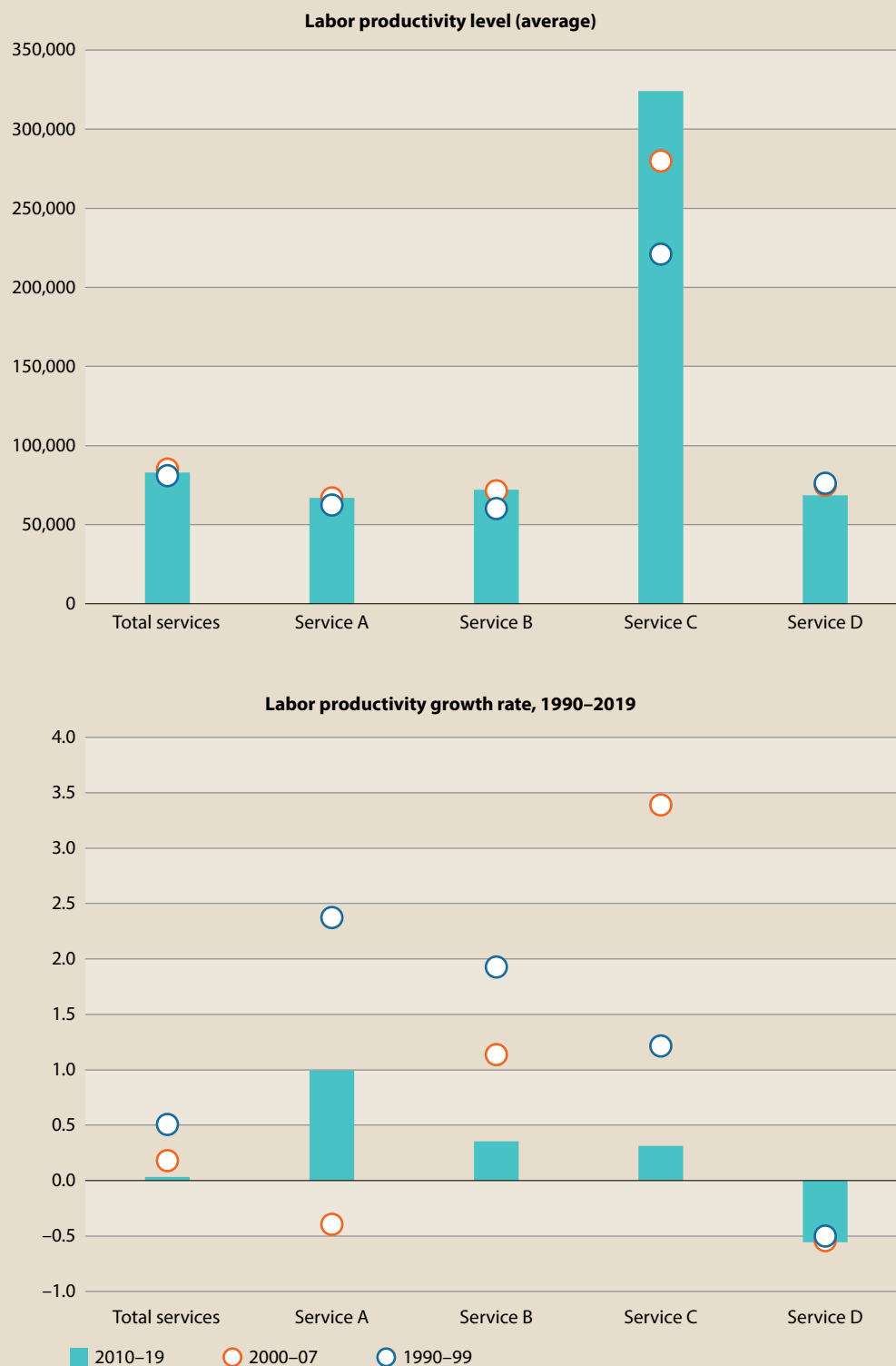


Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes the productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000      | 2010      | 2019      | 2020      |
|-----------|----------------------|-----------|-----------|-----------|-----------|
| Total     | Intermediate inputs  | 2,046,069 | 2,319,467 | 2,356,284 | 2,312,965 |
|           | Net backward linkage | 1.026     | 1.028     | 0.953     | 0.949     |
|           | Net forward linkage  | 1.005     | 0.998     | 1.052     | 1.069     |
| Service A | Intermediate inputs  | 530,909   | 577,062   | 619,988   | 598,328   |
|           | Net backward linkage | 0.97      | 0.986     | 0.903     | 0.895     |
|           | Net forward linkage  | 0.993     | 0.995     | 1.088     | 1.106     |
| Service B | Intermediate inputs  | 227,040   | 254,107   | 255,705   | 257,335   |
|           | Net backward linkage | 0.866     | 0.897     | 0.738     | 0.711     |
|           | Net forward linkage  | 1.047     | 1.025     | 1.166     | 1.208     |
| Service C | Intermediate inputs  | 448,358   | 530,275   | 511,880   | 504,807   |
|           | Net backward linkage | 0.658     | 0.671     | 0.717     | 0.715     |
|           | Net forward linkage  | 1.349     | 1.319     | 1.266     | 1.277     |
| Service D | Intermediate inputs  | 306,965   | 400,128   | 345,463   | 338,480   |
|           | Net backward linkage | 1.352     | 1.322     | 1.236     | 1.251     |
|           | Net forward linkage  | 0.836     | 0.843     | 0.869     | 0.865     |

**Source:** Authors' calculations based on ADB MRIO Database.

**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.  
 Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.  
 Service C includes financial intermediation; real estate activities; renting of M&E; and other business activities.  
 Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

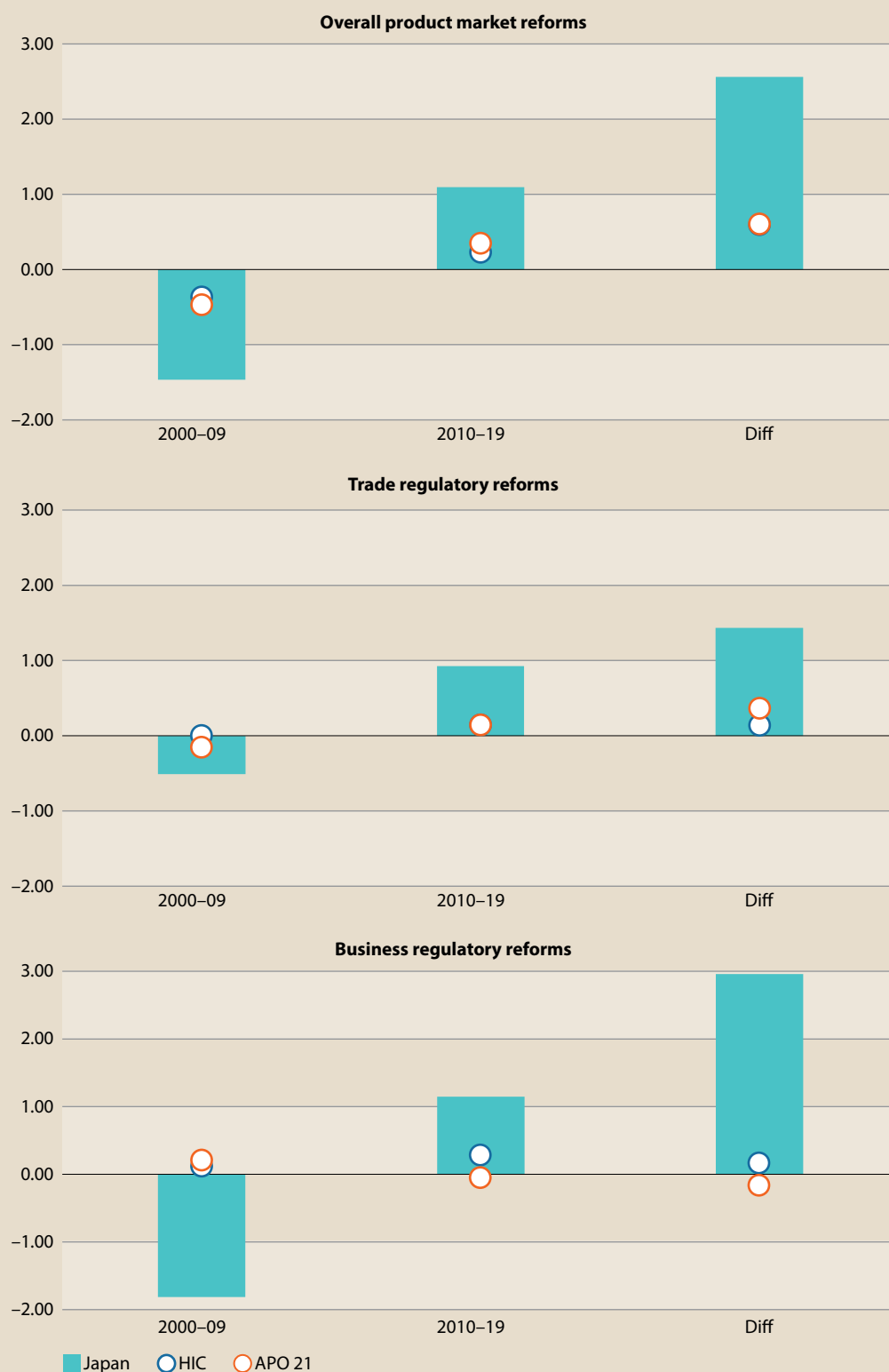
- Japan shows a clear upper trend between the finance sector and total productivity. The country was able to channelize financial development through the correct mechanisms to boost economic growth and total productivity.

## Regulatory Reforms Intensity

- The overall degree of liberalization in product markets greatly expanded in Japan during the period 2010–09, with much higher intensity than the HIC and APO medians.
- Among two different areas of the overall product market reforms, a notable reform progress in business regulations has played a more significant role in boosting the overall reforms process.

FIGURE 5

## OVERALL, TRADE, AND BUSINESS REFORMS IN JAPAN BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) HIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- The majority of sectors in Japan have increased their GVC participation, many with positive gains in international competitiveness. Transportation equipment, basic metal, and chemicals are among these sectors.
- GVC participation of Japan's services as a whole is far lower than that of manufacturing as a whole. Water transport, having the highest score of GVC participation among service sectors, has shown decreases in GVC participation for the last two decades. Japan has many service sectors that have moderately strong international competitiveness, e.g., wholesale, motor vehicle-related services, hotels and restaurants, telecommunications, and health services. The RCA of Japan's financial services sector decreased from 1.01 in 2000 to 0.60 in 2020.

# THE REPUBLIC OF KOREA

## Services Sector's Productivity

- The Republic of Korea (ROK) experienced a downward trend in the services sector productivity, largely due to the GFC, and again by the COVID-19 pandemic.
- Between 2000 and 2020, the ROK experienced a productivity growth of over 1.65% in the services sector, thereby showing a marked increase in the level of the sector's productivity from USD46,222 in 2000 to USD66,735 in 2020.
- The long downturn observed in employment growth seems to have played a large role in slowing the overall growth in productivity over the period. In contrast, productivity in each subsector of the services sector improved before the outbreak of COVID-19, but the increase in employment slowed the growth of the sector's productivity.
- In 2020, the intermediate input of the overall services sector increased by about 2.6 times compared with 2000. In particular, service sector C, financial intermediation, and other business activities recorded 3.4 times increase compared with 2000, and also an increase in the impact of COVID-19.

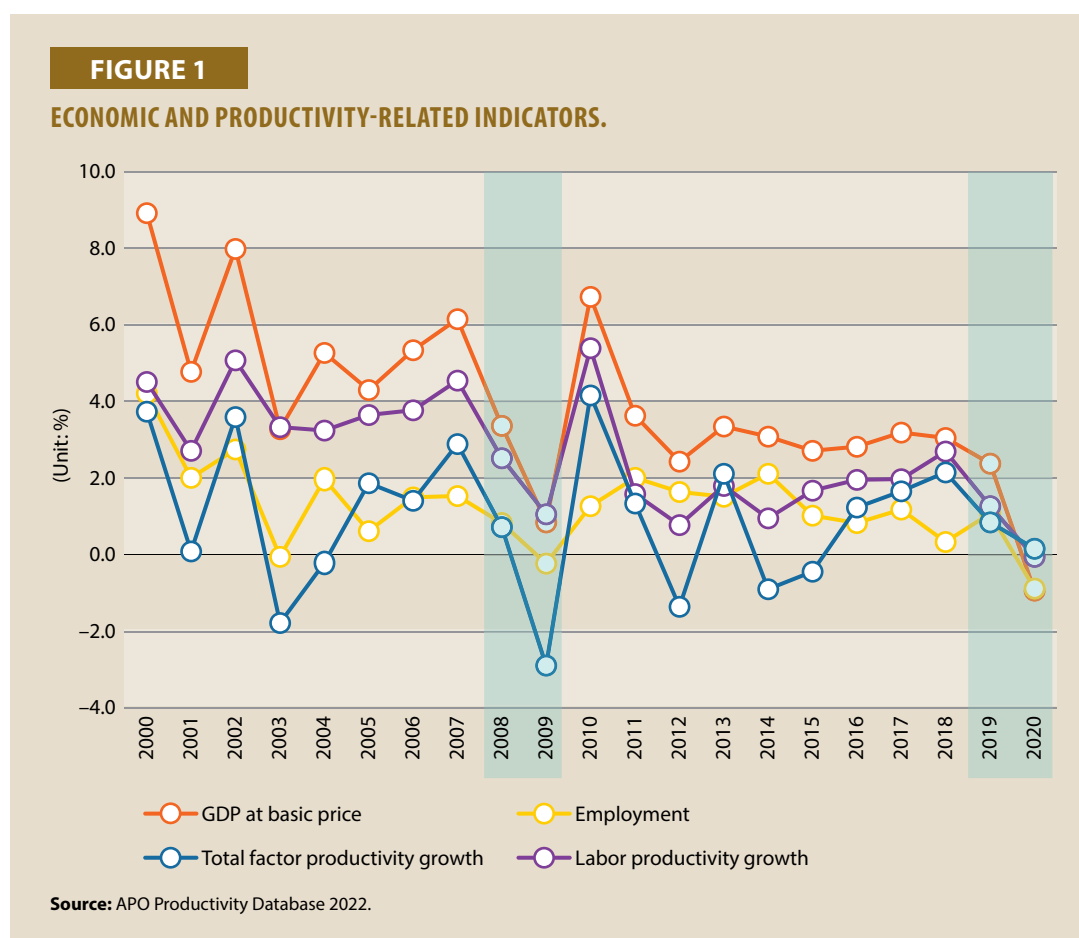
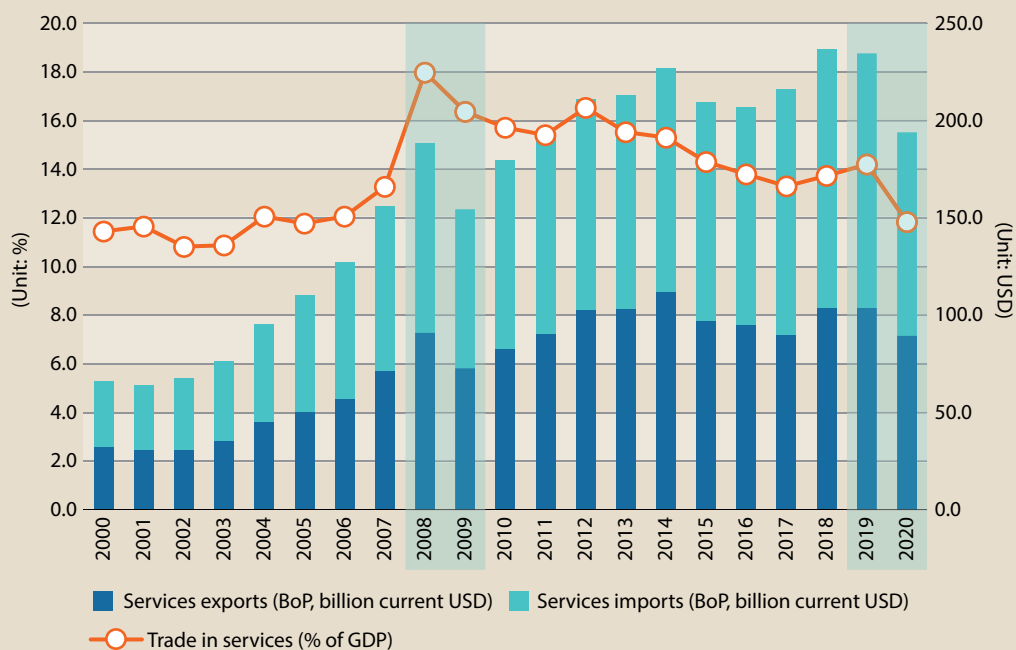


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

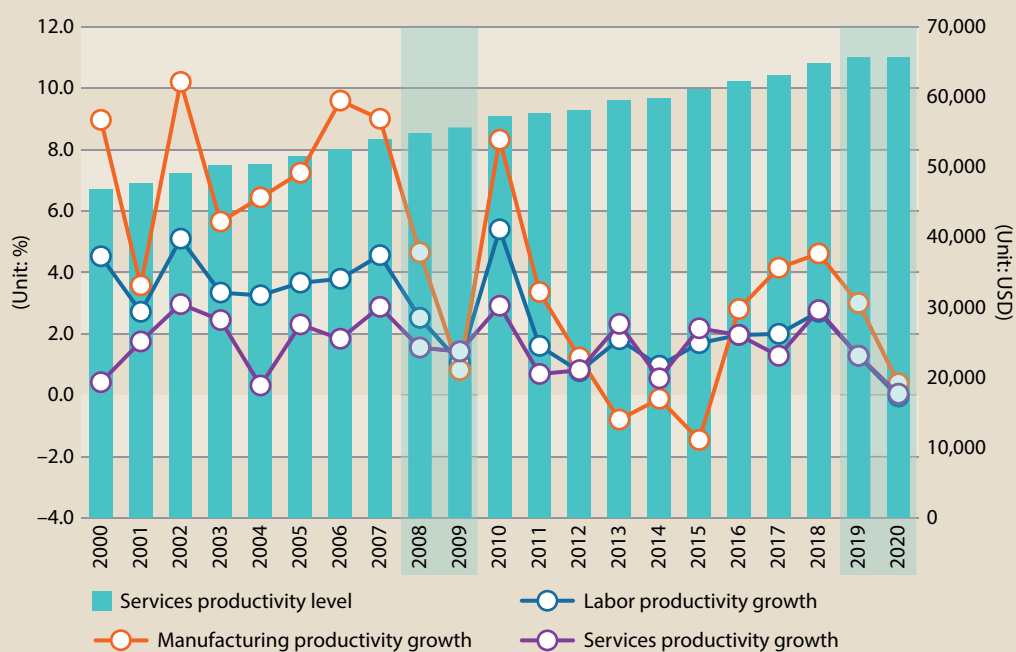


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



Source: Authors' calculations using APO Productivity Database.

Notes: Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants. Service B includes transport, storage, and communications. Service C includes financial intermediation, real estate, renting, and business activities. Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000    | 2010    | 2019    | 2020    |
|-----------|----------------------|---------|---------|---------|---------|
| Total     | Intermediate inputs  | 235,511 | 541,037 | 868,282 | 841,715 |
|           | Net backward linkage | 1.035   | 1.034   | 0.968   | 0.953   |
|           | Net forward linkage  | 0.948   | 0.919   | 0.895   | 0.913   |
| Service A | Intermediate inputs  | 44,660  | 97,374  | 192,370 | 171,600 |
|           | Net backward linkage | 0.916   | 0.824   | 0.839   | 0.814   |
|           | Net forward linkage  | 1.063   | 1.111   | 1.015   | 1.039   |
| Service B | Intermediate inputs  | 29,755  | 74,698  | 106,574 | 98,784  |
|           | Net backward linkage | 0.897   | 0.935   | 0.708   | 0.675   |
|           | Net forward linkage  | 0.919   | 0.798   | 0.832   | 0.857   |
| Service C | Intermediate inputs  | 56,983  | 123,567 | 245,496 | 249,988 |
|           | Net backward linkage | 0.682   | 0.734   | 0.757   | 0.752   |
|           | Net forward linkage  | 1.281   | 1.257   | 1.193   | 1.21    |
| Service D | Intermediate inputs  | 42,851  | 113,254 | 159,496 | 155,785 |
|           | Net backward linkage | 1.383   | 1.353   | 1.394   | 1.388   |
|           | Net forward linkage  | 0.747   | 0.769   | 0.725   | 0.737   |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

**Finance Sector's Productivity**

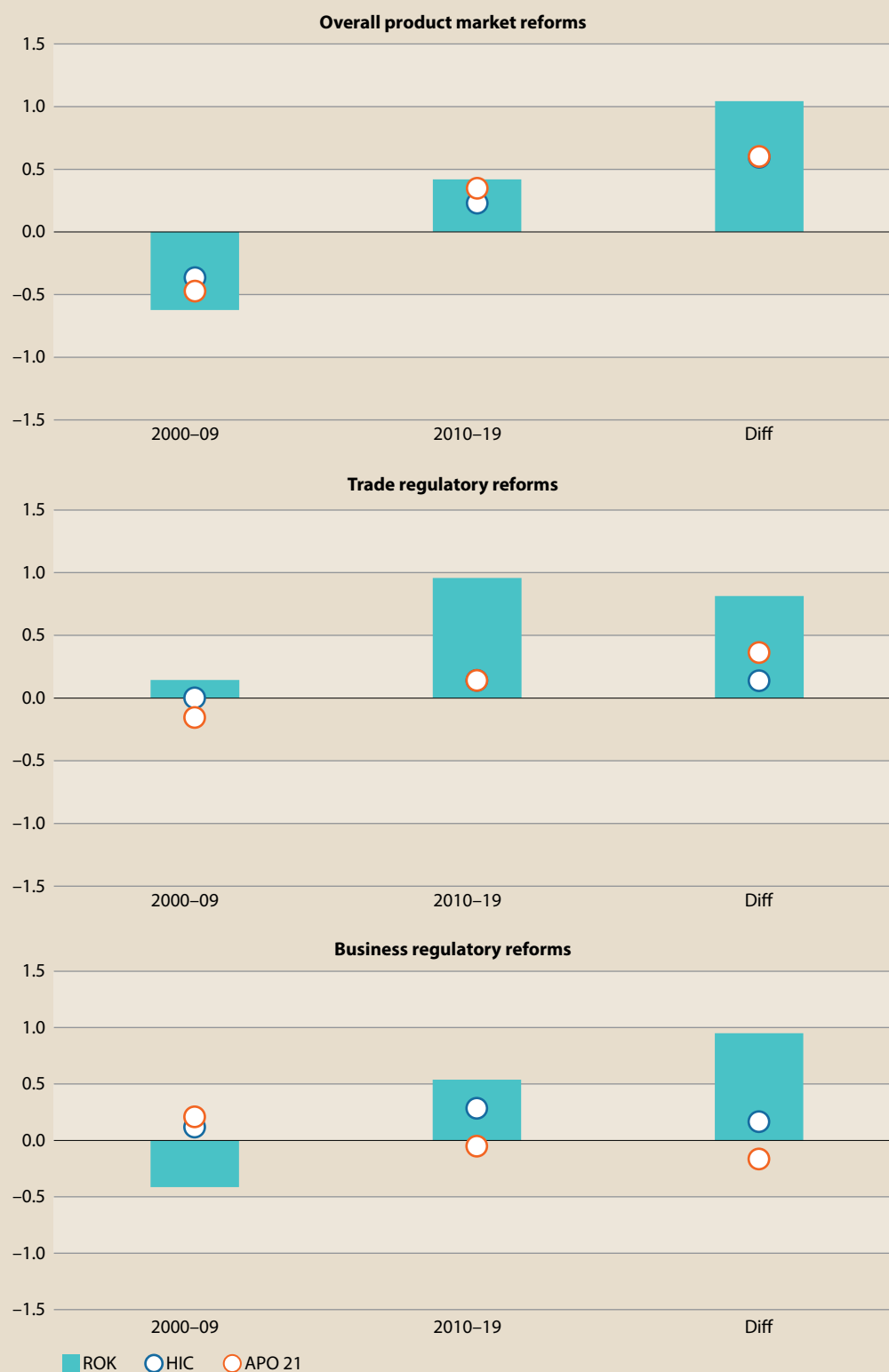
- The ROK switched back and forth between being an upper-middle-income and a high-income country. Since 2000, the ROK has been consistently classified as a high-income country. Like other high-income countries, the relationship between the finance sector and total factor productivity is clear and upward. Thus, policies should make sure that the link is not discontinued.

**Regulatory Reforms Intensity**

- Even though the ROK exhibited a negative growth in the reforms intensity (over -0.5%) in the product market during 2000–09, the trend was reversed in the subsequent period (2010–19), with a positive growth of around 0.5%.
- Among the two different reform areas, eliminating trade regulatory burdens was more noticeable in the past decade (2010–19).

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN THE ROK BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) HIC and APO 21 denote median growths of the respective groups

## GVC Participation

- The ROK seems to experience big changes in industrial structure (more focus on high-tech manufacturing and less on low-tech manufacturing). The country's specialization pattern is similar to hyperspecializers: concentrating exports to increasingly small number of products, such as electrical/optical equipment and transportation equipment. The ROK has increased GVC participation, but with differing results in terms of RCAs.
- Among services, the ROK has moderate international competitiveness in air and water transport and in hotels and restaurants. The ROK's knowledge-intensive services do not show gaining international competitiveness. Financial services and education have remained low both in GVC participation and RCAs.

# LAO PDR

## Services Sector's Productivity

- In 2000, the economy of Lao PDR started with a low growth rate in the wake of the Asian financial crisis, but since then, it has recorded a high overall growth rate of 5%. Macroeconomic indicators fell simultaneously in 2012 due to instability in the global economy, such as the European financial crisis, but soon recovered from the shock.
- Lao PDR's service exports account for a low proportion of the economy, but both exports and imports appear to be increasing in a balanced manner. In addition, the services sector's productivity, though low, appears to be growing steadily. Service sector's productivity increased at an annual growth rate of 2.77% during the 2000–20 period, and the decrease in productivity since 2011 can be explained mainly due to the continuous increase in employment. However, it appears that the services sector's productivity has been stable due to the stable growth in employment.
- Inputs of services as intermediate goods in the Lao PDR's economy increased 14.6 times in 2020 compared with 2000; 4.1 times in the 2000–10 period; and about 2.2 times in the 2010–20 period. In particular, service C shows an increase of about 21.3 times, which exceeds the average for the overall period. However, this large growth rate has been due to the low initial level in 2000.

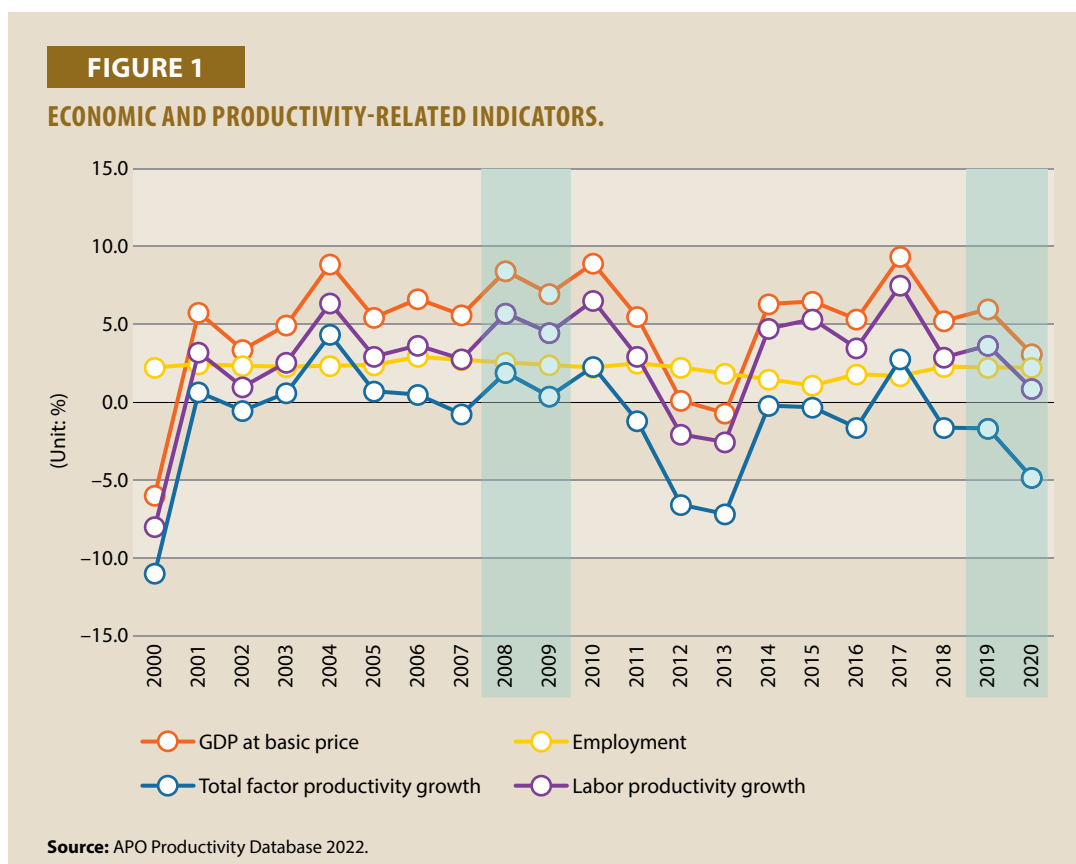
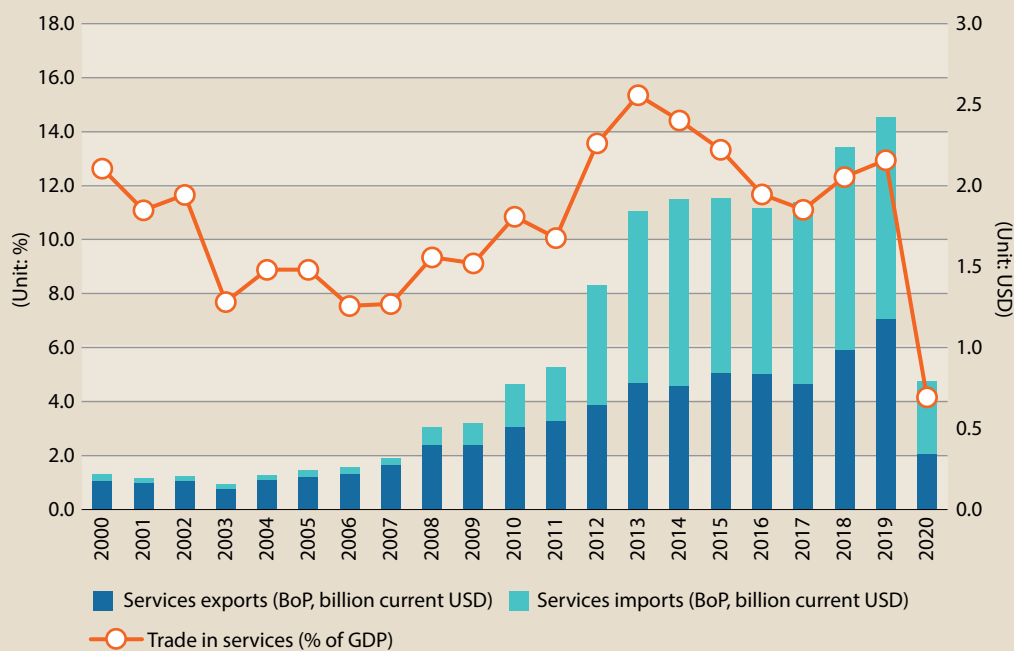


FIGURE 2

TRADE IN SERVICES SINCE 2000.

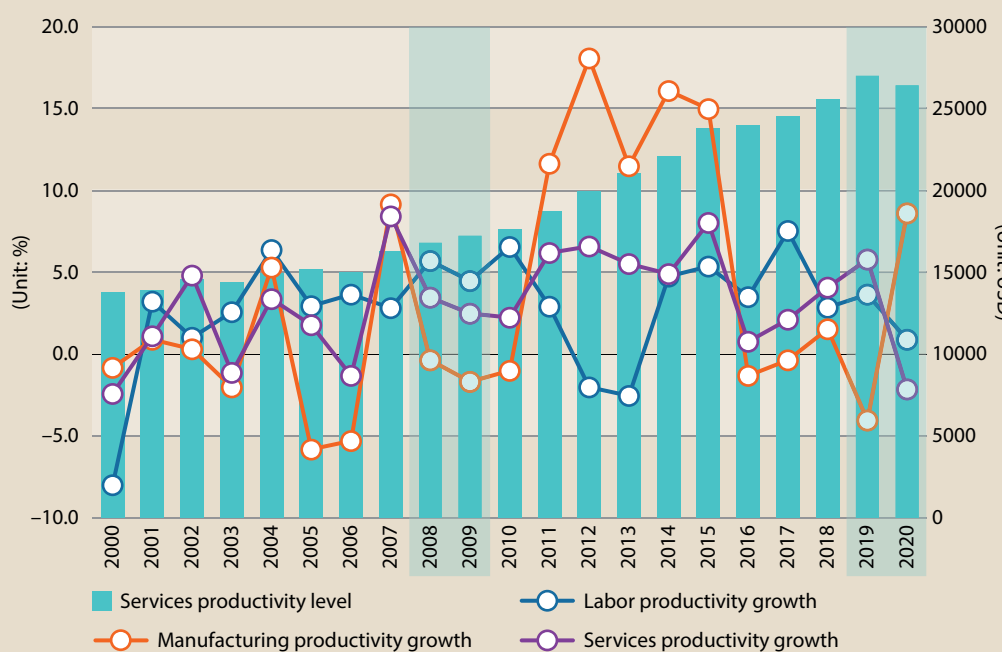


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

**FIGURE 4**

**LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.**



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants. Service B includes transport, storage, and communications. Service C includes financial intermediation, real estate, renting, and business activities. Service D includes community, social and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000  | 2010  | 2019  | 2020  |
|-----------|----------------------|-------|-------|-------|-------|
| Total     | Intermediate inputs  | 424   | 2,181 | 6,949 | 6,614 |
|           | Net backward linkage | 0.748 | 0.845 | 0.968 | 0.925 |
|           | Net forward linkage  | 0.595 | 0.791 | 0.758 | 0.8   |
| Service A | Intermediate inputs  | 105   | 614   | 1,761 | 1,484 |
|           | Net backward linkage | 0.728 | 1.14  | 0.954 | 0.93  |
|           | Net forward linkage  | 0.685 | 0.788 | 0.883 | 0.926 |
| Service B | Intermediate inputs  | 59    | 267   | 470   | 391   |
|           | Net backward linkage | 0.658 | 0.334 | 0.845 | 0.694 |
|           | Net forward linkage  | 0.556 | 0.637 | 0.532 | 0.618 |
| Service C | Intermediate inputs  | 18    | 327   | 423   | 402   |
|           | Net backward linkage | 0.179 | 0.596 | 0.807 | 0.801 |
|           | Net forward linkage  | 0.398 | 1.28  | 1.125 | 1.15  |
| Service D | Intermediate inputs  | 45    | 32    | 324   | 306   |
|           | Net backward linkage | 1.186 | 1.187 | 1.24  | 1.255 |
|           | Net forward linkage  | 0.757 | 0.755 | 0.721 | 0.726 |

**Source:** Authors' calculations based on ADB MRIO Database.

**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.  
 Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.  
 Service C includes financial intermediation; real estate activities; renting of M&E; and other business activities.  
 Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

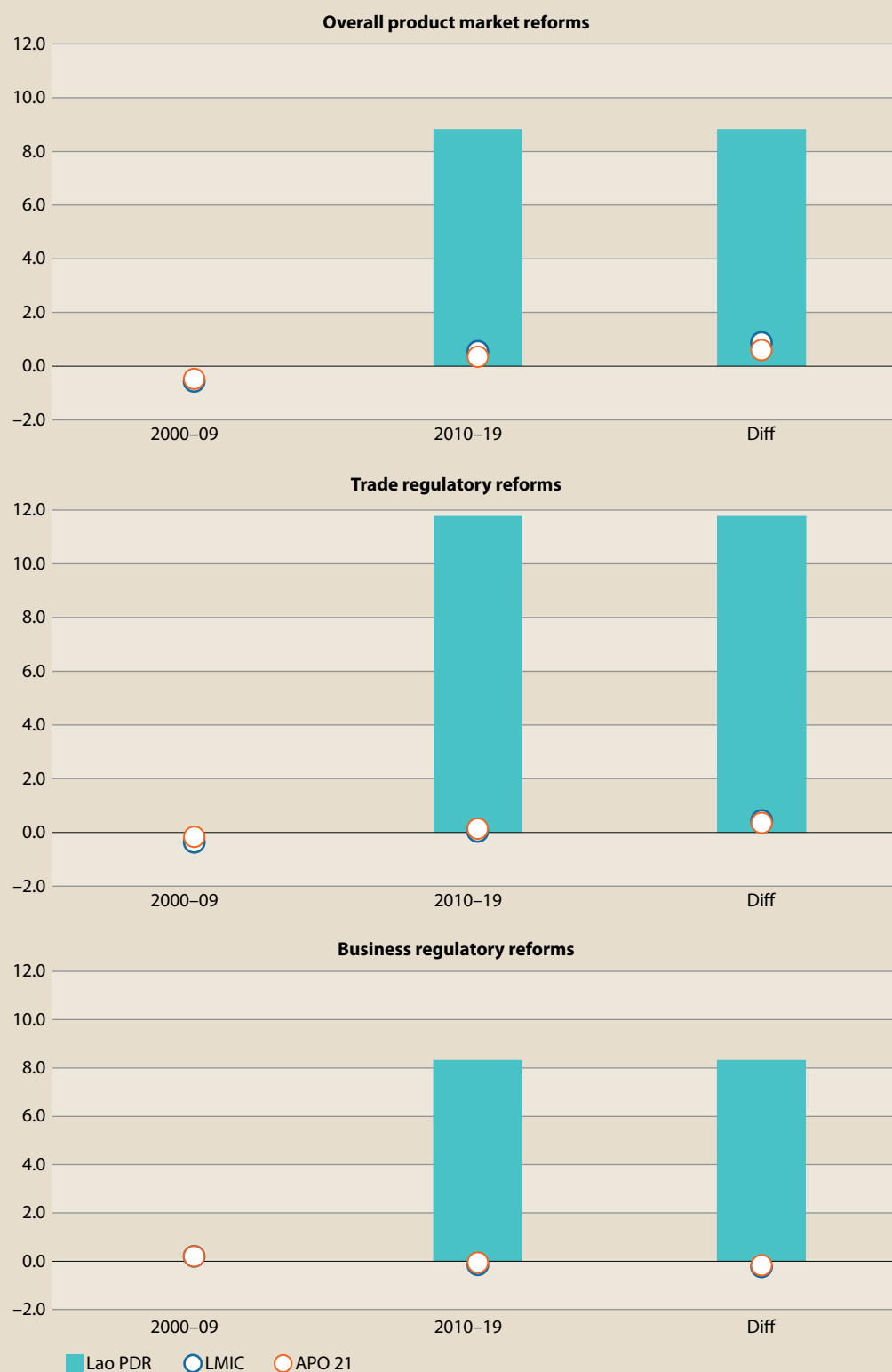
- Lao PDR advanced from a low-income economy to a lower-middle-income country in 2010. We observe a decline in productivity in recent years. The finance sector seems to be decreasing as well. Policies that ensure funding to the private sector need to be reviewed.

## Regulatory Reforms Intensity

- The long-lasting stagnation of reform progress during the period of 2000–09 turned into an upswing in the following period, thereby far outbalancing the LMIC and APO 21 medians.
- A notable rise of liberalization in both trade and business reform areas contributed to such significant strides, largely attributable to WTO Accession (2013); and Enterprises Law and the Investment Promotion Law, amended in 2013 and 2016, respectively.

**FIGURE 5**

**OVERALL, TRADE, AND BUSINESS REFORMS IN LAO PDR BEFORE AND AFTER 2010.**



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups. (3) Due to data availability limitations, trade regulatory reform shows different time periods (e.g., 2014–19).

## GVC Participation

- Lao PDR specializes in primary sectors, with increasing role of light manufacturing and weak services, excluding motor vehicle-related services.
- Lao PDR is the only economy among APO members that has very high RCA in electricity (a subsector of utilities). Electricity accounted for 30% of Lao PDR's exports in 2020, mostly to Thailand. Wood products accounted for 2.6% of total exports.
- The top exports of Lao PDR in 2020 were electricity, gold, rubber, refined copper, and copper ore, mostly to Thailand, PR China, Vietnam, Japan, and Germany. (Data source: <https://oec.world/en/profile/country/lao>).

# MALAYSIA

## Services Sector's Productivity

- Malaysia had experienced a constant economic growth of 5% until the GFC, rising again in 2010. It was affected in 2020 with the outbreak of COVID-19. However, indicators and the impact of each crisis should be interpreted carefully due to the base effect.
- Notwithstanding the GFC, Malaysia experienced a productivity growth of over 2.33% in the services sector between 2000 and 2019, thereby showing a marked increase in the level of services sector's productivity from USD33,083 in 2000 to USD52,306 in 2020.
- In 2020, the intermediate input of overall services increased by about 4.76 times compared with 2000. In 2000, Malaysia's intermediate input in each service subsector was very low but had steadily increased before the COVID-19.

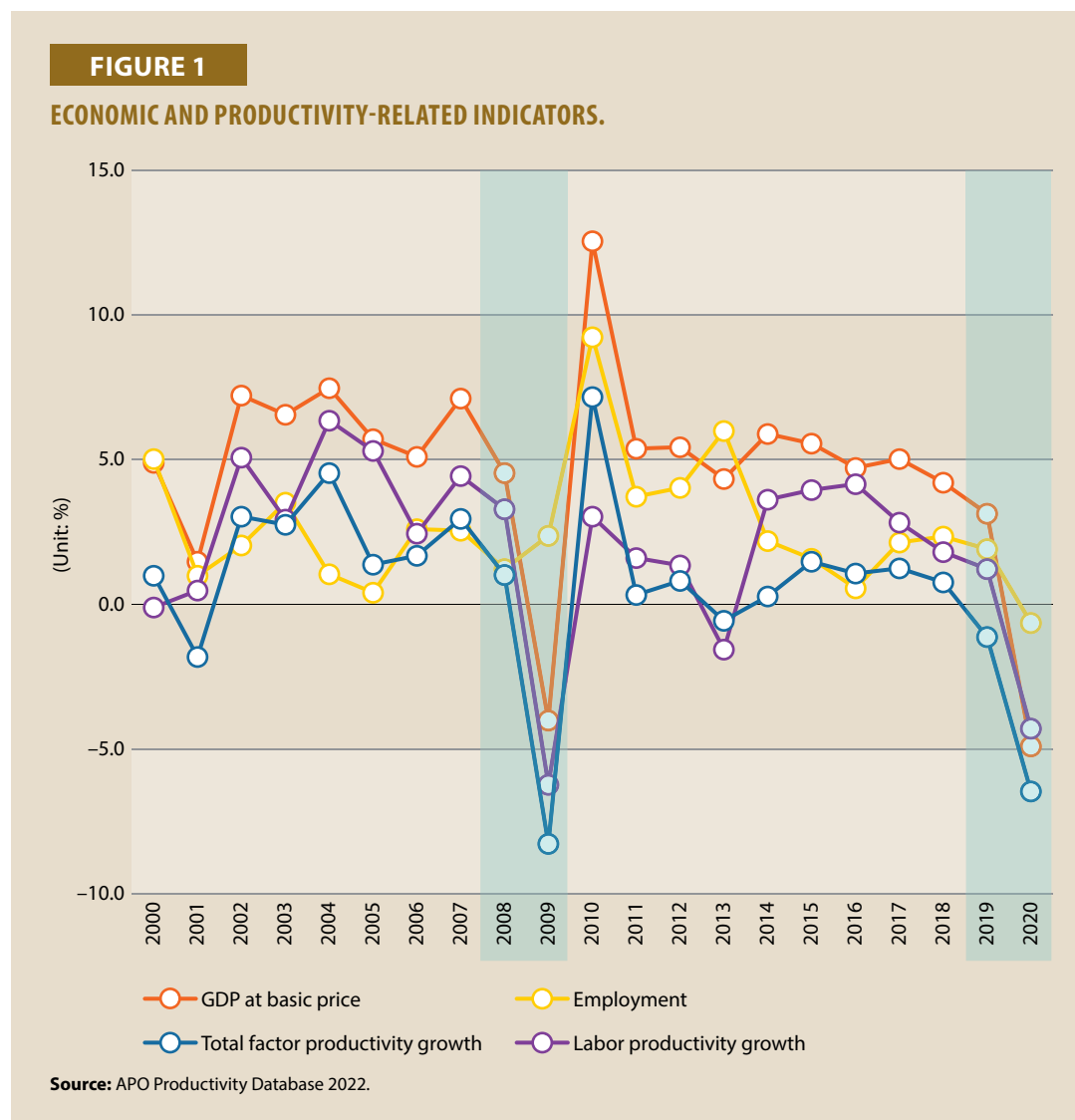
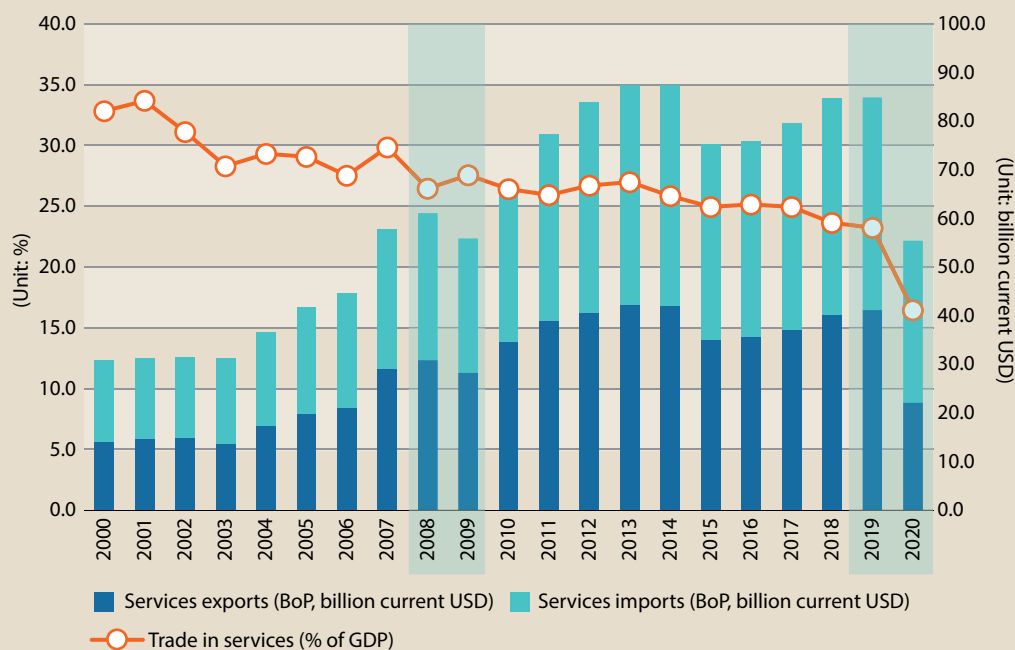


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

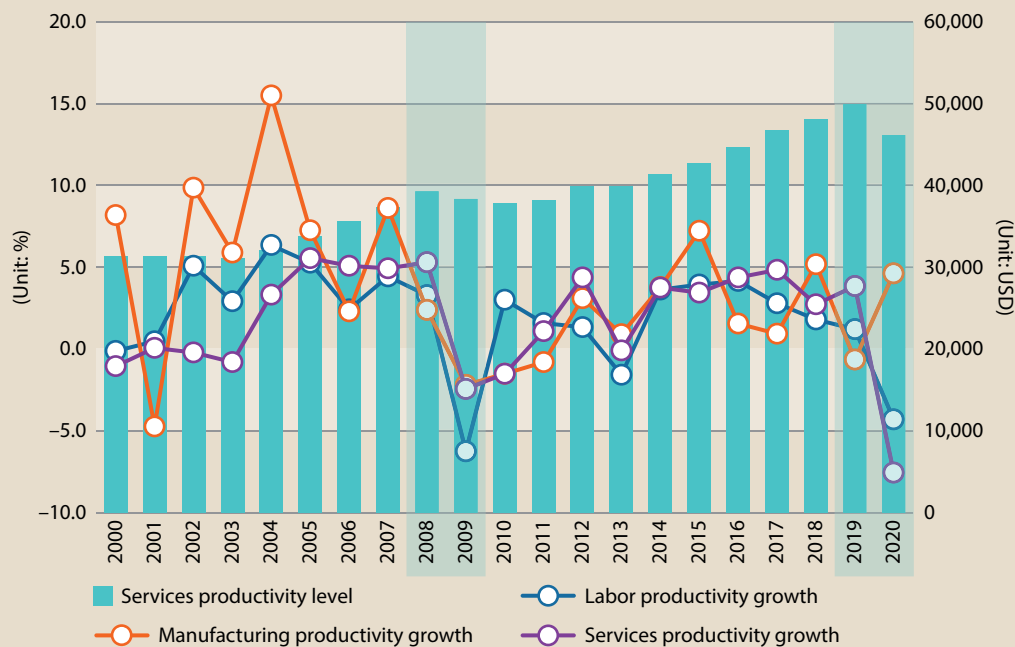


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.  
 Service B includes transport, storage, and communications.  
 Service C includes financial intermediation, real estate, renting, and business activities.  
 Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000   | 2010    | 2019    | 2020    |
|-----------|----------------------|--------|---------|---------|---------|
| Total     | Intermediate inputs  | 38,928 | 139,344 | 248,823 | 224,034 |
|           | Net backward linkage | 0.988  | 1.012   | 0.991   | 0.937   |
|           | Net forward linkage  | 0.771  | 0.791   | 0.903   | 0.958   |
| Service A | Intermediate inputs  | 7,339  | 35,545  | 69,600  | 61,094  |
|           | Net backward linkage | 0.635  | 0.991   | 0.936   | 0.853   |
|           | Net forward linkage  | 1.05   | 0.888   | 1.052   | 1.115   |
| Service B | Intermediate inputs  | 7,876  | 28,653  | 58,481  | 52,268  |
|           | Net backward linkage | 1.023  | 0.874   | 0.908   | 0.895   |
|           | Net forward linkage  | 0.649  | 0.653   | 0.709   | 0.749   |
| Service C | Intermediate inputs  | 11,136 | 34,979  | 38,554  | 36,979  |
|           | Net backward linkage | 0.858  | 0.622   | 0.458   | 0.328   |
|           | Net forward linkage  | 0.867  | 1.222   | 1.456   | 1.57    |
| Service D | Intermediate inputs  | 2,188  | 9,130   | 17,454  | 16,004  |
|           | Net backward linkage | 1.219  | 1.406   | 1.295   | 1.252   |
|           | Net forward linkage  | 0.707  | 0.623   | 0.751   | 0.793   |

**Source:** Authors' calculations based on ADB MRIO Database.

**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&E; and other business activities.

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## Finance Sector's Productivity

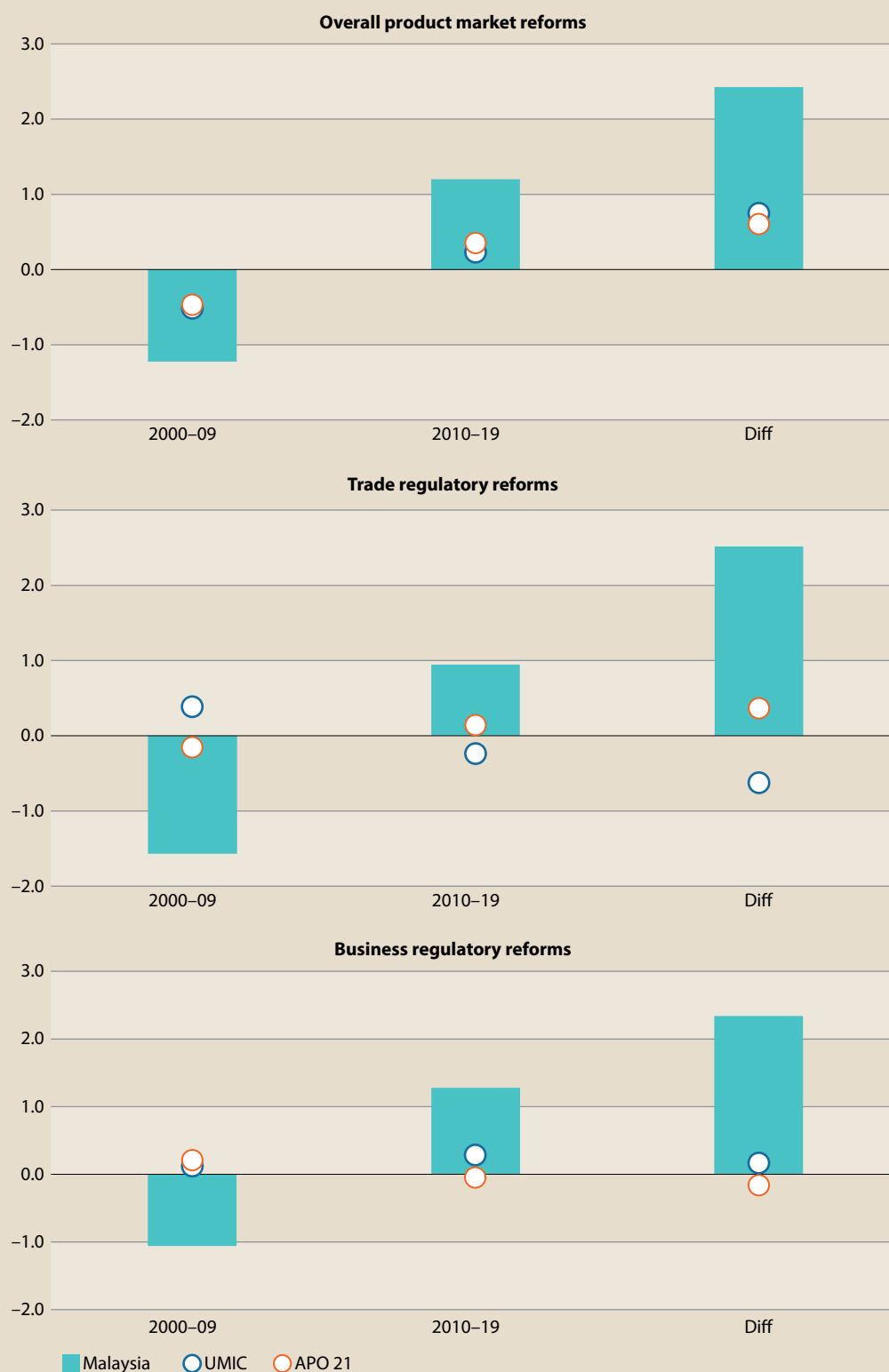
- Malaysia was a lower-middle-income country before being reclassified as an upper-middle-income country in 1993. It has experienced diverse changes through the decades, and seems to have settled with stable productivity growth after 2010 with an active finance sector.

## Regulatory Reforms Intensity

- Malaysia demonstrated a fall in reforms intensity in the overall product market between 2000 and 2009. Yet, it boasted of a reversal and increasing pattern of reforms intensity for the period 2010–19.
- There are similar patterns in the two reform areas. While a slowed pace of the reform process was found in the 2000s, an upswing pattern was revealed during the 2010s.

FIGURE 5

## OVERALL, TRADE, AND BUSINESS REFORMS IN MALAYSIA BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) UMIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- The specialization of Malaysia is mixed among primary and manufacturing sectors and services. Agriculture, mining, and quarrying, as well as some sectors in light manufacturing such as food and wood products have good RCAs. Some high-tech manufacturing sectors such as electrical/optical equipment also have good RCAs, which improved between 2000 and 2020.
- Some services such as motor vehicle-related services, and retail and hotel services maintain high RCAs. Telecommunications, a key knowledge-intensive service sector, has improved international competitiveness, with decreases in GVC participation. Another key knowledge-intensive service, finance, has worsened both in terms of RCAs and GVC participation.

# MONGOLIA

## Services Sector's Productivity

- The economy of Mongolia recorded a high growth rate in 2011, but since then, its growth has slowed due to diverse factors such as worsening export environment, a decrease in foreign direct investment, and a high inflation rate. Although it seems that productivity has increased, it can be attributed to the outbreak of COVID-19 and reduction in employment. Also, this is judged to be a temporary phenomenon due to the decrease in employment. On the other hand, the proportion of trade in services in the economy has remained around 25% of the total GDP since the GFC.
- The services sector's productivity increased by about 2.57% annually from 2000 to 2019, but the fluctuation was large during the period, which is believed to be due to external price factors rather than stable productivity growth. Employment growth and output declined sharply in 2020.
- Mongolia's input of intermediate goods increased 7.33 times in 2020 compared with 2000. The increase was about 3.37 times in the 2000–10 period and about 1.1 times in the 2010–20 period. In particular, service A showed an increase in intermediate inputs by about 11.1 times and service C by 8.94 times, exceeding the overall period's average. However, the initial small amount of intermediate goods input in 2000s is believed to be the reason for the large growth rate.

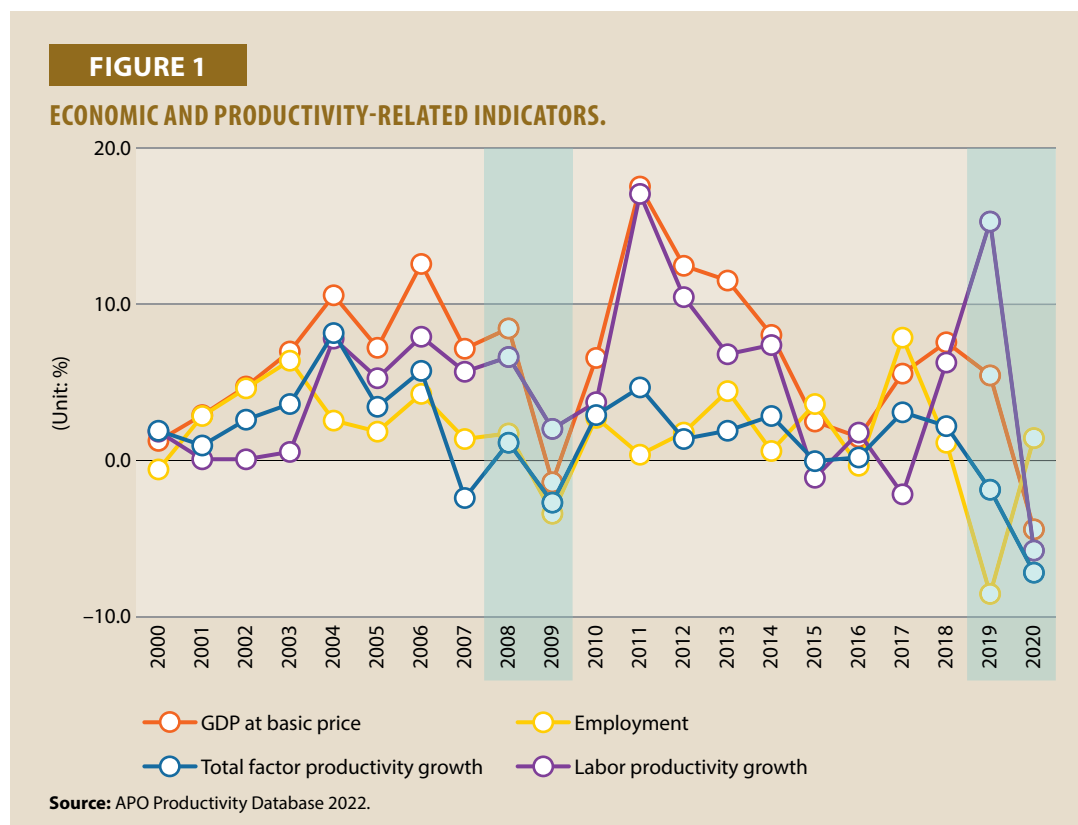
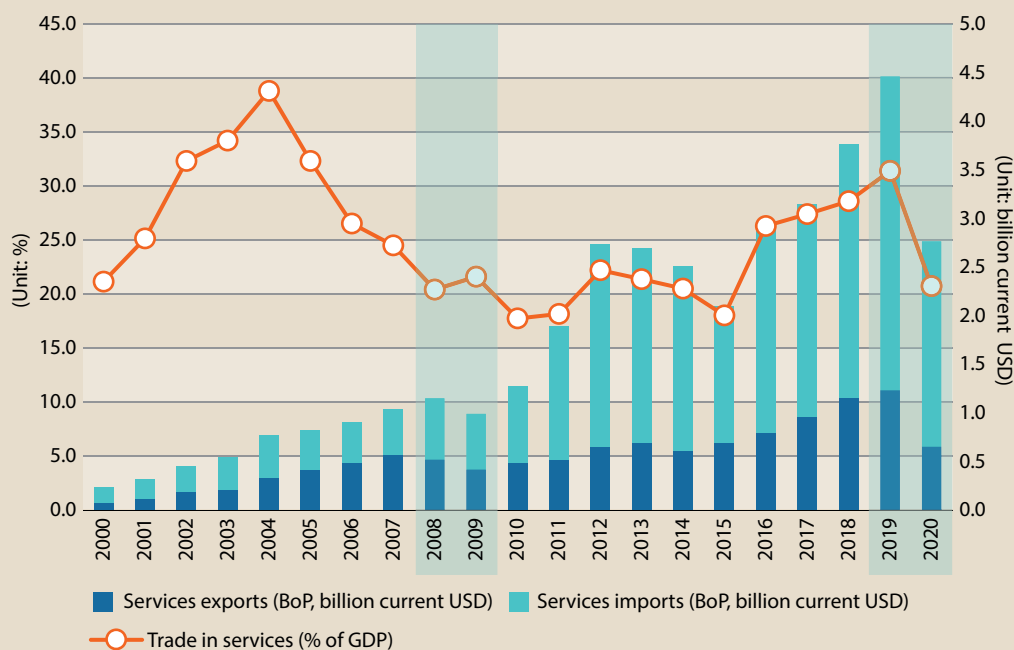


FIGURE 2

TRADE IN SERVICES SINCE 2000.

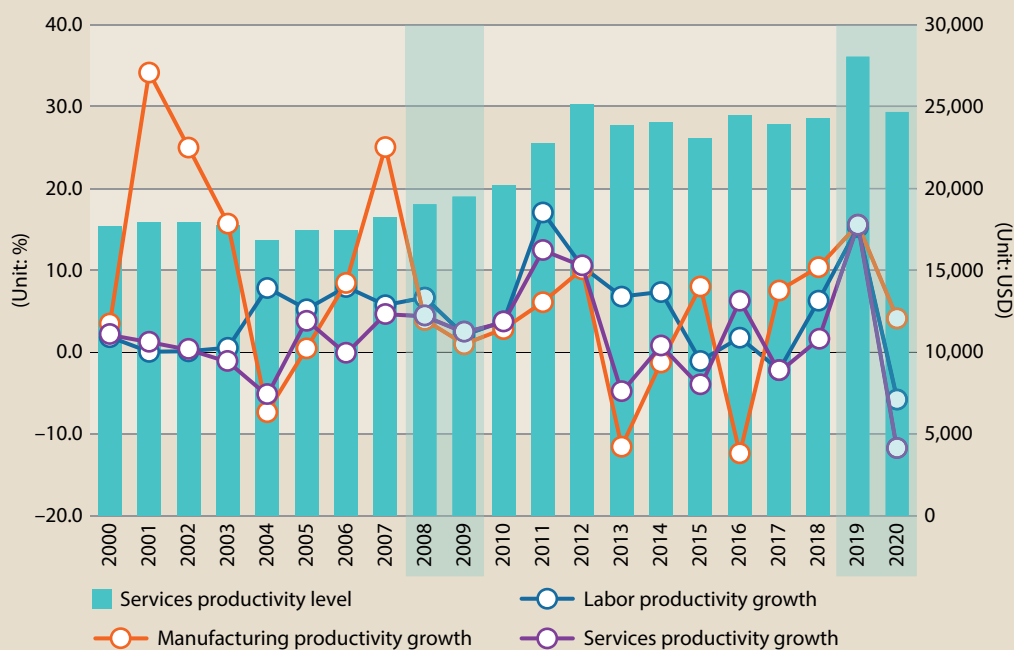


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.

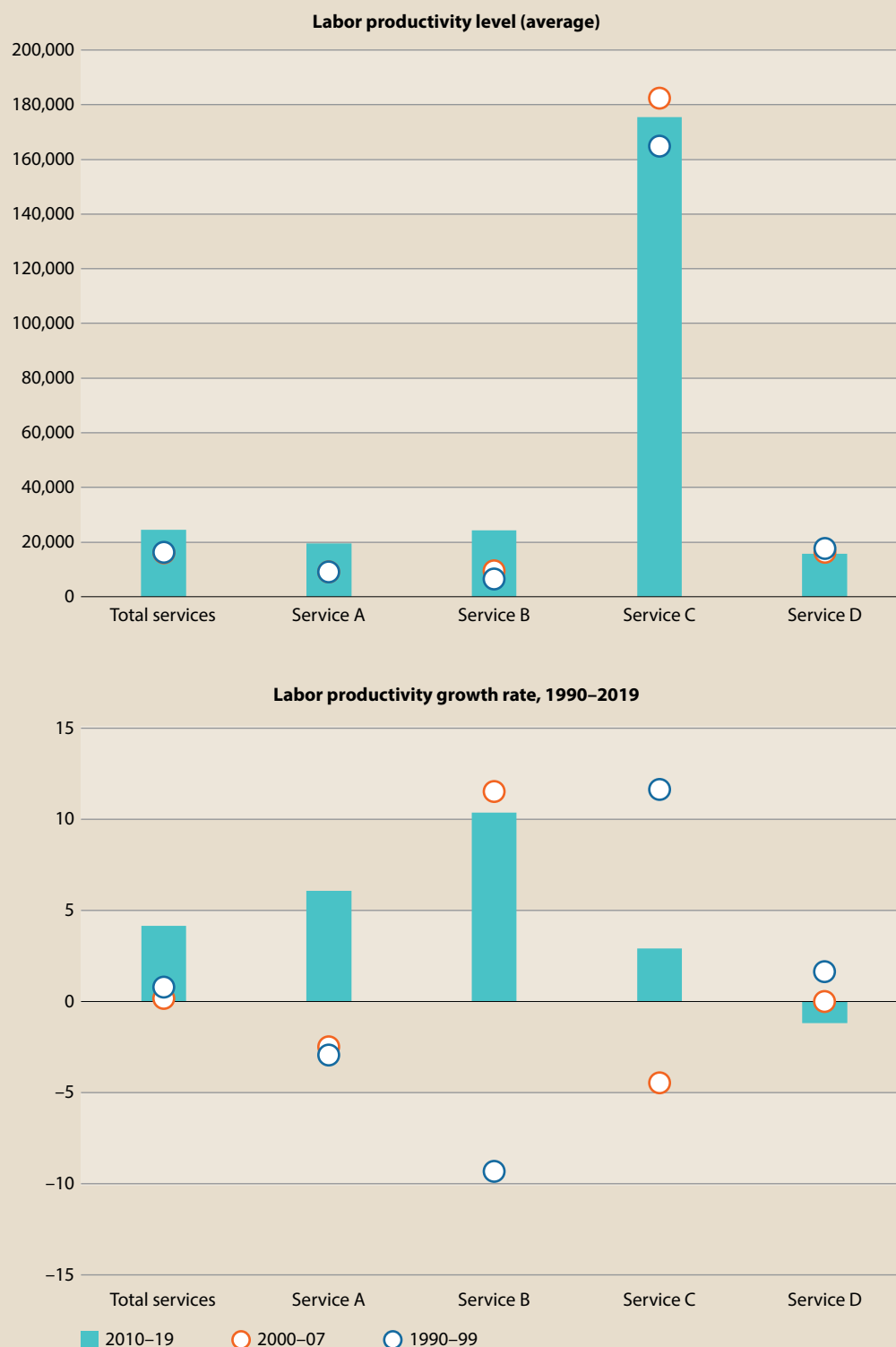


Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



Source: Authors' calculations using APO Productivity Database.

Notes: Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000  | 2010  | 2019  | 2020  |
|-----------|----------------------|-------|-------|-------|-------|
| Total     | Intermediate inputs  | 697   | 3,045 | 6,376 | 5,808 |
|           | Net backward linkage | 1.016 | 0.947 | 0.905 | 0.943 |
|           | Net forward linkage  | 0.716 | 0.809 | 0.795 | 0.801 |
| Service A | Intermediate inputs  | 92    | 691   | 1,313 | 1,113 |
|           | Net backward linkage | 1.042 | 1.006 | 0.776 | 0.811 |
|           | Net forward linkage  | 0.724 | 0.766 | 0.902 | 0.911 |
| Service B | Intermediate inputs  | 151   | 646   | 1,321 | 1,075 |
|           | Net backward linkage | 0.986 | 0.798 | 0.975 | 0.992 |
|           | Net forward linkage  | 0.689 | 0.804 | 0.642 | 0.652 |
| Service C | Intermediate inputs  | 95    | 485   | 981   | 944   |
|           | Net backward linkage | 0.767 | 0.692 | 0.588 | 0.592 |
|           | Net forward linkage  | 0.977 | 1.102 | 1.16  | 1.189 |
| Service D | Intermediate inputs  | 65    | 283   | 620   | 635   |
|           | Net backward linkage | 1.201 | 1.223 | 1.158 | 1.202 |
|           | Net forward linkage  | 0.657 | 0.739 | 0.71  | 0.704 |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

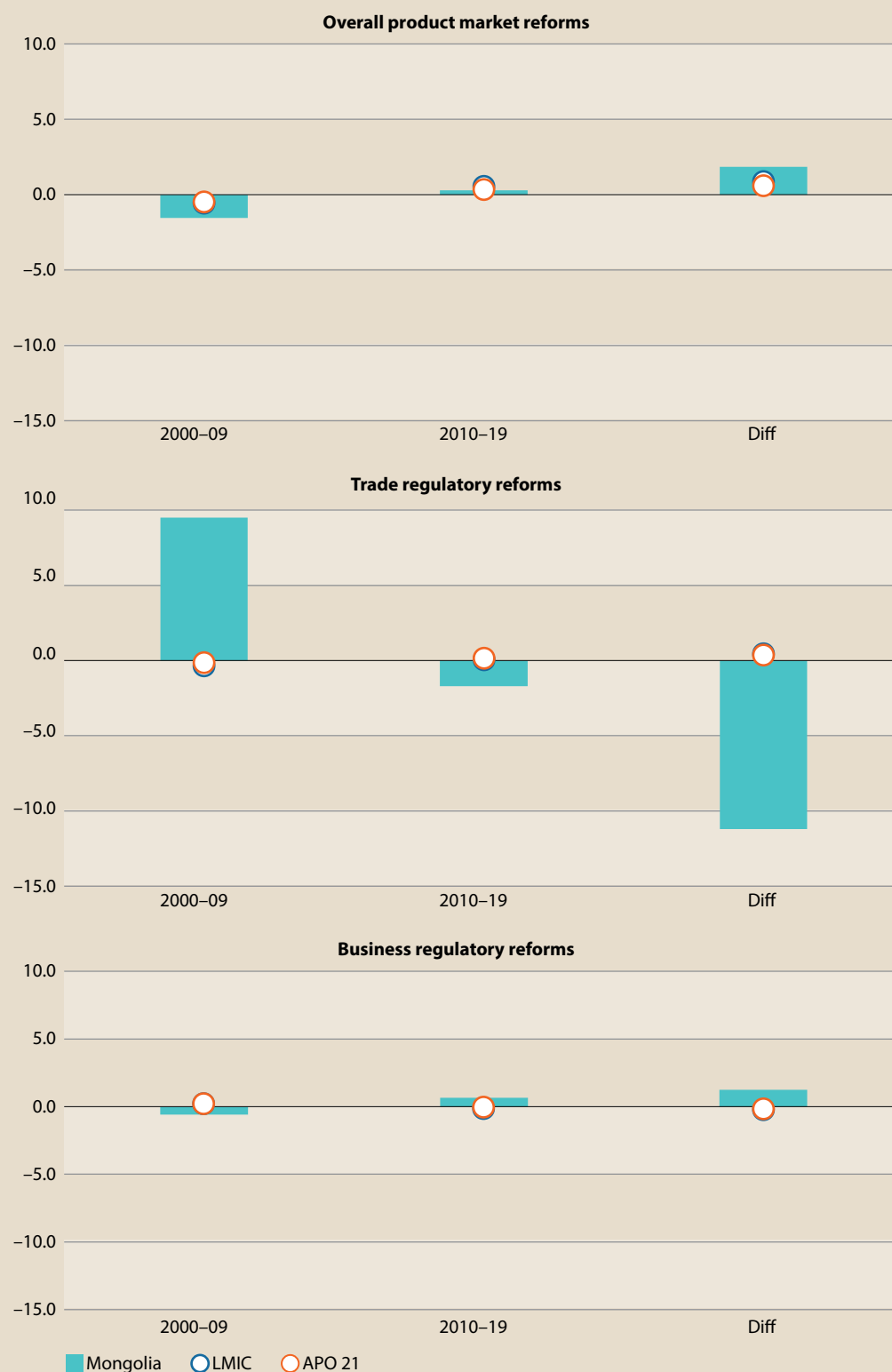
- Mongolia has switched back and forth from being a lower-middle-income country to a lower-income country and again to a lower-middle-income country. We can see a huge transition in the 1990s that helped increase productivity in recent years.

## Regulatory Reforms Intensity

- Regulatory reforms intensity fell largely over the 2000s but reversed and rose during the 2010s. Moreover, the degree of increased liberalization turned out to be higher than those in the LMICs and APO 21.
- Deregulating business procedures and rules, in particular, made a greater contribution to such strides in the recent decade (2010–19), whereas reducing trade burdens on business activities did otherwise.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN MONGOLIA BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups. (3) Due to data availability limitations, trade regulatory reform shows different time periods (e.g., 2004-09).

## GVC Participation

- Mongolia is becoming hyperspecialized in mining and quarrying, with additional international strengths in farming and a high RCA in construction. The country has shown increases in GVC participation in most of the sectors.
- Retail and inland transport are two services where Mongolia has international competitiveness.

# NEPAL

## Services Sector's Productivity

- Over the period 2000–20, Nepal's services sector's productivity had an average annual growth rate of 2.3%. Its productivity levels increased almost 1.8 times from USD13,559 in 2000 to USD24,505 in 2020. During the same period, the services sector's productivity growth was higher than that of manufacturing.
- Although employment rate has increased steadily, GDP appears to be fluctuating greatly. Nepal's economy is sensitive to external economies, especially those of neighboring countries such as India and PR China, due to its territorial location as a land locked country.
- Productivity growth in services as well as manufacturing was highly affected due to the outbreak of COVID-19, which affected it more than the financial crisis. However, it rebounded in 2020.
- In 2020, the intermediate input of the services sector increased by about 5.36 times compared with 2000. In particular, higher increase was experienced in financial intermediation and other business service subsectors in comparison with other subsectors.

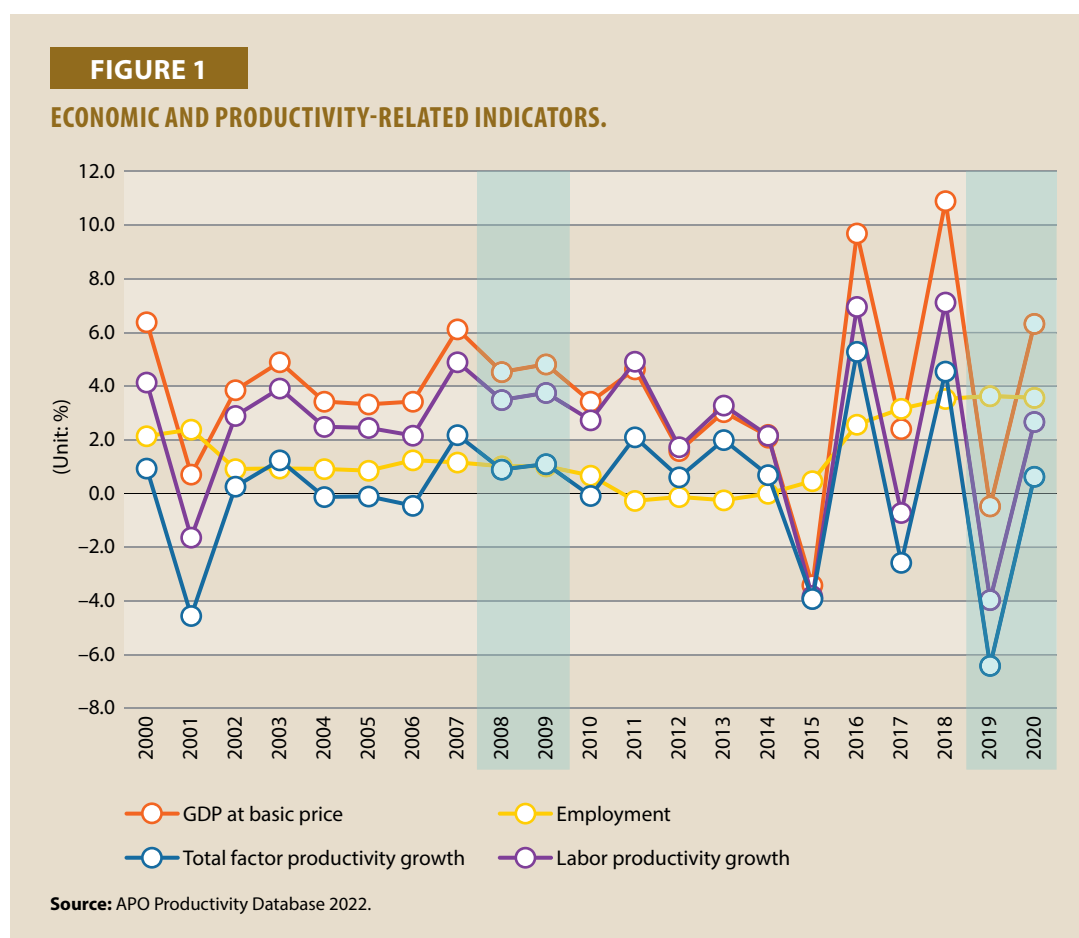
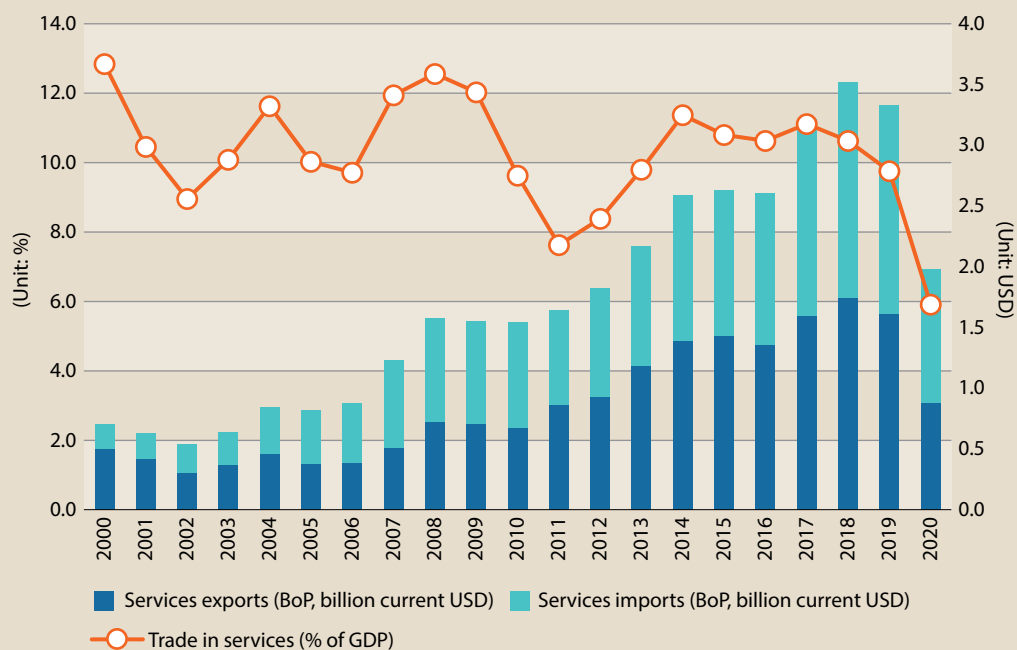


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

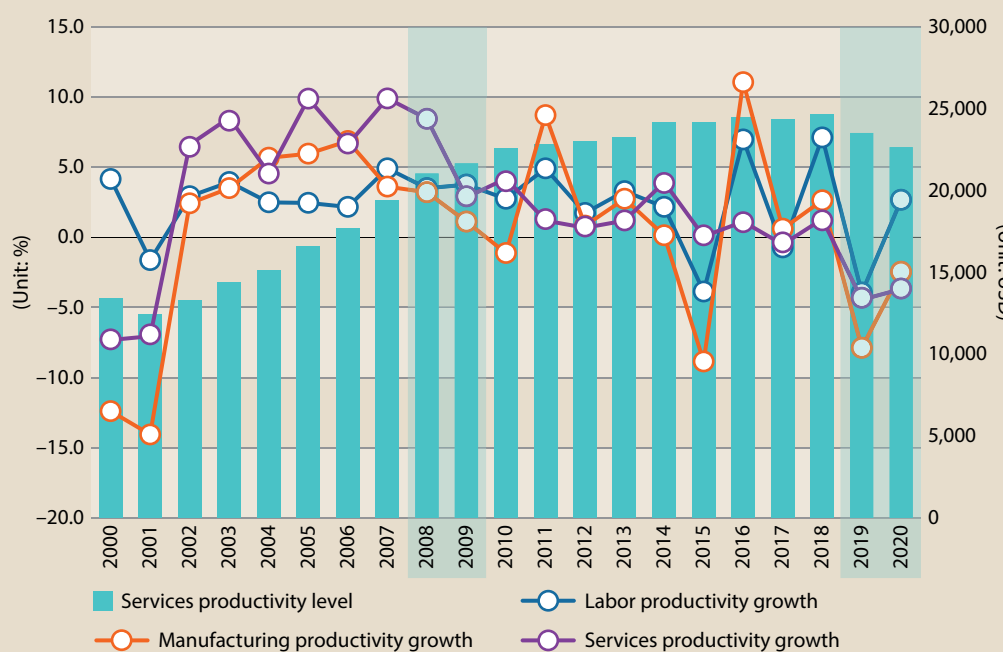


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.

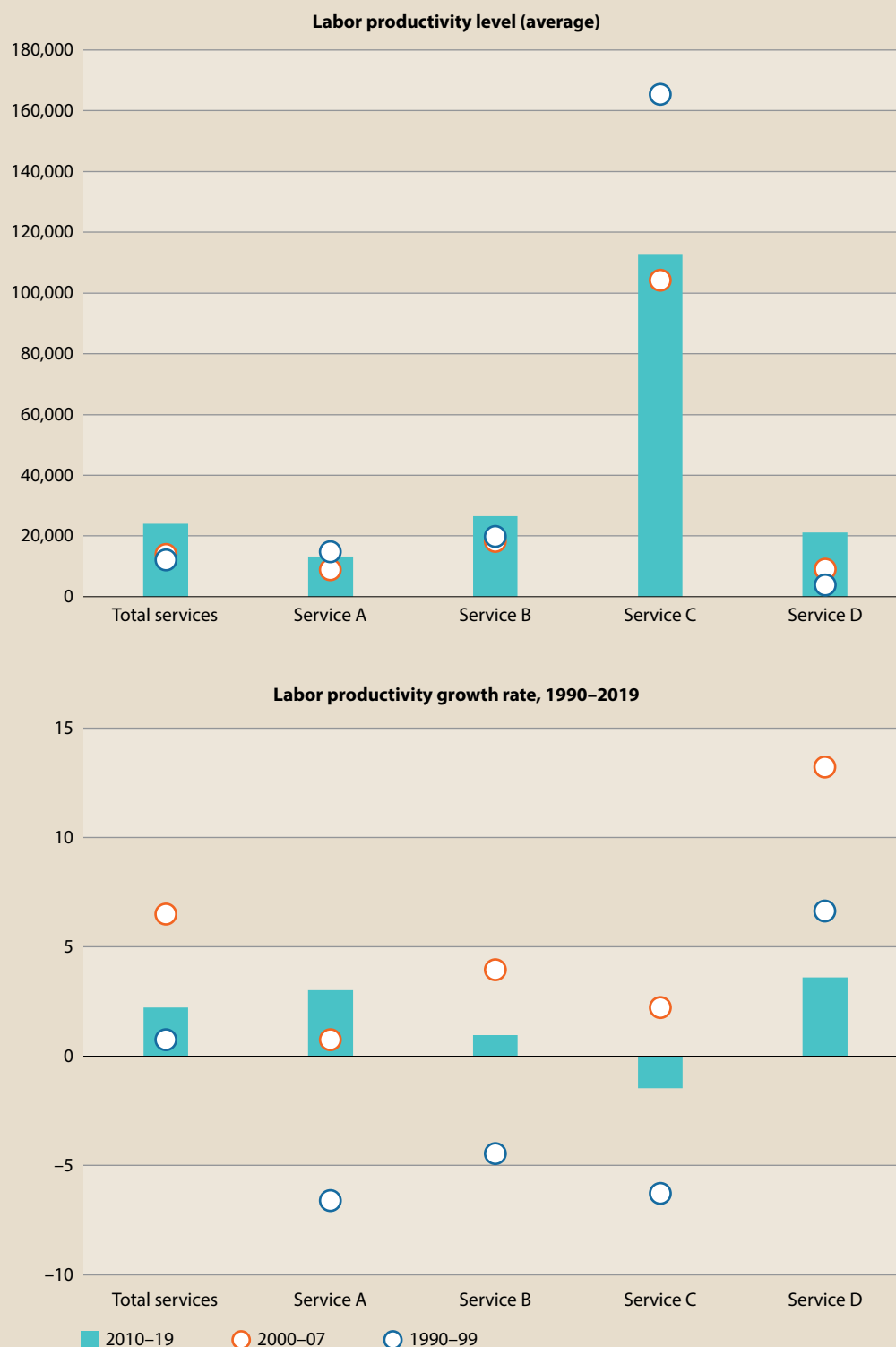


Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants. Service B includes transport, storage, and communications. Service C includes financial intermediation, real estate, renting, and business activities. Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000  | 2010  | 2019   | 2020   |
|-----------|----------------------|-------|-------|--------|--------|
| Total     | Intermediate inputs  | 2,005 | 5,444 | 13,760 | 12,756 |
|           | Net backward linkage | 1.053 | 1.015 | 1.008  | 1.043  |
|           | Net forward linkage  | 0.8   | 0.785 | 0.733  | 0.727  |
| Service A | Intermediate inputs  | 501   | 1,001 | 2,993  | 2,547  |
|           | Net backward linkage | 0.936 | 0.967 | 0.987  | 1.063  |
|           | Net forward linkage  | 1.048 | 1.003 | 0.949  | 0.917  |
| Service B | Intermediate inputs  | 495   | 1,246 | 2,872  | 2,492  |
|           | Net backward linkage | 0.967 | 0.842 | 0.754  | 0.793  |
|           | Net forward linkage  | 0.521 | 0.582 | 0.562  | 0.551  |
| Service C | Intermediate inputs  | 315   | 917   | 2,215  | 2,228  |
|           | Net backward linkage | 0.751 | 0.815 | 0.943  | 0.957  |
|           | Net forward linkage  | 1.135 | 1.042 | 0.899  | 0.908  |
| Service D | Intermediate inputs  | 268   | 896   | 1,441  | 1,509  |
|           | Net backward linkage | 1.375 | 1.331 | 1.369  | 1.378  |
|           | Net forward linkage  | 0.701 | 0.7   | 0.644  | 0.65   |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

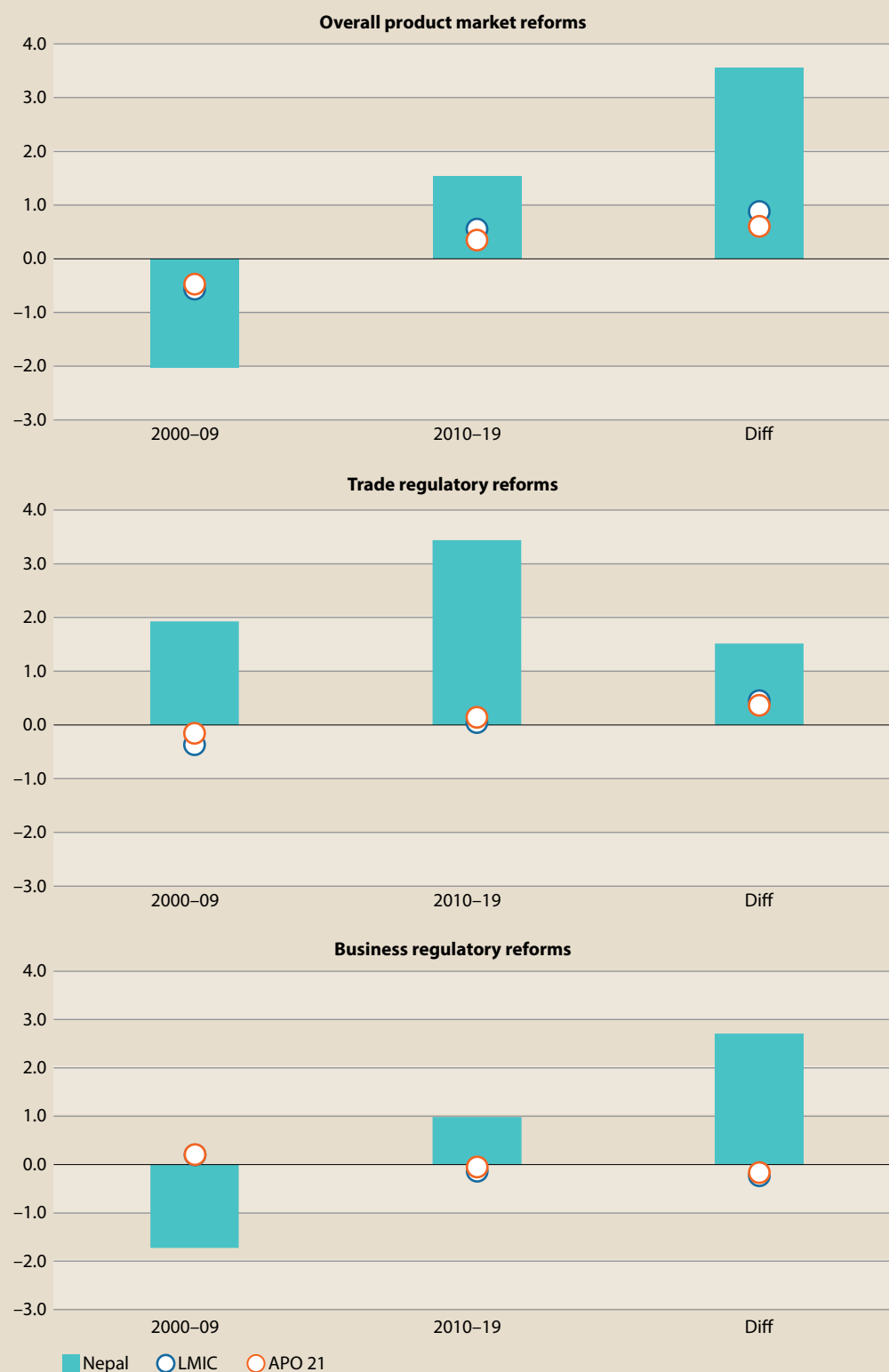
- Nepal was a low-income country until 2019. Its productivity declined consistently until around the 2010s. Productivity increased but without much change in the finance sector. So, there must be another sector driving this productivity gain, possibly the manufacturing and/or the services sector.

## Regulatory Reforms Intensity

- The reform progress in Nepal has greatly happened in the post-GFC period (2010–19), which is quite a contrast to the preceding period of 2000–09.
- A marked deregulation process was observed in both trade and business regulatory reform areas. Yet, the latter (over 2% p) displayed more striking progress than the former (below 2% p).

FIGURE 5

## OVERALL, TRADE, AND BUSINESS REFORMS IN NEPAL BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups. (3) Due to data availability limitations, trade regulatory reform shows different time periods (e.g., 2004-09).

## GVC Participation

- Nepal's high-RCA sectors are across three groups: (1) services including telecommunications, inland transport, and air transport; (2) agricultural and light-manufacturing products such as palm oil and soyabean oil, and yarn (non-metallic minerals also form a leading export area); and (3) services of moderate international competitiveness such as health and social welfare, retail, and other social services. Most of the manufacturing sectors except those mentioned above have very low RCAs.
- In terms of GVC participation, Nepal's picture is mixed. The sectors with high RCAs have mostly increased it. Examples are telecommunications, air transport, and food industry.

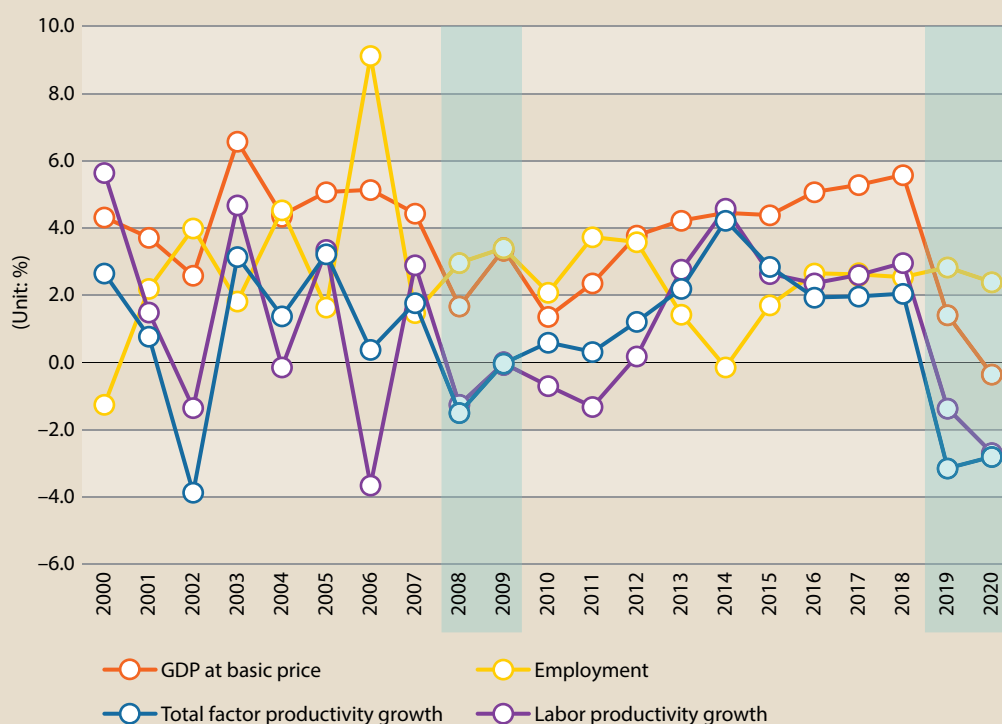
# PAKISTAN

## Services Sector's Productivity

- Pakistan's services sector's productivity shows an average annual growth rate of 1.43% for the period 2000–20, with the productivity level increasing almost 1.3 times from USD18,639 in 2000 to USD23,899 in 2020.
- However, macroeconomic variables appear to be fluctuating greatly, being sensitive to the external economies. There was a significant impact on employment and exports due to the outbreak of COVID-19.
- Since the GFC, productivity growth has slowed down in the services sector as well in manufacturing, and although it rebounded briefly in 2014, productivity growth has continued to fall due to the influence of COVID-19.
- In 2020, the intermediate input of the total services sector increased by about 2.49 times compared with 2000. In particular, service C, financial intermediation, and other business activities sectors recorded a relatively higher increase compared with other service subsectors. However, this growth is due to the low input of basic intermediate goods in 2000.

**FIGURE 1**

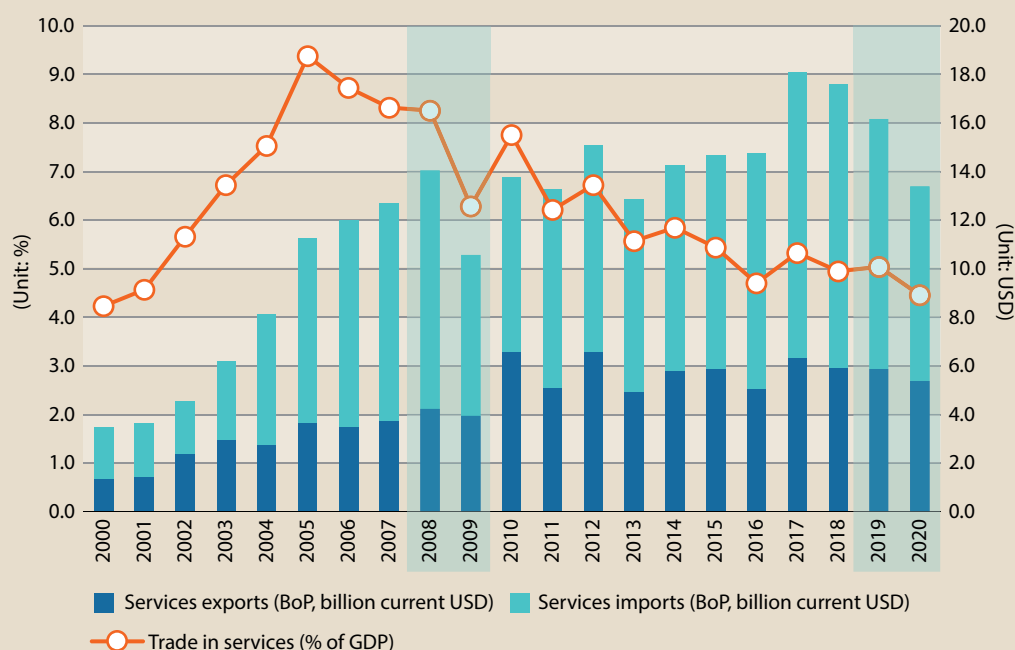
### ECONOMIC AND PRODUCTIVITY-RELATED INDICATORS.



Source: APO Productivity Database 2022.

FIGURE 2

TRADE IN SERVICES SINCE 2000.

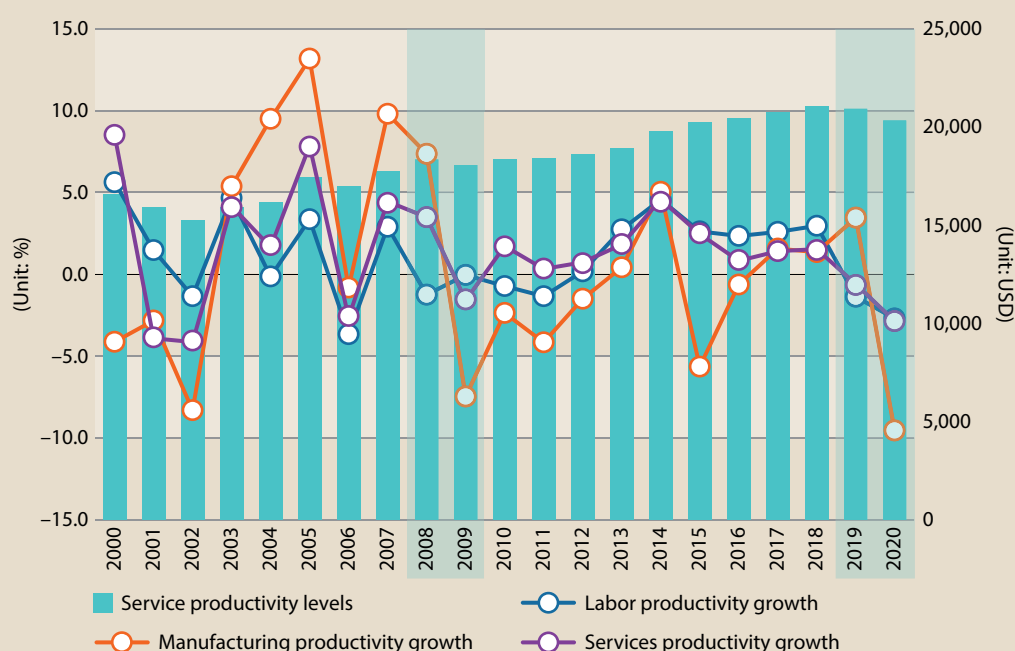


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.

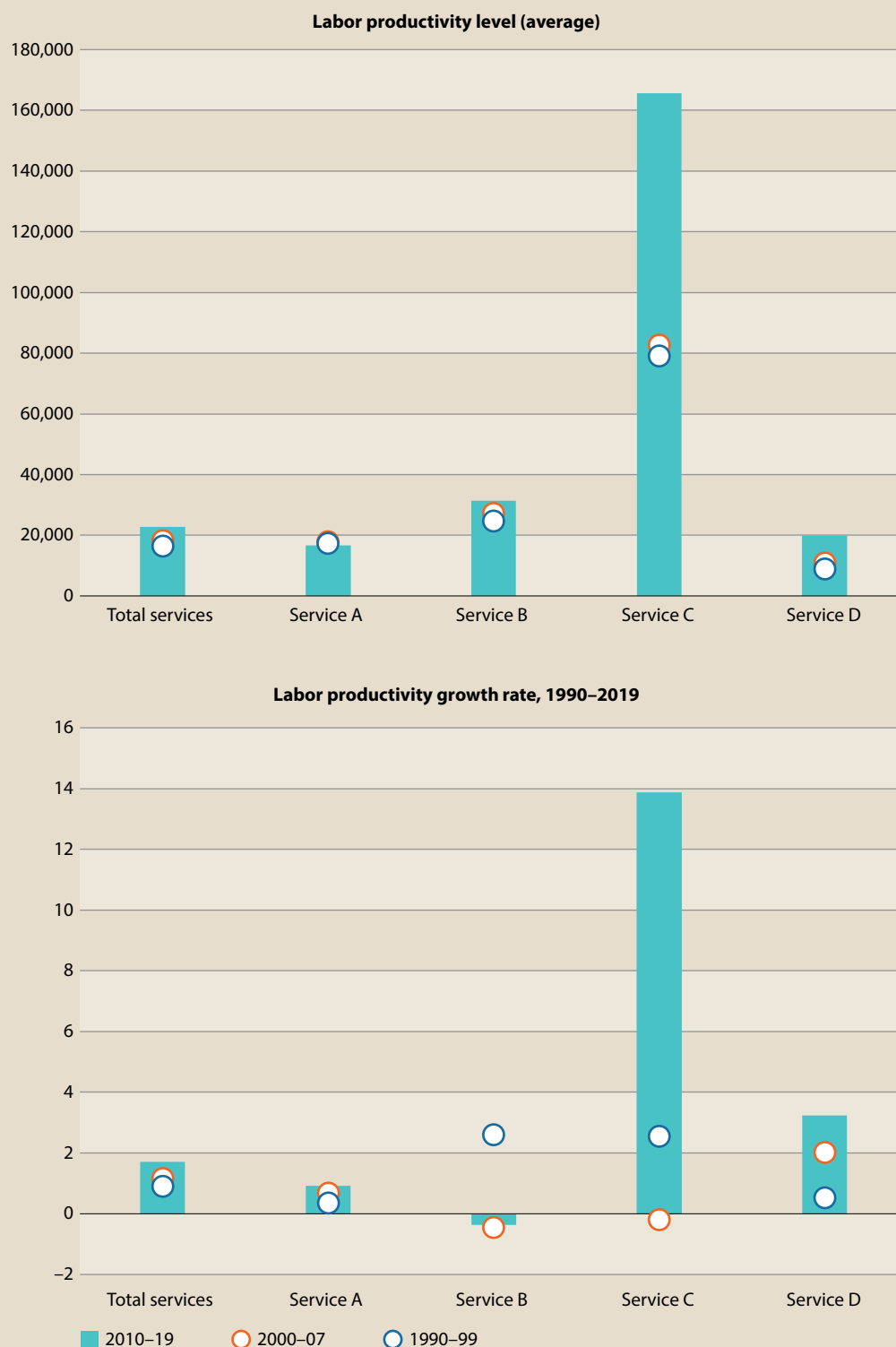


Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000   | 2010   | 2019   | 2020   |
|-----------|----------------------|--------|--------|--------|--------|
| Total     | Intermediate inputs  | 20,008 | 51,424 | 71,858 | 69,828 |
|           | Net backward linkage | 0.933  | 1.057  | 1.047  | 1.046  |
|           | Net forward linkage  | 1.178  | 0.989  | 0.948  | 0.961  |
| Service A | Intermediate inputs  | 4,399  | 12,736 | 16,747 | 15,671 |
|           | Net backward linkage | 0.919  | 1.01   | 1.03   | 1.036  |
|           | Net forward linkage  | 1.181  | 1.041  | 0.991  | 1.001  |
| Service B | Intermediate inputs  | 7,089  | 20,722 | 25,595 | 23,428 |
|           | Net backward linkage | 0.959  | 1.076  | 1.043  | 1.02   |
|           | Net forward linkage  | 0.985  | 0.866  | 0.842  | 0.867  |
| Service C | Intermediate inputs  | 667    | 3,242  | 5,247  | 5,570  |
|           | Net backward linkage | 0.143  | 0.623  | 0.649  | 0.632  |
|           | Net forward linkage  | 2.176  | 1.498  | 1.431  | 1.455  |
| Service D | Intermediate inputs  | 1,471  | 2,165  | 4,125  | 4,411  |
|           | Net backward linkage | 1.132  | 1.085  | 1.108  | 1.132  |
|           | Net forward linkage  | 0.968  | 0.972  | 0.908  | 0.897  |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

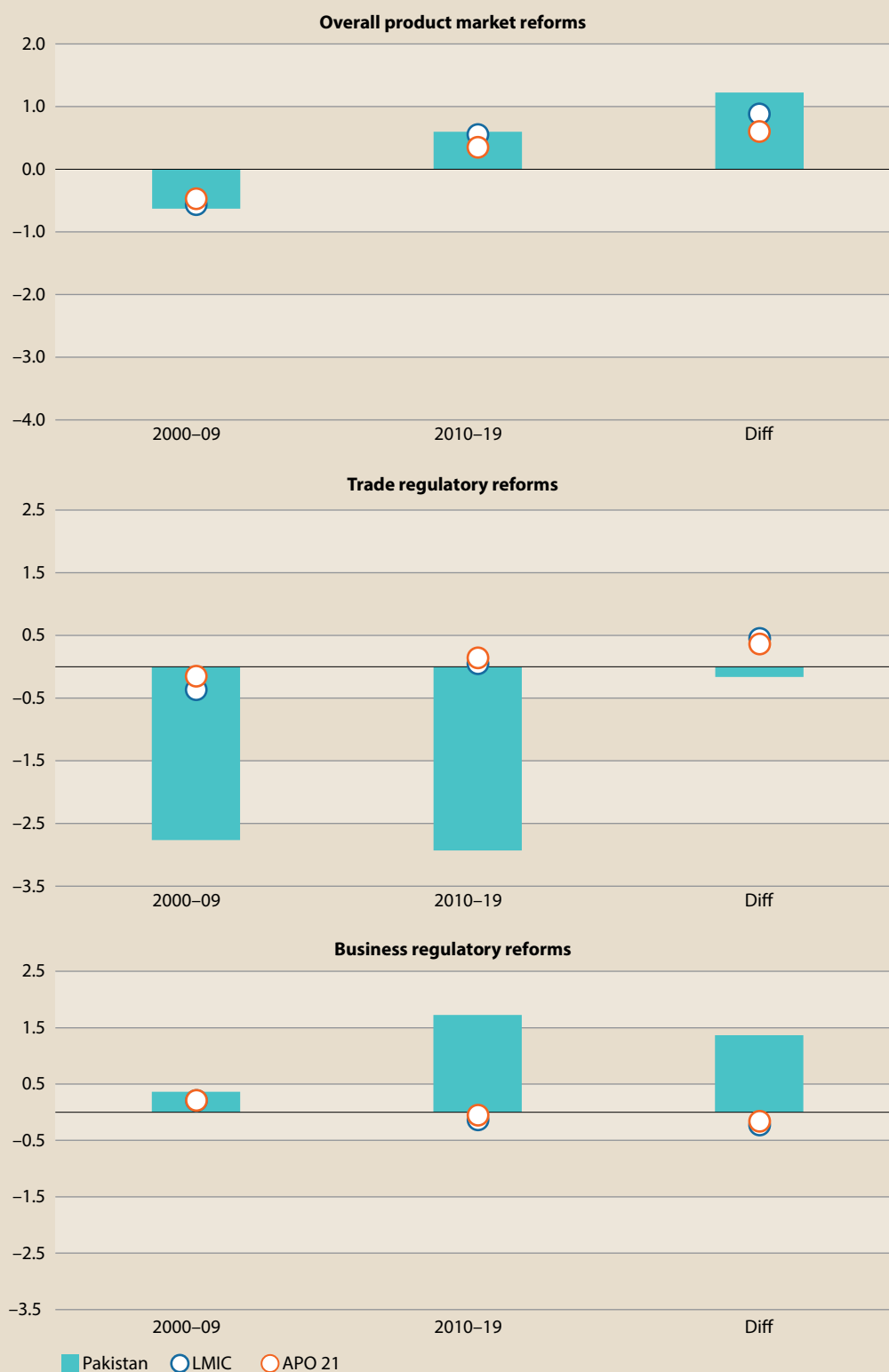
- Pakistan was a low-income country. In 2008, its income surpassed the standard to become a lower-middle-income country. The growths in the finance sector and total factor productivity show similar patterns and seem to complement each other well. Policies should make sure that financial development continues to channel funds for the right investments and innovations to boost productivity and economic growth.

## Regulatory Reforms Intensity

- The reforms intensity of product market regulations shows a negative growth in the period 2000–09, while it exhibits a positive growth in the subsequent period of 2010–19. Thus, a notable reforms progression was made in the latter period.
- A contrasting pattern can be found in that the reform process significantly decreased in the trade reforms area, whereas in business reforms, it largely went up in the same period.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN PAKISTAN BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- Pakistan has very high RCAs in the manufacturing sector (textiles); agriculture; and services (education, retail, health, and other social services). Textiles and clothing accounted for 59% of Pakistan's total merchandise exports in 2020, followed by vegetables and food products (18%), as per data from World Integrated Trade Solution (WITS).
- After these leading sectors lie such services as inland transport, other social services, and leather products.

# THE PHILIPPINES

## Services Sector's Productivity

- The services sector's productivity grew by an annual average of 2.4% between 2000 and 2019, and the productivity level increased by 1.6 times from USD14,679 in 2000 to USD23,398 in 2019. However, in 2020, it experienced around –10% decline to USD21,204.
- Even after the GFC, during 2010–18, the productivity growth rate had accelerated in the services sector, mainly in the financial, rental, and business services subsectors, with an apparent increase in service exports.
- In 2020, the intermediate input of the services sector increased by about 3.86 times compared with 2000. In particular, service C, financial intermediation, and other business activities subsectors, recorded relatively higher increase compared with other service subsectors. However, this growth was due to the low input of basic intermediate goods in 2000.

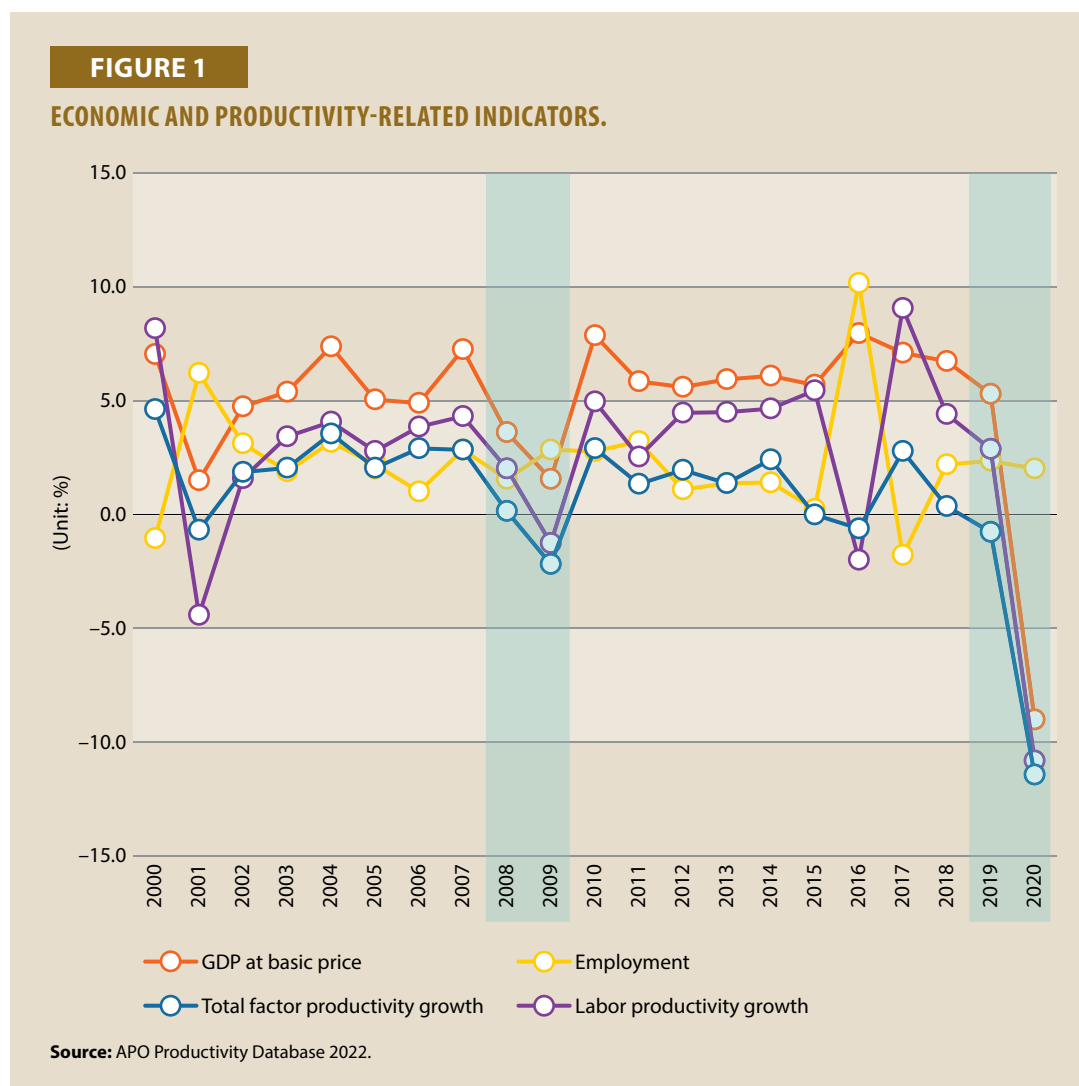
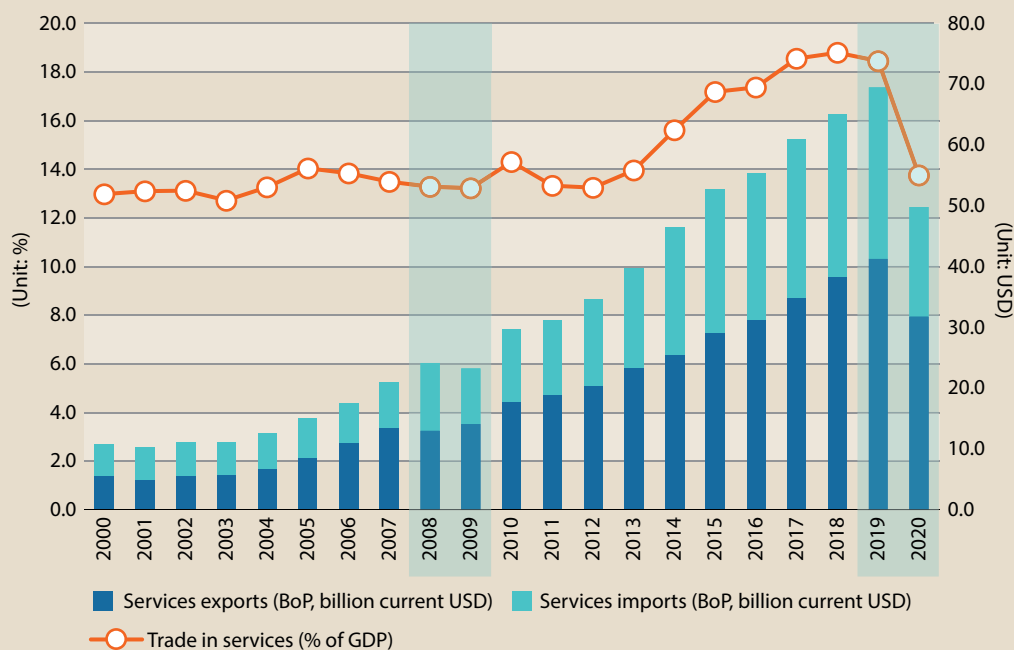


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

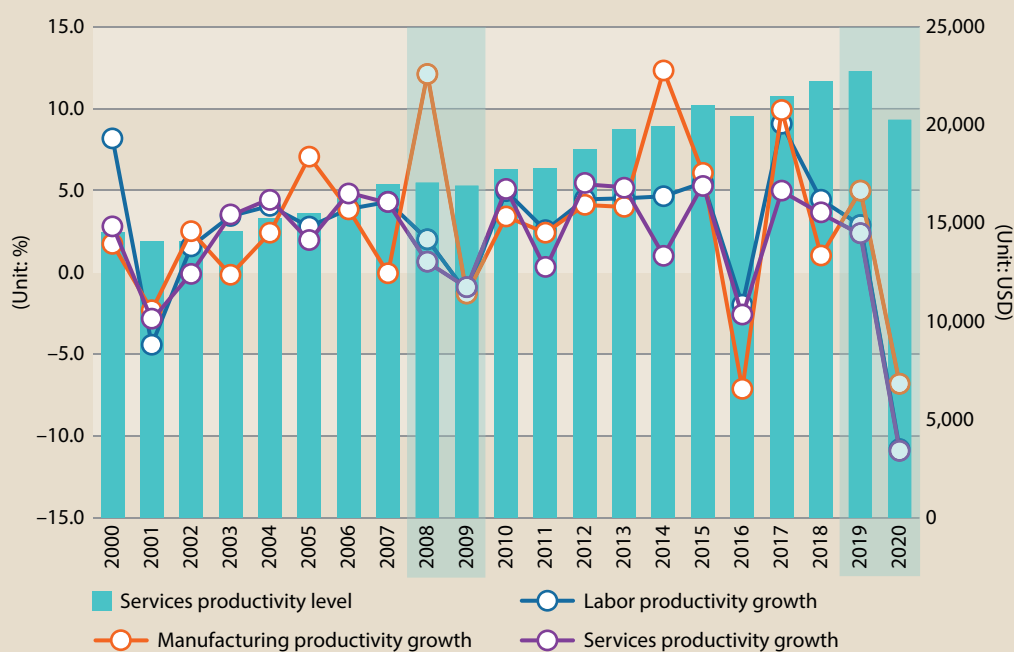


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000   | 2010   | 2019    | 2020    |
|-----------|----------------------|--------|--------|---------|---------|
| Total     | Intermediate inputs  | 27,267 | 72,539 | 148,456 | 132,531 |
|           | Net backward linkage | 1.145  | 1.062  | 1.125   | 1.127   |
|           | Net forward linkage  | 0.801  | 0.939  | 0.846   | 0.857   |
| Service A | Intermediate inputs  | 8,751  | 21,808 | 43,985  | 38,630  |
|           | Net backward linkage | 1.187  | 0.832  | 0.911   | 0.898   |
|           | Net forward linkage  | 0.812  | 1.152  | 1.045   | 1.048   |
| Service B | Intermediate inputs  | 5,328  | 11,197 | 19,958  | 14,536  |
|           | Net backward linkage | 1.098  | 1.14   | 1.17    | 1.218   |
|           | Net forward linkage  | 0.717  | 0.799  | 0.706   | 0.715   |
| Service C | Intermediate inputs  | 4,773  | 17,769 | 37,045  | 38,037  |
|           | Net backward linkage | 0.759  | 0.711  | 0.931   | 0.918   |
|           | Net forward linkage  | 1.114  | 1.311  | 1.069   | 1.087   |
| Service D | Intermediate inputs  | 2,614  | 8,252  | 16,064  | 13,695  |
|           | Net backward linkage | 1.364  | 1.333  | 1.355   | 1.295   |
|           | Net forward linkage  | 0.711  | 0.712  | 0.711   | 0.742   |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

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Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

**Finance Sector's Productivity**

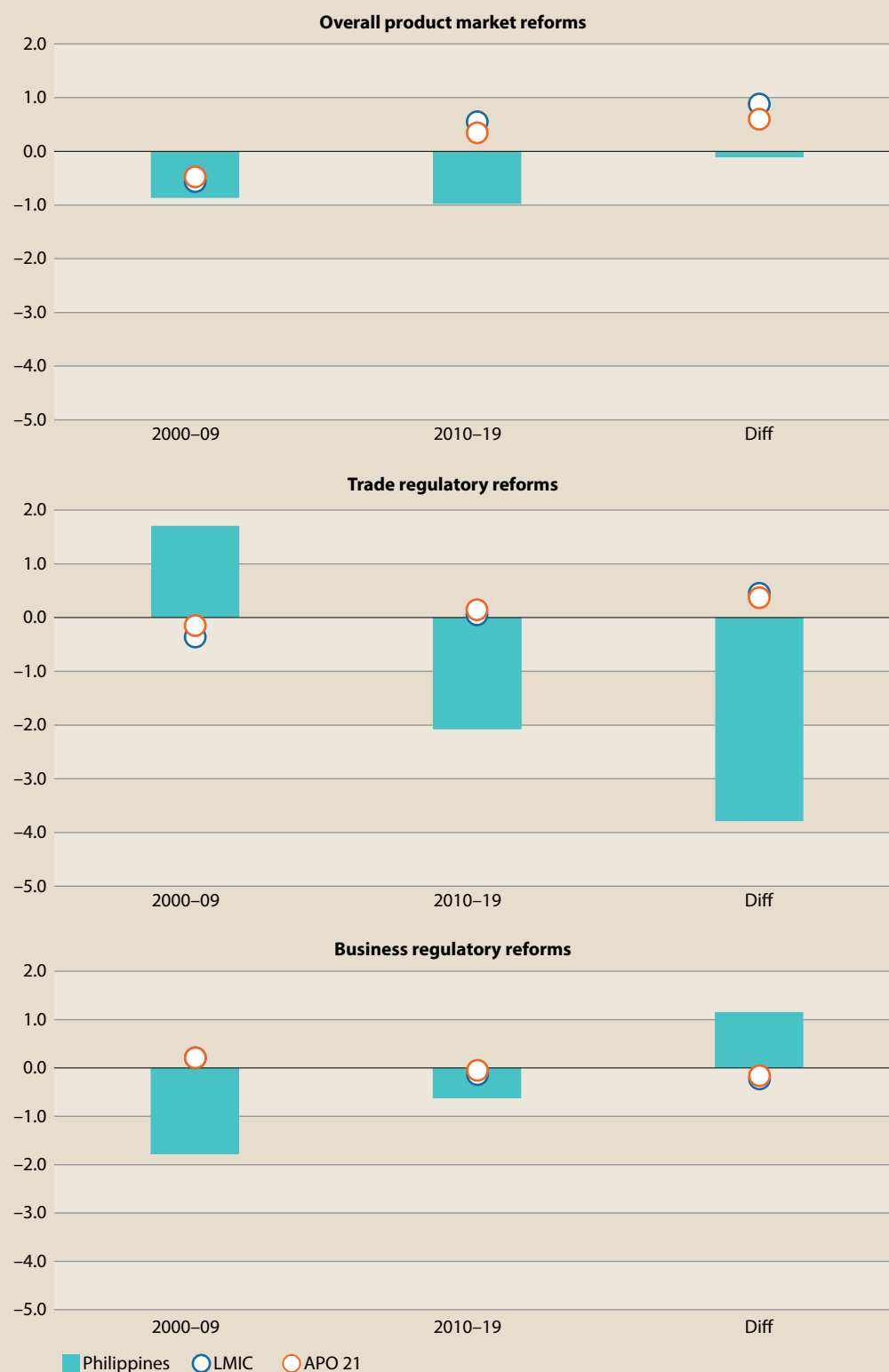
- The Philippines was classified consistently as a lower-middle-income country. No clear pattern has been observed between the finance sector and productivity.

**Regulatory Reforms Intensity**

- A great slowing pattern of reforming product market regulations was revealed over the 20-year period of 2000–19. Further stagnation in reforms was seen in the past decade (2010–19), which is a sharp opposite of the trends in LMICs and APO 21.
- The Philippines experienced a drastic fall in the reforms process in trade-related regulations, while significant progress in reducing business administrative burdens was made.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN THE PHILIPPINES BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- The Philippines has experienced big changes in its industrial landscape. Formerly leading manufacturing subsectors such as machinery, electrical/optical equipment, chemicals, and refined petroleum changed their positions from high RCAs to low RCAs (below 1). Instead, services have shown increase in RCAs: retail, hotels and restaurants, renting and other business services, education, telecommunications, and travel services are showing increases in RCAs.
- GVC participation in the Philippines has not changed as significantly as the RCAs. The directions are mixed.

# SINGAPORE

## Services Sector's Productivity

- Singapore's economy fluctuated significantly before the GFC. After the crisis, the growth rate stabilized but was dragged down again with the outbreak of COVID-19. The trade in services has constantly increased in terms of both exports and imports.
- Singapore recorded a low level of productivity growth in the services sector after the Asian financial crisis in the late 1990s and the GFC in the 2000s. In spite of that, its services sector's annual productivity growth averaged around 1.61% between 2000 and 2020, thereby showing a marked increase in the level of productivity from USD118,573 in 2000 to USD146,745 in 2020.
- In 2020, the total intermediate input of services increased by about 2.47 times compared with 2000, and all service subsectors showed a balanced growth between 3.7 and 4.9 times during the period of 2000 to 2020, except for services B.

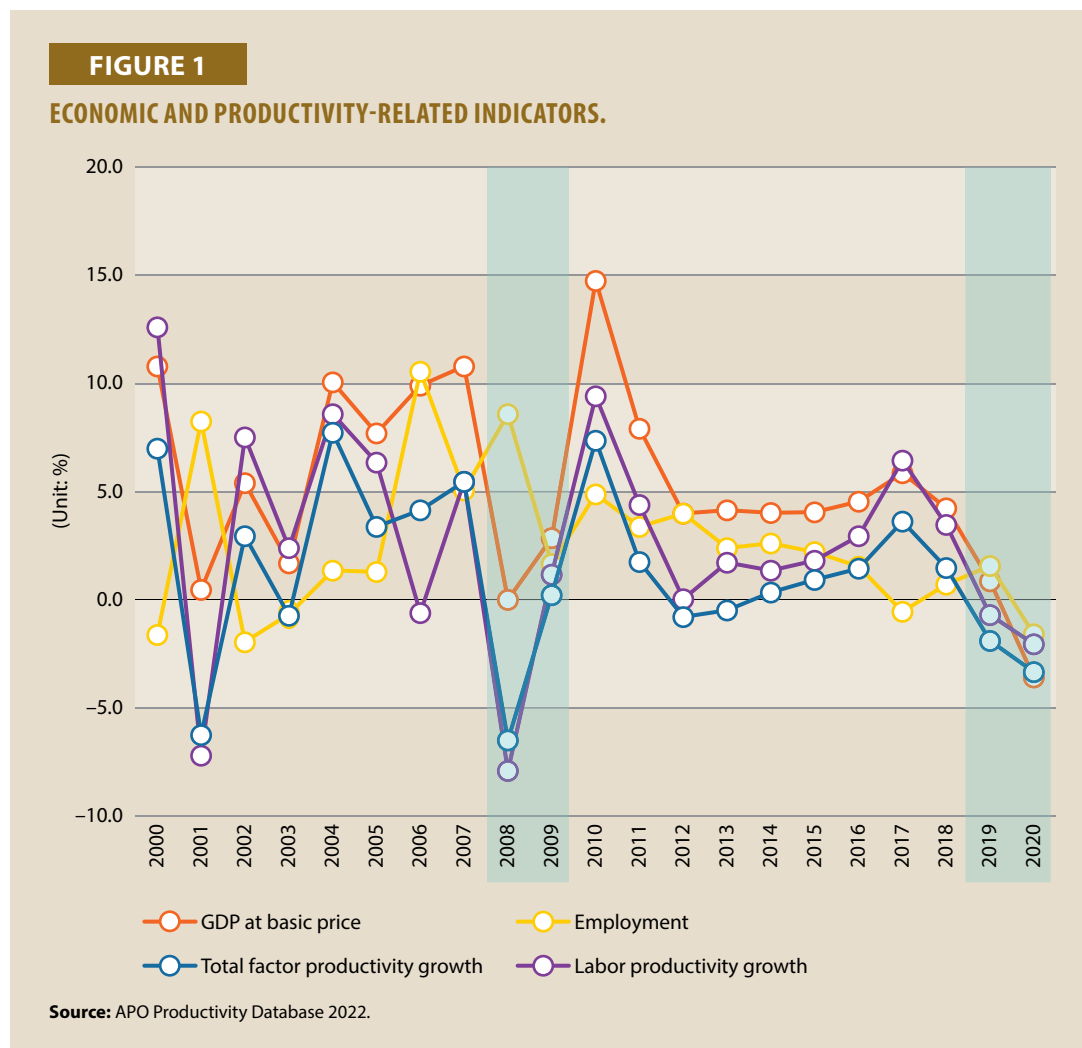
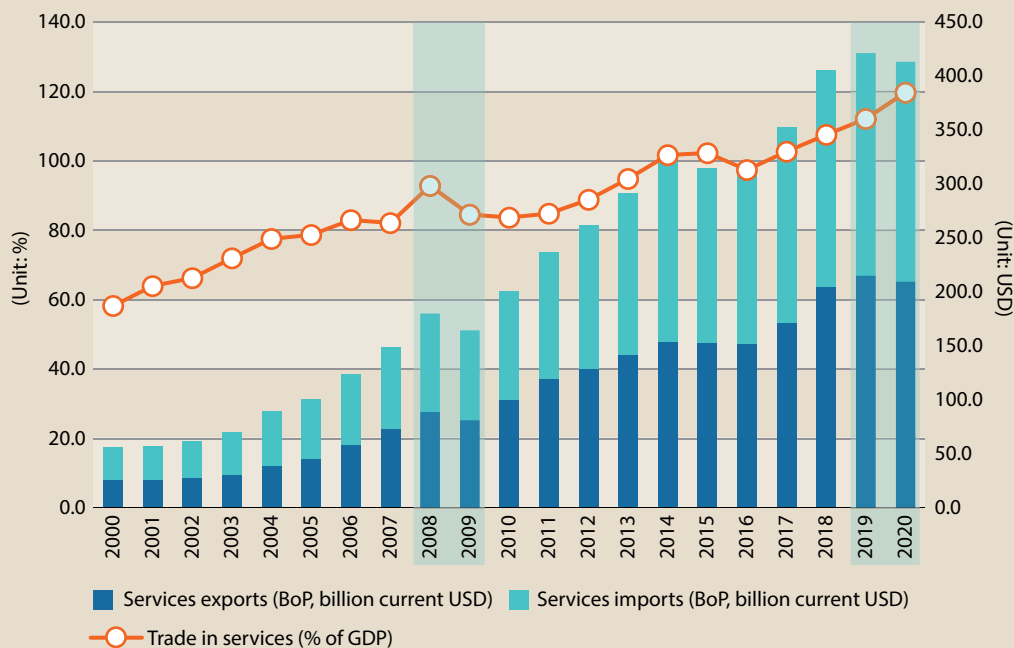


FIGURE 2

TRADE IN SERVICES SINCE 2000.

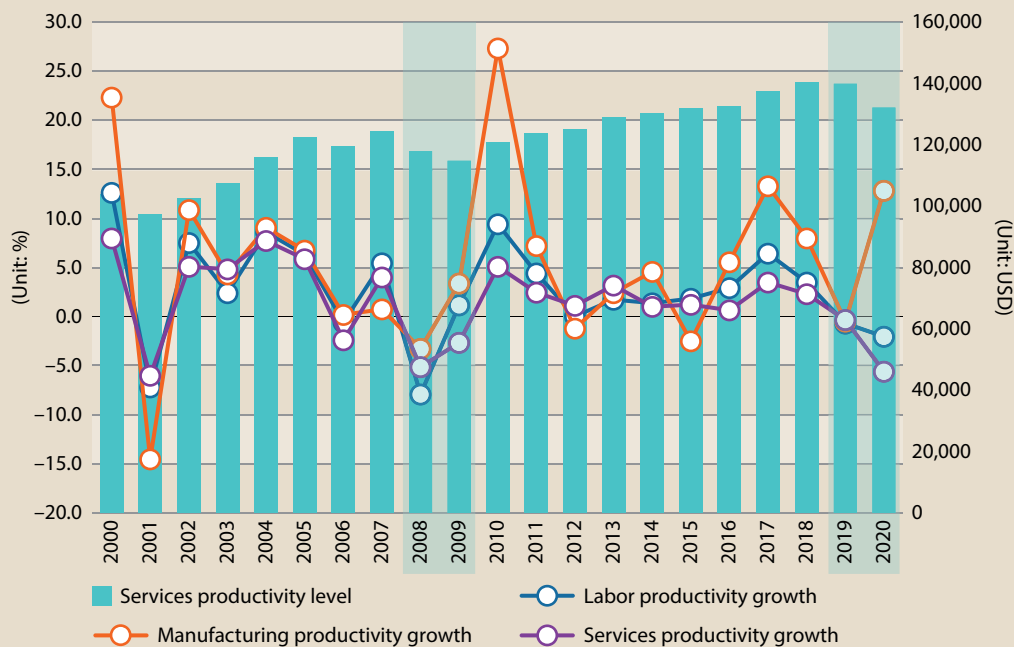


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants. Service B includes transport, storage, and communications. Service C includes financial intermediation, real estate, renting, and business activities. Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000   | 2010    | 2019    | 2020    |
|-----------|----------------------|--------|---------|---------|---------|
| Total     | Intermediate inputs  | 91,525 | 214,691 | 367,453 | 317,942 |
|           | Net backward linkage | 0.944  | 0.989   | 0.919   | 0.948   |
|           | Net forward linkage  | 0.767  | 0.701   | 0.708   | 0.705   |
| Service A | Intermediate inputs  | 13,338 | 45,381  | 86,903  | 78,516  |
|           | Net backward linkage | 1.029  | 1.004   | 1.016   | 1.012   |
|           | Net forward linkage  | 0.806  | 0.666   | 0.69    | 0.7     |
| Service B | Intermediate inputs  | 22,753 | 55,510  | 79,297  | 61,502  |
|           | Net backward linkage | 0.789  | 0.84    | 0.717   | 0.766   |
|           | Net forward linkage  | 0.735  | 0.653   | 0.63    | 0.616   |
| Service C | Intermediate inputs  | 23,672 | 61,338  | 125,496 | 118,888 |
|           | Net backward linkage | 0.781  | 0.796   | 0.641   | 0.607   |
|           | Net forward linkage  | 0.94   | 0.92    | 0.941   | 0.986   |
| Service D | Intermediate inputs  | 3,241  | 8,740   | 17,232  | 15,322  |
|           | Net backward linkage | 1.03   | 1.118   | 1.053   | 1.104   |
|           | Net forward linkage  | 0.799  | 0.826   | 0.823   | 0.792   |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

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Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

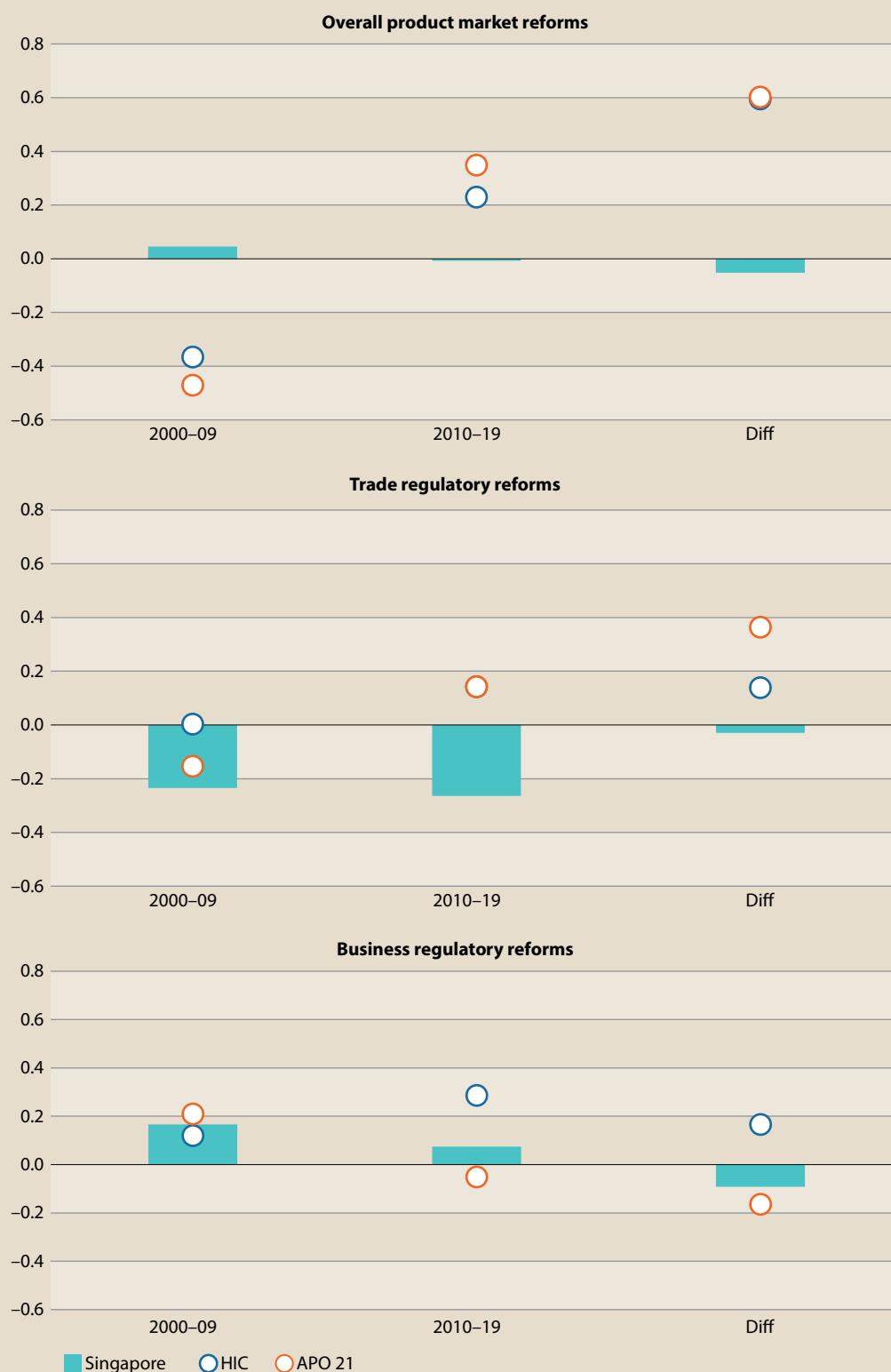
- Singapore has been a high-income country throughout the sample period. There were some ambiguous links between the finance sector and productivity before 2000. However, the relationship became much more transparent after 2000. It is reasonable to assume that the finance sector's development has influenced the increase in productivity.

## Regulatory Reforms Intensity

- Singapore shows a marginal growth in reforms intensity for the overall product market over the last two decades at an average below 0.2%. Notably, the growth trend was decelerated (−0.05% p) in the post-GFC period (2010–19).
- The post-GFC slowdown in reforms intensity is attributable to both trade and business regulatory reforms, with the latter (−0.09%p) showing more stagnant growth compared with the former (−0.02% p).

FIGURE 5

## REGULATORY REFORMS INTENSITY.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) HIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- Singapore is strengthening its position as a trading and services hub in the world economy. It also has internationally competitive high-tech manufacturing such as electrical/optical equipment and chemicals.
- With only a few exceptions, Singapore's picture has remained almost constant for two decades. Big changes in RCAs have occurred in travel services, health services, construction, and paper sectors. In terms of GVC participation also, Singapore has shown very small changes with a few exceptions such as refined petroleum and chemicals.

# SRI LANKA

## Services Sector's Productivity

- Sri Lanka's services sector's productivity has shown an average annual growth rate of 3.77% over the period 2000–20, with its productivity levels almost doubling from an initial USD23,105 in 2000 to USD45,482 in 2020. However, the GFC highly impacted productivity growth in services compared with that in manufacturing.
- However, Sri Lanka's economy appears to be sensitive to external changes as seen in the fluctuation of macroeconomic variables. The recent COVID-19 has impacted employment and exports significantly.
- In 2020, the intermediate input of total services sector increased by about 3.46 times compared with 2000. In particular, service C, financial intermediation, and other business activities recorded a relatively higher increase compared with other service subsectors. However, this growth is due to the low input of basic intermediate goods in 2000.

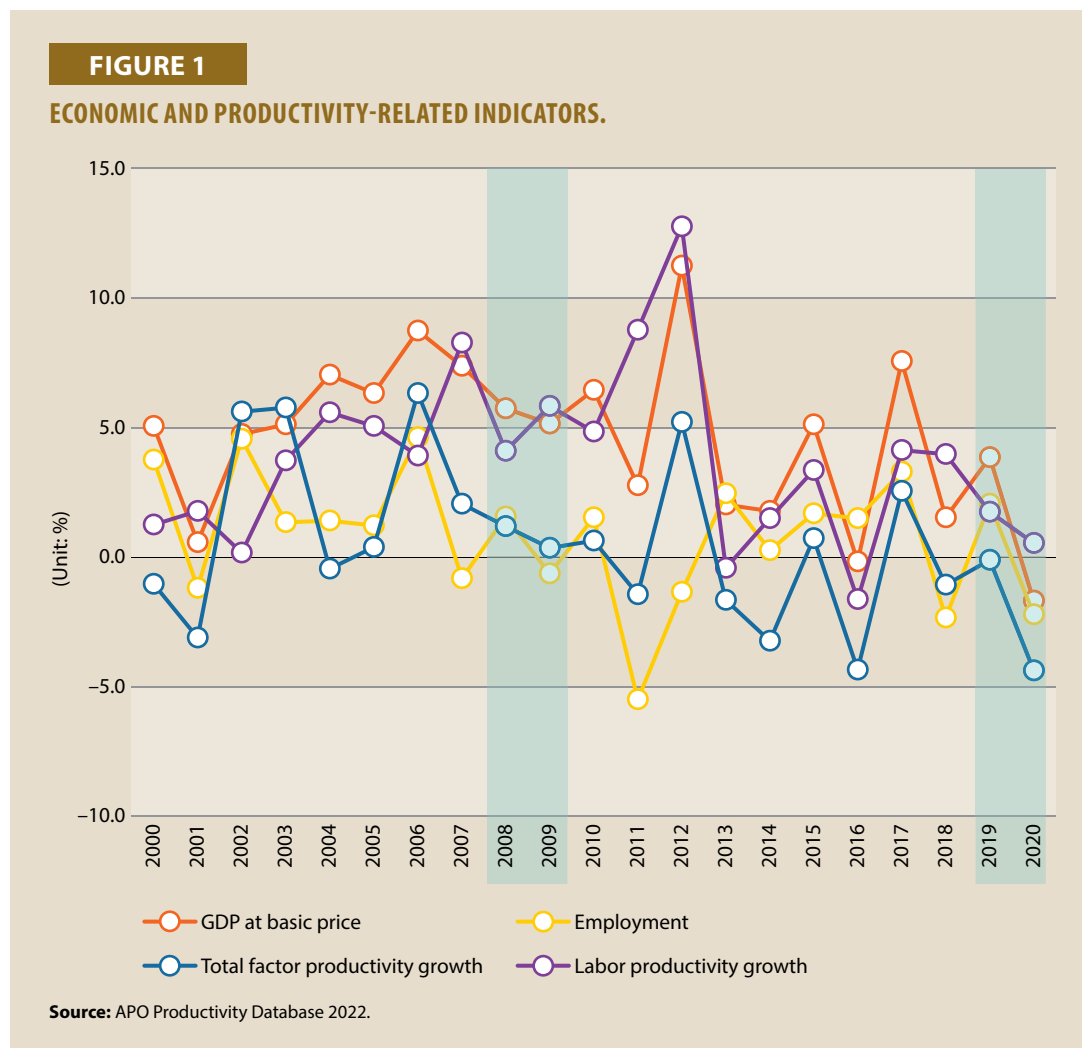
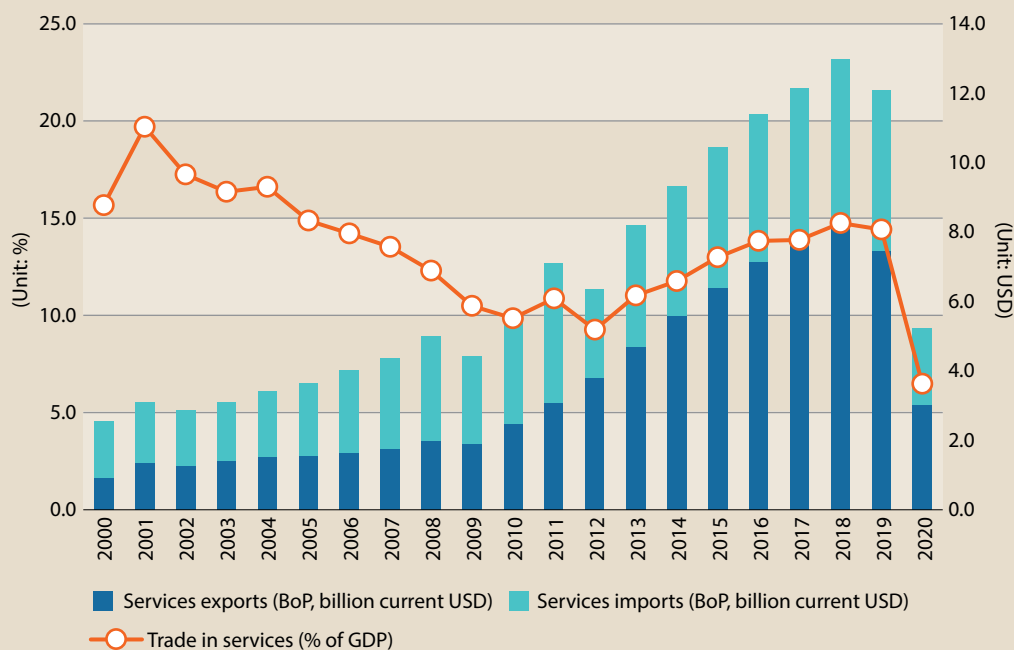


FIGURE 2

## TRADE IN SERVICES SINCE 2000.

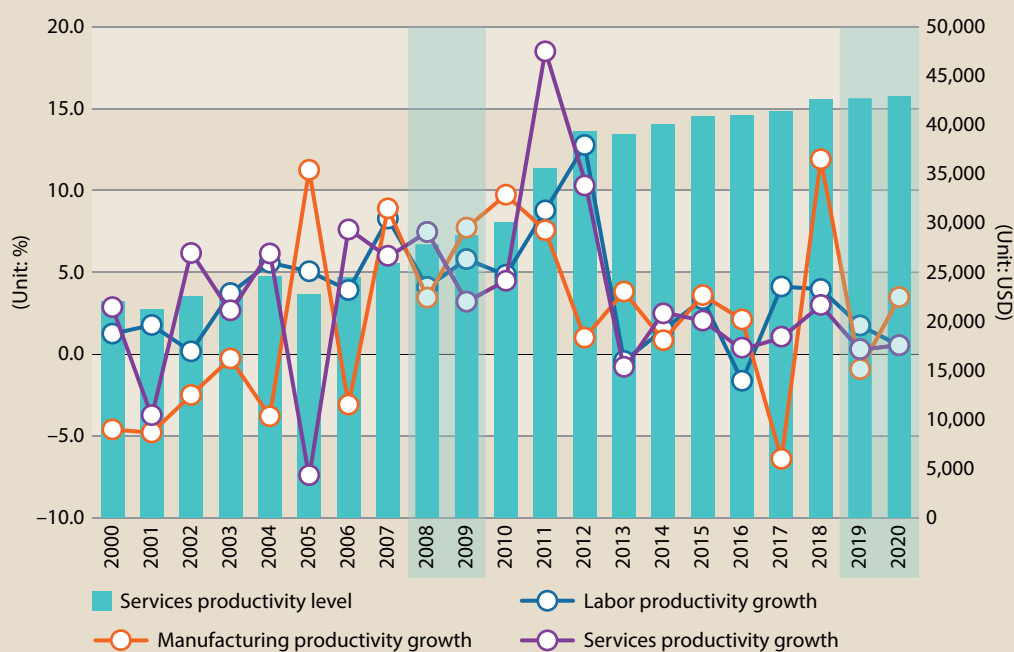


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

## LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

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Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000  | 2010   | 2019   | 2020   |
|-----------|----------------------|-------|--------|--------|--------|
| Total     | Intermediate inputs  | 6,391 | 17,979 | 30,295 | 28,529 |
|           | Net backward linkage | 0.899 | 0.932  | 1.096  | 1.077  |
|           | Net forward linkage  | 0.668 | 0.979  | 0.861  | 0.891  |
| Service A | Intermediate inputs  | 587   | 2,537  | 3,907  | 3,488  |
|           | Net backward linkage | 0.798 | 1.005  | 1.016  | 1.006  |
|           | Net forward linkage  | 0.516 | 0.994  | 1.004  | 1.029  |
| Service B | Intermediate inputs  | 1,361 | 5,151  | 8,376  | 7,797  |
|           | Net backward linkage | 0.927 | 0.793  | 1.169  | 1.129  |
|           | Net forward linkage  | 0.342 | 0.955  | 0.682  | 0.738  |
| Service C | Intermediate inputs  | 500   | 1,816  | 3,946  | 4,204  |
|           | Net backward linkage | 0.673 | 0.609  | 0.979  | 0.931  |
|           | Net forward linkage  | 1.161 | 1.303  | 1.012  | 1.06   |
| Service D | Intermediate inputs  | 1,229 | 4,522  | 7,849  | 7,518  |
|           | Net backward linkage | 1.054 | 1.137  | 1.11   | 1.125  |
|           | Net forward linkage  | 0.874 | 0.846  | 0.881  | 0.876  |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

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Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

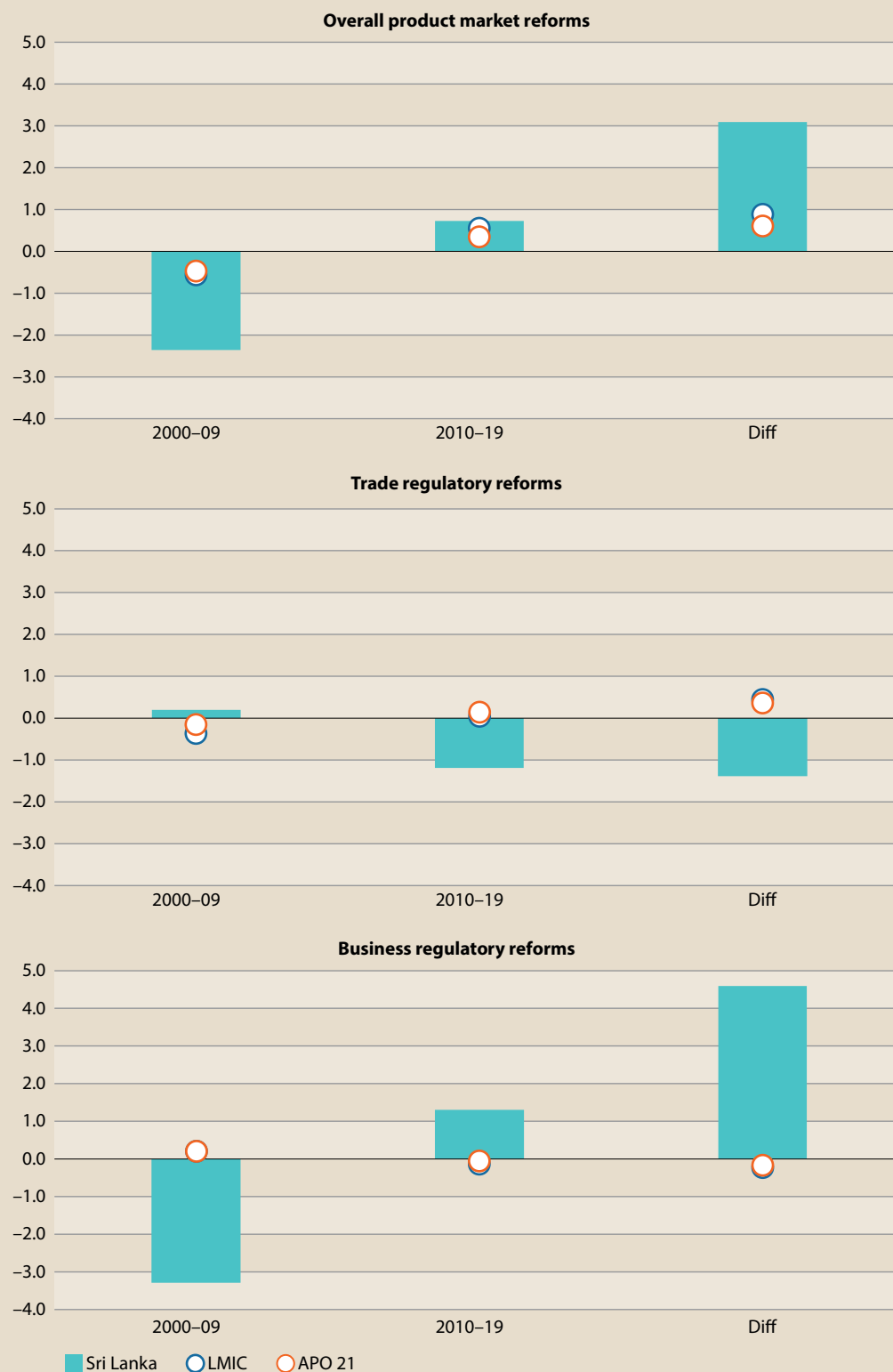
- Sri Lanka was a low-income country until 1997 when it advanced to a lower-middle-income status. Sri Lanka's productivity has increased throughout the years, but it is unclear whether the finance sector has complemented the increase. Policymakers should evaluate the recent force driving the productivity increase and support that channel.

## Regulatory Reforms Intensity

- Sri Lanka represents a competing trend across two periods: while a negative growth in the overall product market reforms was observed during 2000–09, a positive growth trend was seen in the subsequent period of 2010–19. In this regard, accelerated reform progress can thus be found in the latter period.
- A similar trend was also revealed across the two different reform areas, especially in the post-GFC period: a notable, positive growth trajectory was found in business regulatory reforms, but the opposite was identified in trade regulatory reforms.

**FIGURE 5**

**OVERALL, TRADE, AND BUSINESS REFORMS IN SRI LANKA BEFORE AND AFTER 2010.**



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- Industrial bases that offer international competitiveness to Sri Lanka seem to be very narrow. The textiles sector in Sri Lanka dominates the industrial landscape, being far higher in terms of RCAs. Shares of merchandise exports in 2020 were: textiles and clothing (45.2%); vegetables including teas (19.5%); plastic or rubber (9.8%); food products (5.5%); and fuels (2.8%) as per data from the WITS.
- Some services including hotel, retail, and inland/air services have good international competitiveness.
- Notably, the sectors with high RCAs have shown increases in GVC participation, except textile.

# THAILAND

## Services Sector's Productivity

- Over the period of 2000–19, Thailand has recorded 2.44% annual growth in service productivity, though the growth was affected by the outbreak of COVID-19 in 2020.
- Despite the GFC, the political turmoil in the late 2010s, and the outbreak of COVID-19, the services sector's productivity level has shown a steady increase, from USD29,012 in 2000 to USD33,026 in 2010 and USD46,018 in 2020.
- From 2000 to 2020, the total intermediate input of the services sector increased by about 2.56 times. In particular, service C, composed of financial intermediation and other business service subsectors, recorded relatively high increase of 4.81 times, followed by service A that increased by 2.56 times.

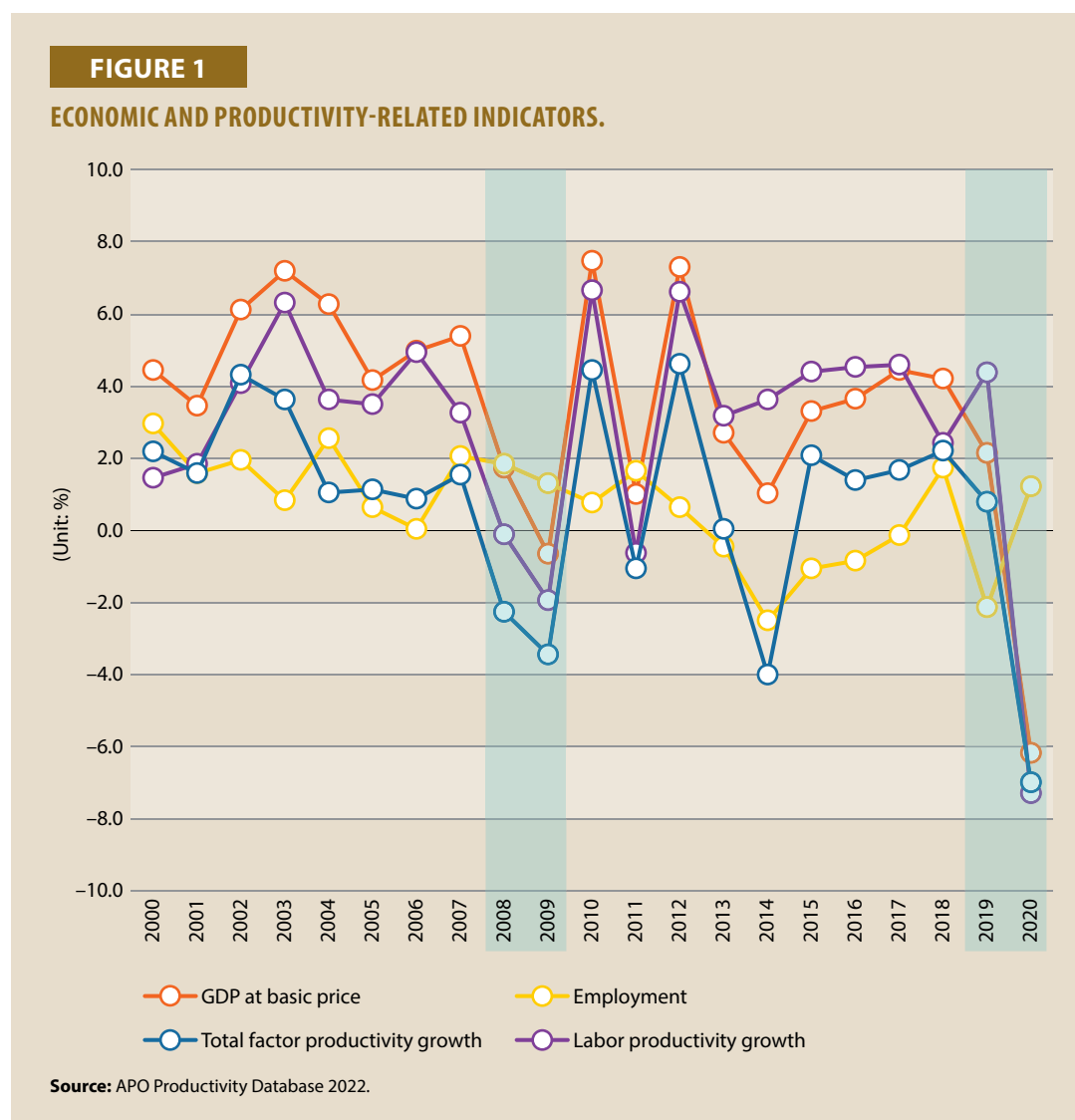
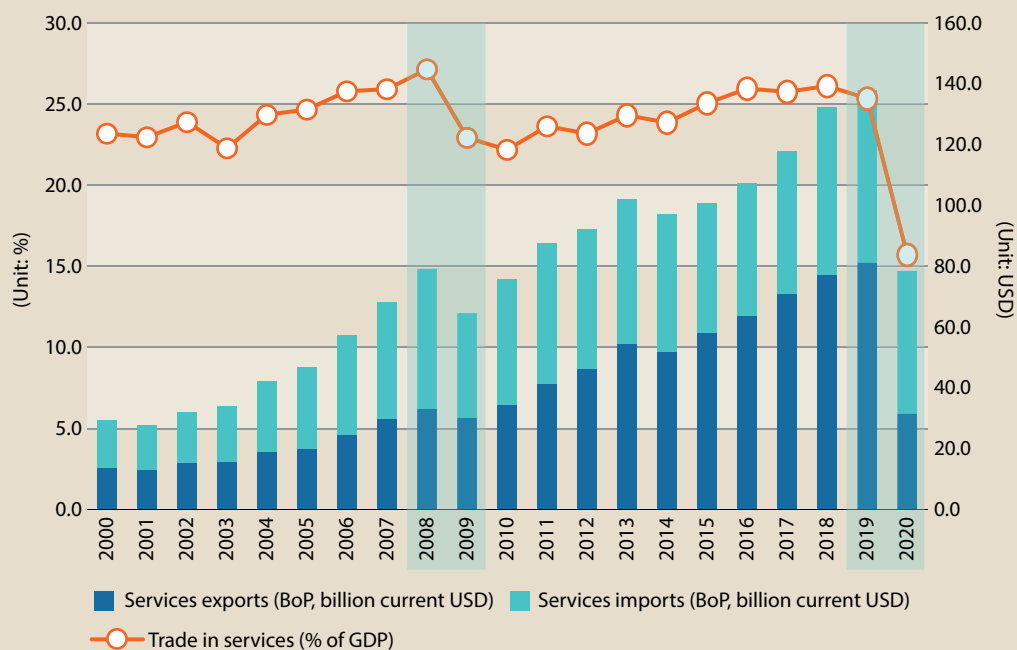


FIGURE 2

TRADE IN SERVICES SINCE 2000.

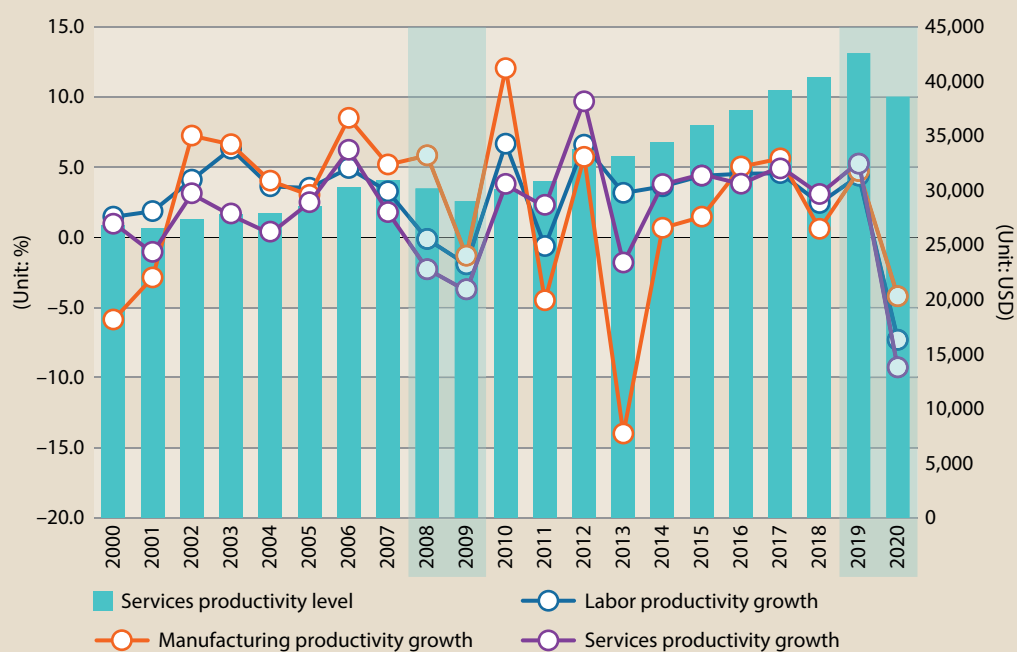


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

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Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social, and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000   | 2010    | 2019    | 2020    |
|-----------|----------------------|--------|---------|---------|---------|
| Total     | Intermediate inputs  | 70,088 | 194,769 | 297,677 | 249,288 |
|           | Net backward linkage | 1.007  | 1.084   | 1.133   | 1.068   |
|           | Net forward linkage  | 0.812  | 0.854   | 0.803   | 0.833   |
| Service A | Intermediate inputs  | 27,070 | 62,872  | 142,712 | 106,095 |
|           | Net backward linkage | 1.108  | 1.12    | 0.841   | 0.819   |
|           | Net forward linkage  | 0.757  | 0.849   | 0.919   | 0.923   |
| Service B | Intermediate inputs  | 13,949 | 33,199  | 32,998  | 26,855  |
|           | Net backward linkage | 0.745  | 0.756   | 1.344   | 1.152   |
|           | Net forward linkage  | 0.714  | 0.825   | 0.596   | 0.679   |
| Service C | Intermediate inputs  | 8,137  | 38,795  | 51,360  | 47,259  |
|           | Net backward linkage | 0.489  | 0.615   | 0.671   | 0.632   |
|           | Net forward linkage  | 1.433  | 1.314   | 1.236   | 1.256   |
| Service D | Intermediate inputs  | 10,058 | 22,579  | 31,443  | 30,371  |
|           | Net backward linkage | 1.416  | 1.528   | 1.337   | 1.353   |
|           | Net forward linkage  | 0.627  | 0.707   | 0.753   | 0.751   |

**Source:** Authors' calculations based on ADB MRIO Database.**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.

Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.

Service C includes financial intermediation; real estate activities; renting of M&amp;E; and other business activities.

Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

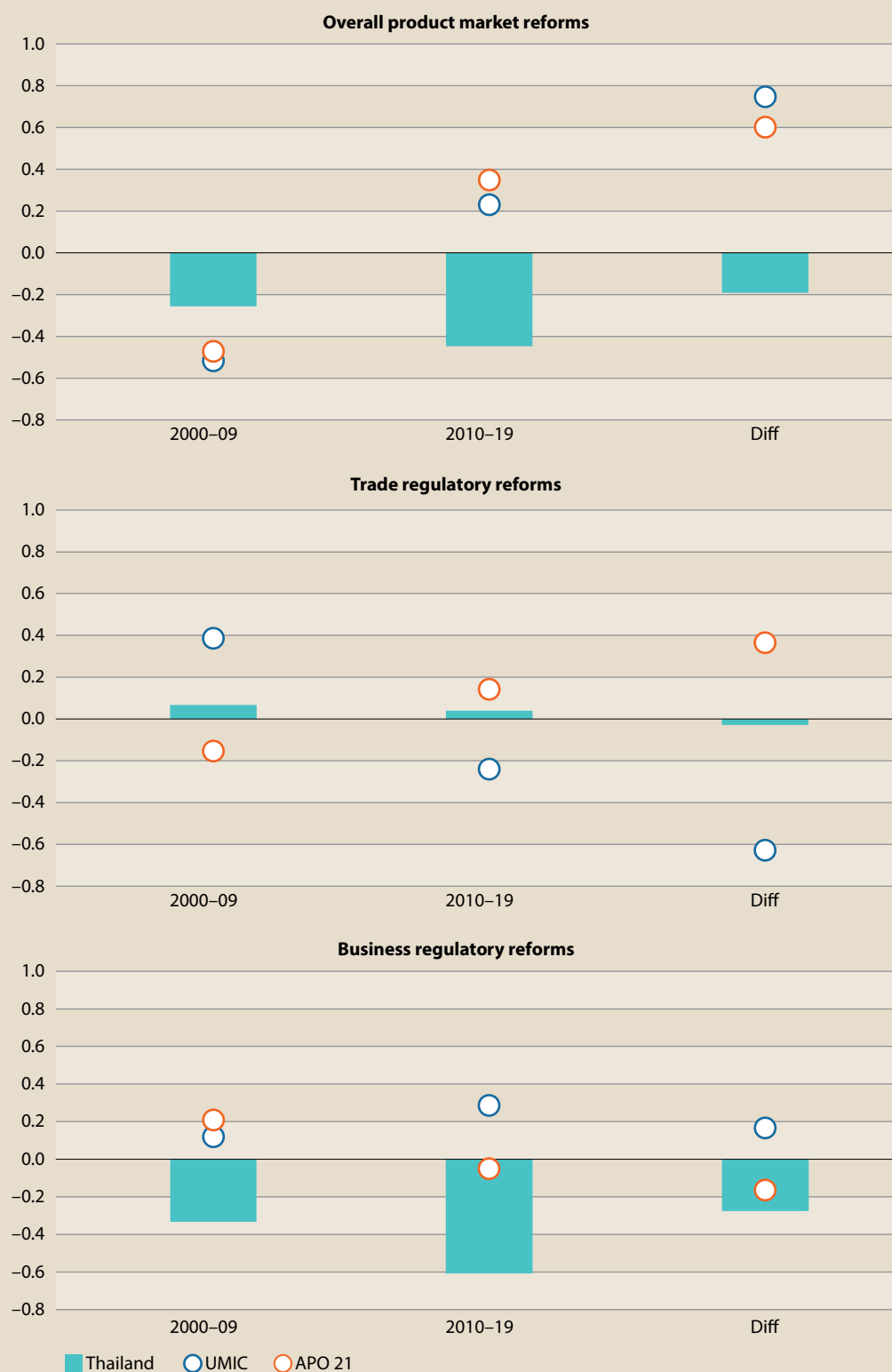
- Thailand was a lower-middle-income country until 2010. The general pattern between the finance sector and total productivity appears positive but varies by decade.

## Regulatory Reform Intensity

- A long-lasting downward trend of reforming product market regulations can be found over a 20-year period (2000–19), which is quite a contrasting trend in comparison with those of the UMIC and APO 21 groups.
- Such slowed and even delayed reform progress is largely driven by accelerated stagnant growth in the recent decade (2010–19), especially in the area of business administrative reforms.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN THAILAND BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) UMIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- Thailand shows a big movement in its industrial landscape. Agriculture has moved outwards both in terms of RCA and GVC participation, while there is a mixed picture in manufacturing. Light manufacturing, including textiles and wood, is moving downward. There is a considerable outward movement in transportation equipment, but other subsectors in heavy manufacturing do not show outward movement. In services, there are big changes: (1) all transport services have shown increases in GVC participation, with substantial gains in RCAs only in water transport; (2) telecommunications and financial services have gained small margins of RCAs; and (3) retail and wholesale services are still internationally competitive, but their RCAs have decreased.
- Very diverse movements are notable in GVC participation.
- Many sectors with increased RCAs are accompanied with increases in GVC participation. These include agriculture, chemicals in manufacturing, and water transport.

# TURKIYE

## Services Sector's Productivity

- In the 1990s Türkiye's economy had experienced high inflation rates and in the early 2000s a severe recession. Macroeconomic variables were further aggravated due to the influence of the GFC. Nevertheless, it showed an annual GDP growth rate of more than 5% during 2000–20, with a relatively lower impact of the COVID-19.
- Türkiye's trade in services appears to have grown steadily centered on exports. The services sector's productivity growth plunged due to the financial crisis in 2001 and the GFC in 2008 but has otherwise been steadily growing. It grew by 1.68% annually during the 2000–20 period. Accordingly, the productivity grew from USD74,200 in 2000 to USD91,201 in 2020.

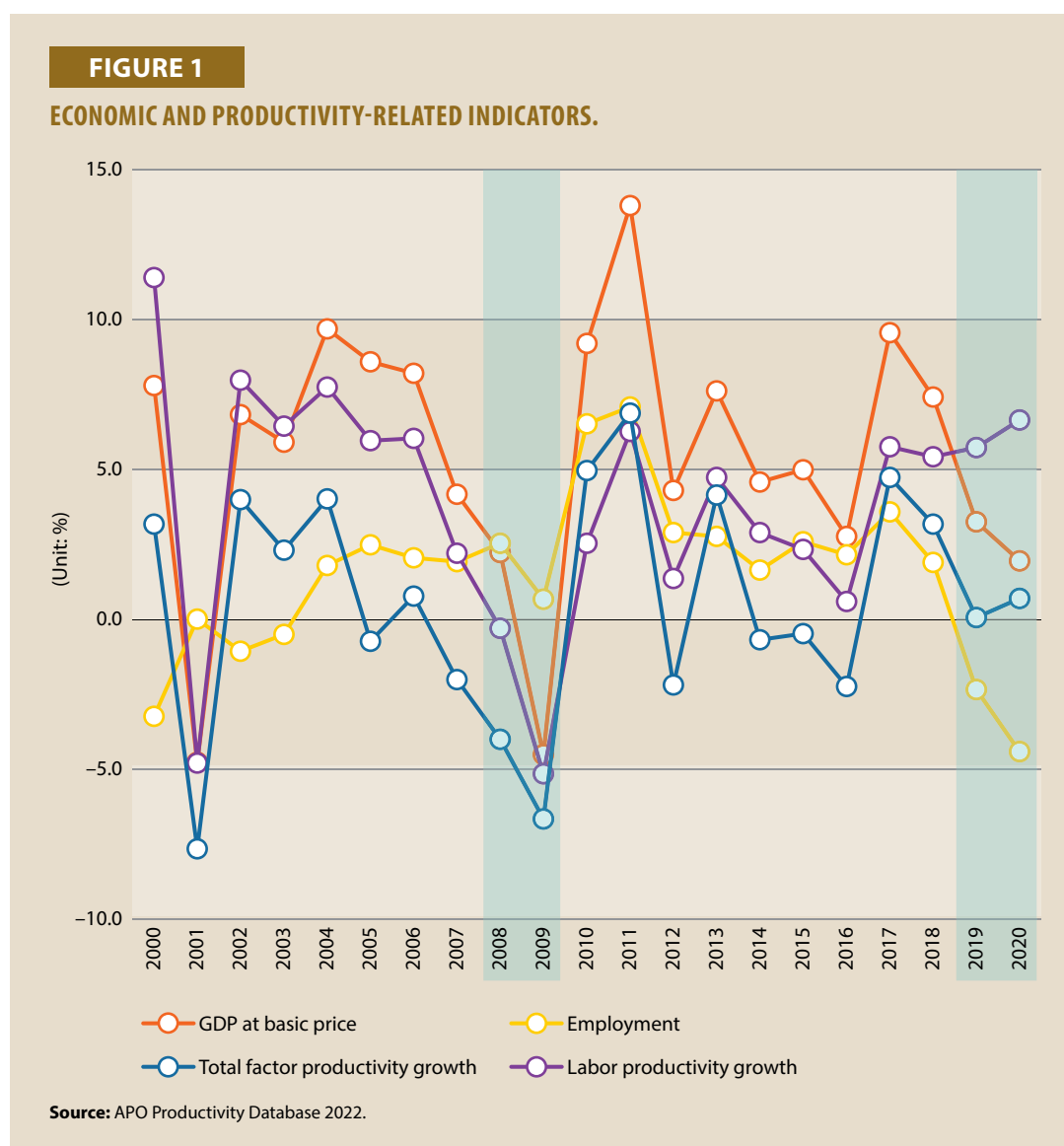
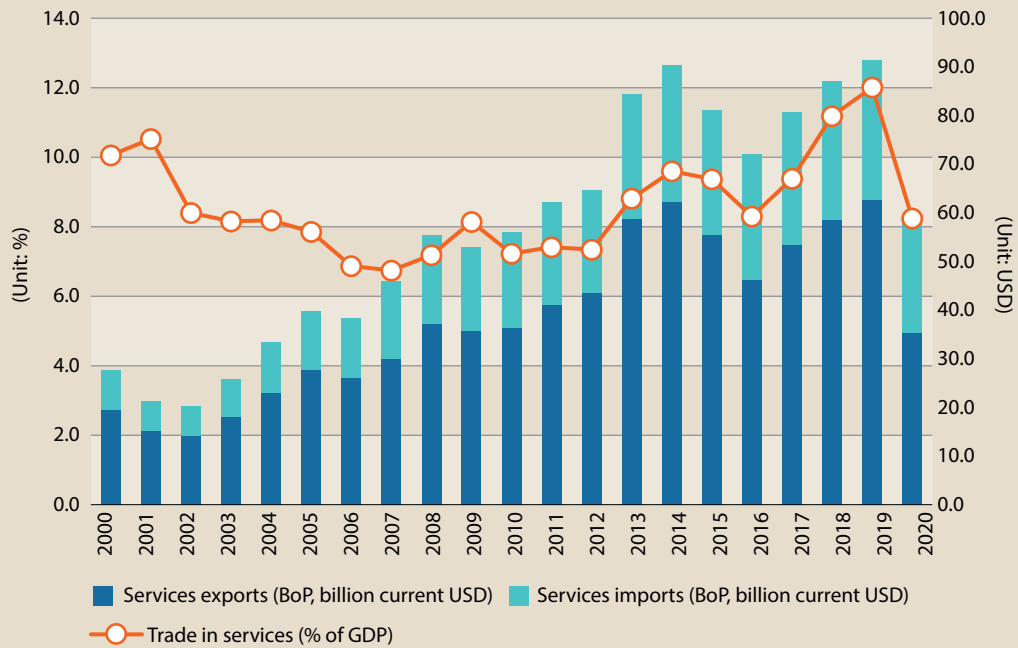


FIGURE 2

TRADE IN SERVICES SINCE 2000.

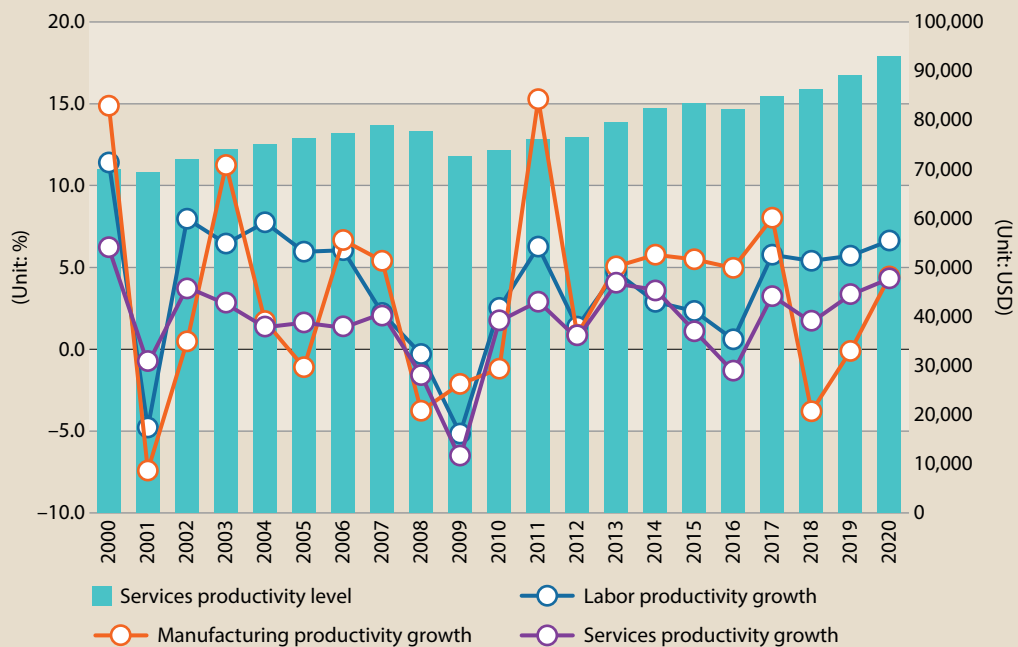


Source: World Development Indicators.

Note: The right side refers to service exports and imports.

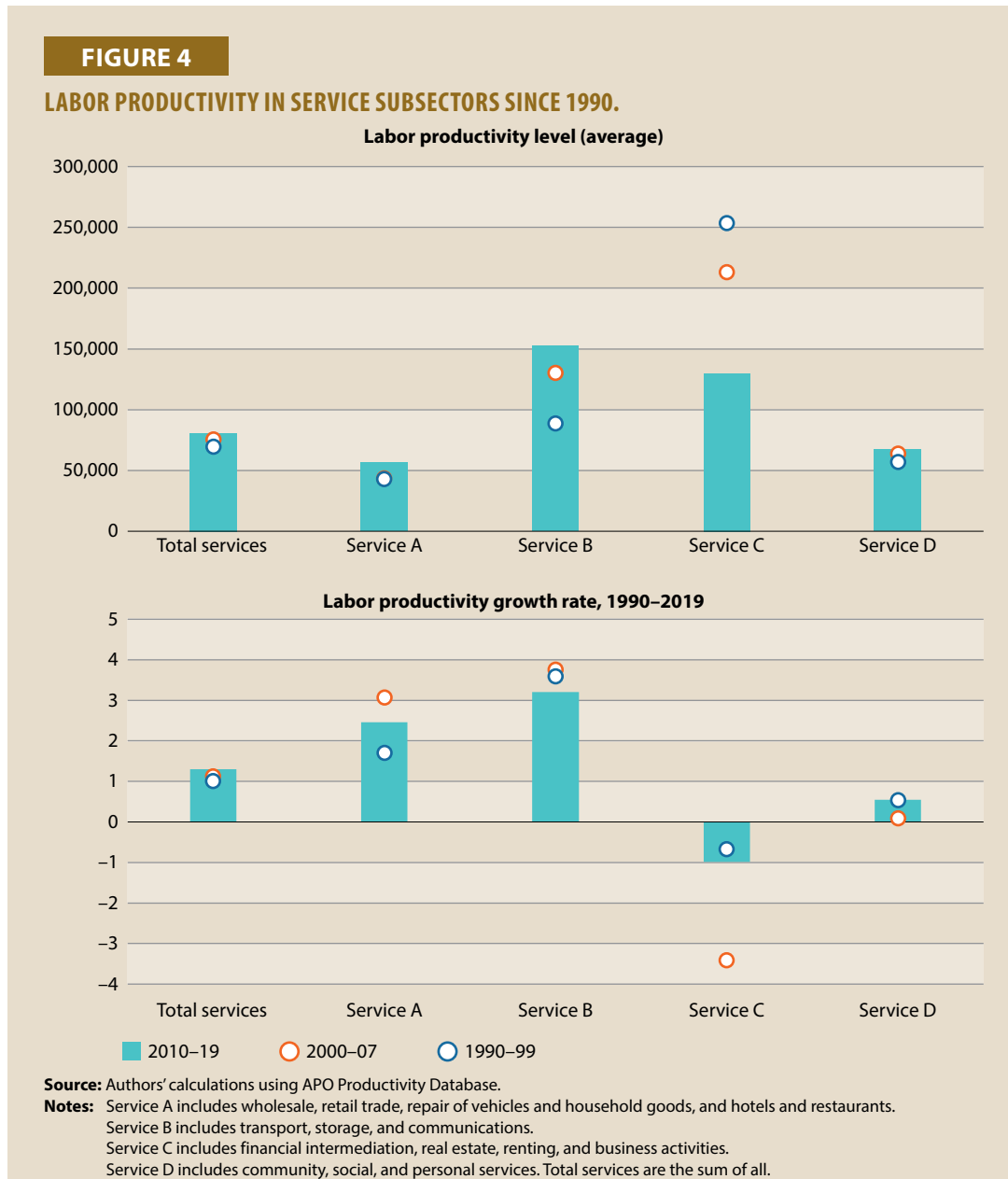
FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.



## Finance Sector's Productivity

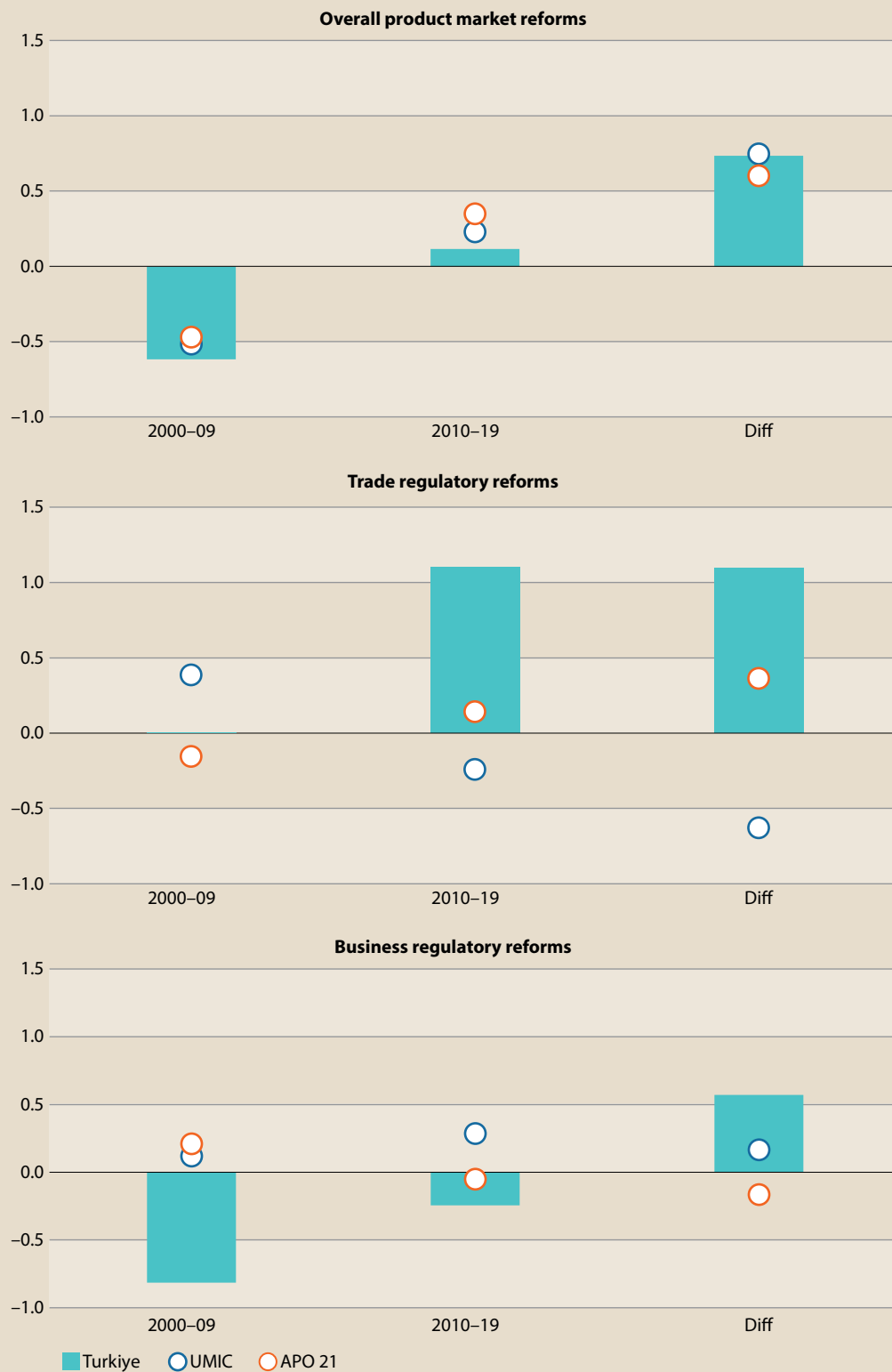
- Turkiye's income classification switched between lower-middle-income and upper-middle-income several times during the sample period. The finance sector has declined throughout the years. Another sector must have contributed to productivity changes.

## Regulatory Reforms Intensity

- Unlike the 2000-09 period when a negative growth was revealed, Türkiye shows a moderate, positive growth trend of reforms intensity for the overall product market during the 2010-19 period, thereby achieving an accelerated reform process in the given period.
- Such progression can largely be made through trade regulatory reforms, which showed stagnated progress in the preceding period of 2000-09.

FIGURE 5

OVERALL, TRADE, AND BUSINESS REFORMS IN TURKIYE BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) UMIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- Turkiye has a variety of merchandise exports and internationally competitive service sectors. Turkiye's merchandise composition in 2020 included textiles and clothing (16.1%); machinery and electronic products (15.4%); transportation equipment (14.5%); metals (12.6%); vegetables and food products (10.9%); rubber and plastics (5.7%); and chemicals (4.8%) as per the WITS data. It is highly surprising to note that almost all manufacturing sectors have shown increases in GVC participation for two decades. Despite some losses in RCAs, this facet of globalization has surely triggered the changes in industrial landscape in Turkiye. The overall result of this change seems positive.
- The impact on services seems unclear, to be seen in coming years. Retail, inland, and water transport services and motor vehicle-related services are internationally competitive. However, knowledge-intensive services such as finance, telecommunications, and education remain low in terms of both RCAs and GVC participation.

# VIETNAM

## Services Sector's Productivity

- Vietnam's services sector's productivity has shown an average annual growth rate of 2.66% over the period 2000–20, with the productivity level increasing from USD9,636 in 2000 to USD17,790 in 2020.
- A solid growth pattern was found in the value added of the services sector, which seems to have had a relatively small impact during the 2008–09 recession.
- Although productivity growth in the services sector has accelerated even after the GFC, exports have slowed down significantly compared with the productivity growth due to the recent impact of COVID-19.
- In 2020, the total intermediate input of the services sector increased by about 11.8 times compared with 2000. In particular, service C, composed of financial intermediation and services related to business activities, recorded a relatively higher increase compared with other service subsectors.

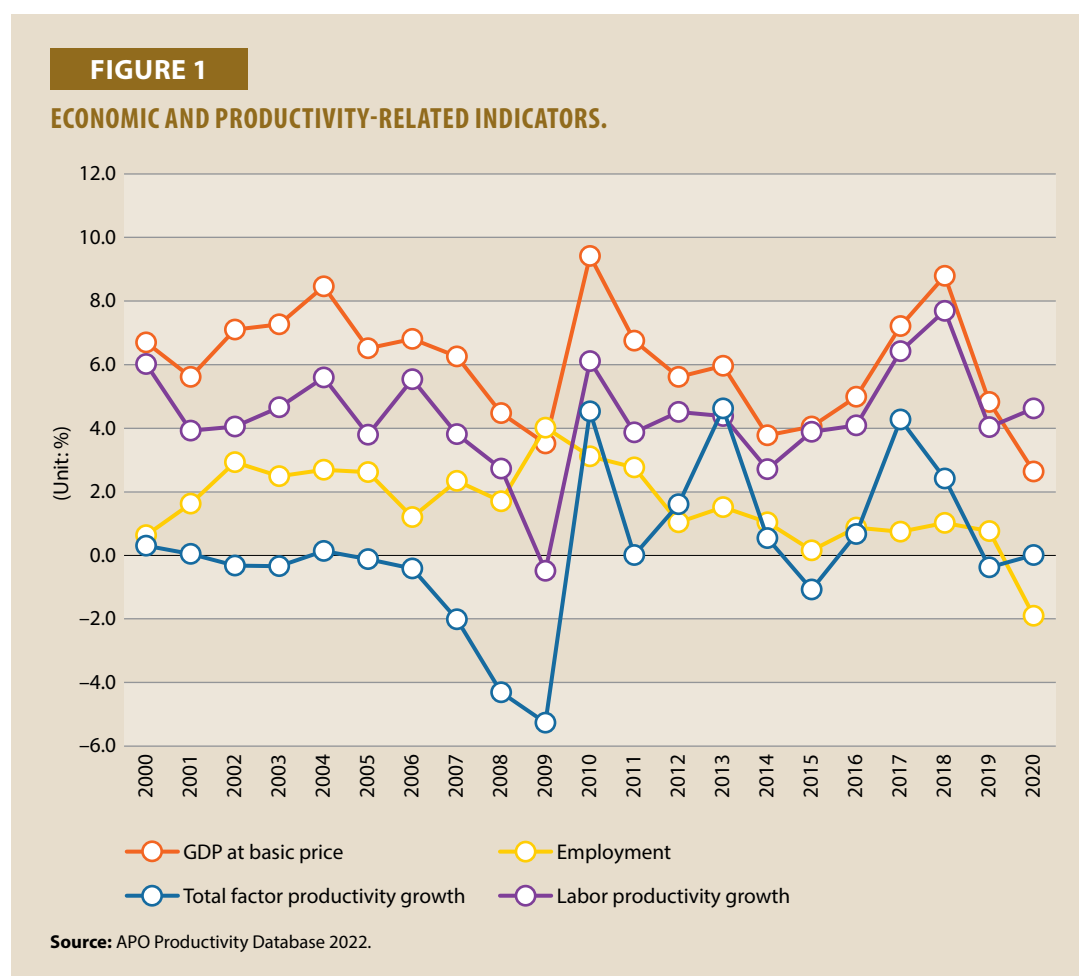
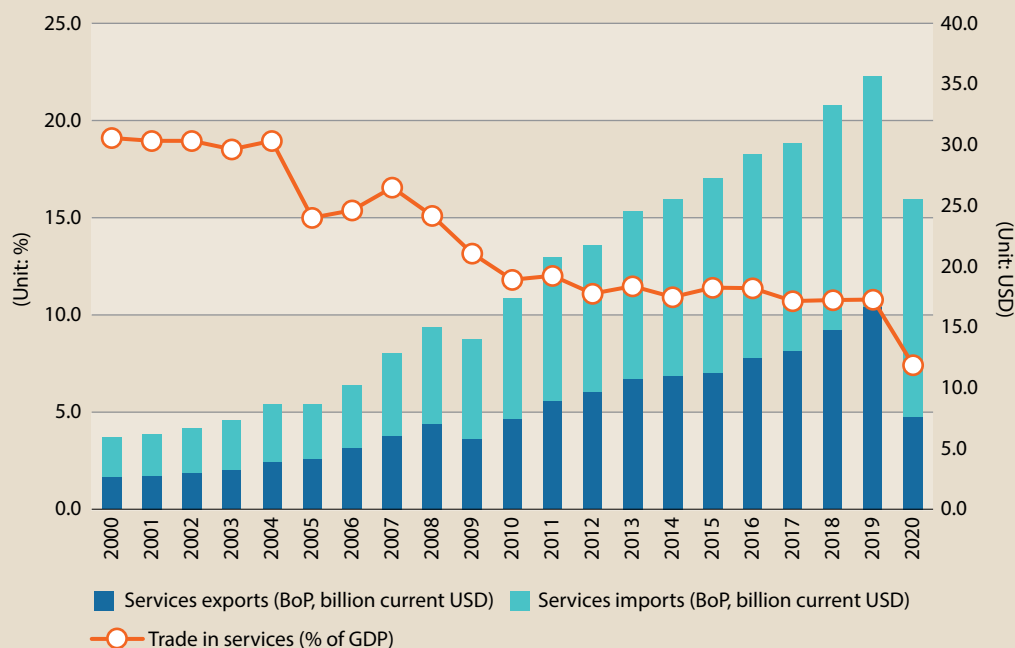


FIGURE 2

TRADE IN SERVICES SINCE 2000.

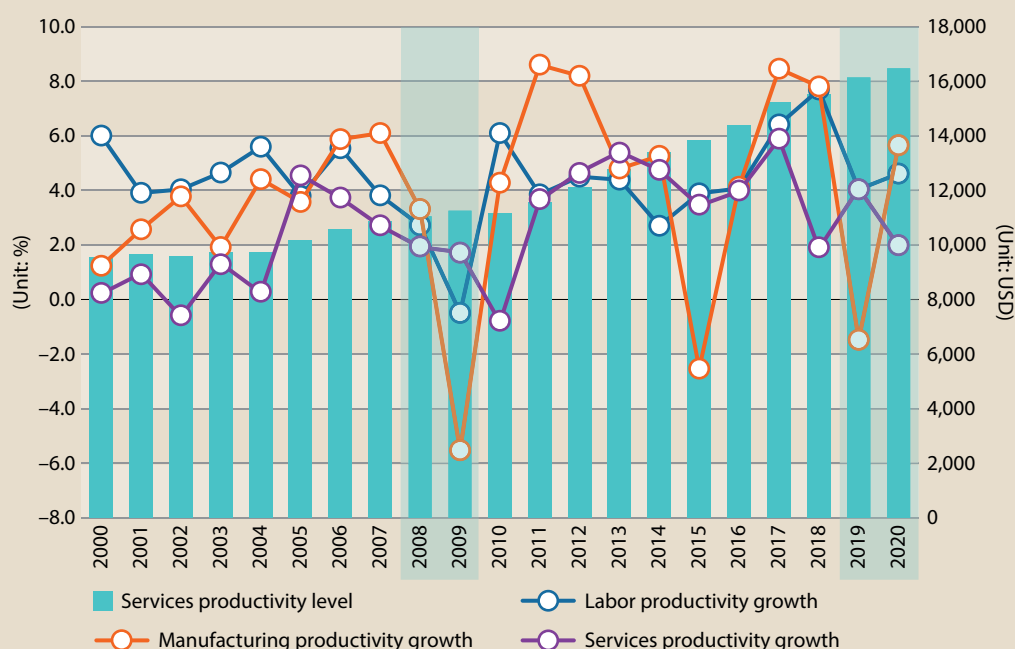


Source: World Development Indicators.

Notes: The right side refers to service exports and imports.

FIGURE 3

LABOR PRODUCTIVITY IN SERVICES SINCE 2000.



Source: Authors' calculations using APO Productivity Database.

Note: The right side denotes productivity level.

FIGURE 4

## LABOR PRODUCTIVITY IN SERVICE SUBSECTORS SINCE 1990.



**Source:** Authors' calculations using APO Productivity Database.

**Notes:** Service A includes wholesale, retail trade, repair of vehicles and household goods, and hotels and restaurants.

Service B includes transport, storage, and communications.

Service C includes financial intermediation, real estate, renting, and business activities.

Service D includes community, social and personal services. Total services are the sum of all.

TABLE 1

## TREND OF INTERINDUSTRY EFFECTS BY SERVICE SUBSECTORS.

(Unit: Million current USD)

|           |                      | 2000  | 2010   | 2019    | 2020    |
|-----------|----------------------|-------|--------|---------|---------|
| Total     | Intermediate inputs  | 9,159 | 51,931 | 114,736 | 117,581 |
|           | Net backward linkage | 0.918 | 0.974  | 0.863   | 0.851   |
|           | Net forward linkage  | 0.856 | 0.737  | 0.75    | 0.784   |
| Service A | Intermediate inputs  | 2,377 | 10,722 | 29,882  | 29,639  |
|           | Net backward linkage | 0.708 | 0.78   | 0.684   | 0.669   |
|           | Net forward linkage  | 0.718 | 0.671  | 0.658   | 0.679   |
| Service B | Intermediate inputs  | 1,273 | 10,883 | 19,616  | 18,399  |
|           | Net backward linkage | 0.864 | 0.959  | 0.708   | 0.751   |
|           | Net forward linkage  | 0.833 | 0.631  | 0.693   | 0.696   |
| Service C | Intermediate inputs  | 360   | 7,702  | 13,660  | 14,056  |
|           | Net backward linkage | 0.645 | 0.652  | 0.817   | 0.675   |
|           | Net forward linkage  | 1.381 | 1.186  | 1.122   | 1.272   |
| Service D | Intermediate inputs  | 917   | 4,222  | 14,958  | 16,251  |
|           | Net backward linkage | 1.233 | 1.277  | 1.164   | 1.177   |
|           | Net forward linkage  | 0.771 | 0.675  | 0.688   | 0.698   |

**Source:** Authors' calculations based on ADB MRIO Database.

**Notes:** Service A includes sales, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel, wholesale trade and commission trade, except of motor vehicles and motorcycles; retail trade, except of motor vehicles and motorcycles; and repair of household goods.  
 Service B includes hotels and restaurants, inland transport, water transport, air transport, and other supporting and auxiliary transport activities; activities of travel agencies; and post and telecommunications.  
 Service C includes financial intermediation; real estate activities; renting of M&E; and other business activities.  
 Service D includes education; health and social work; and other community, social, and personal services.

## Finance Sector's Productivity

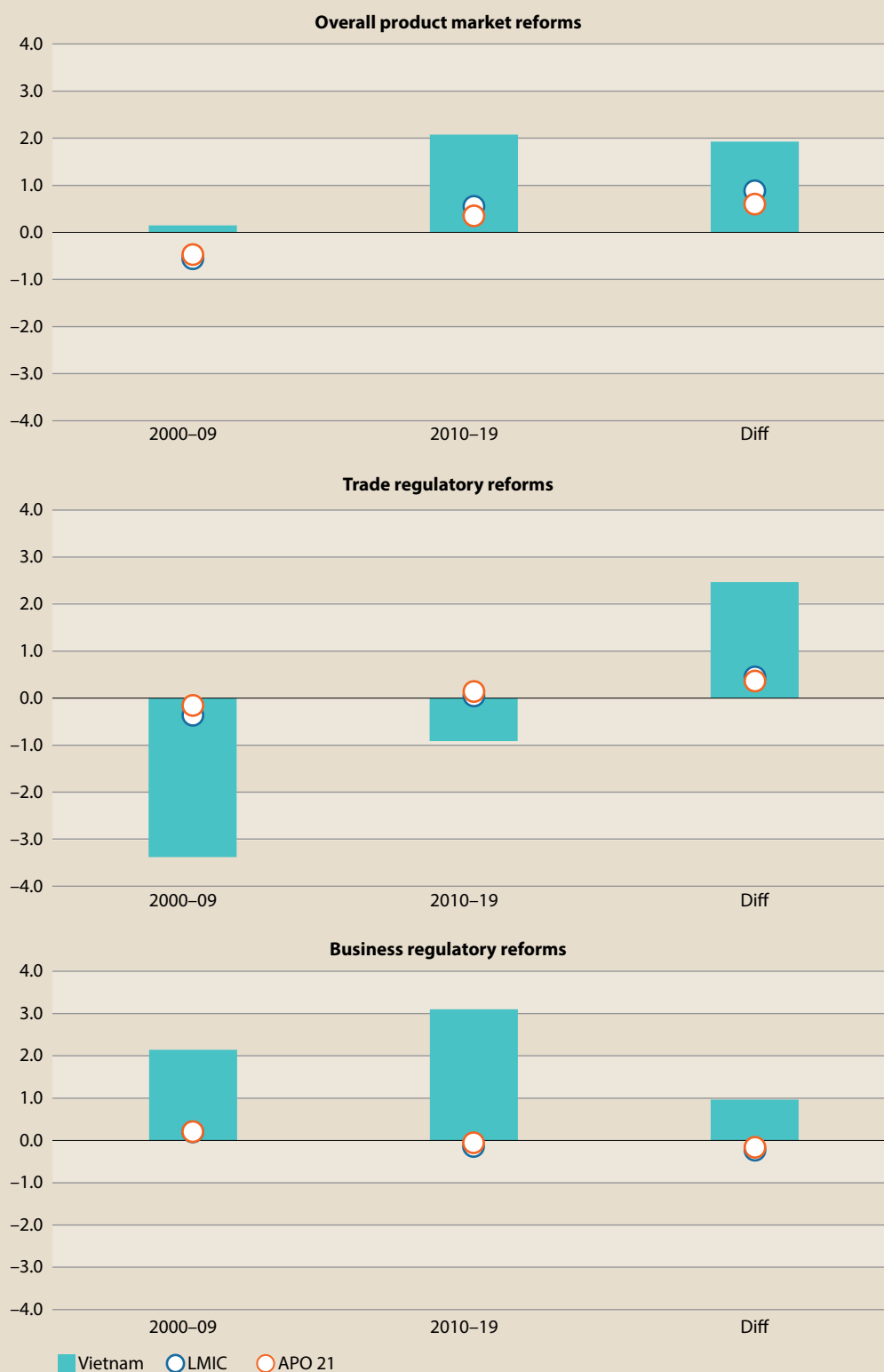
- Vietnam was a low-income country until 2009. In 2009, it was reclassified as a lower-middle-income country. The graphs show no visible pattern throughout the years. Another sector seems to have driven the productivity boost in the recent decade.

## Regulatory Reforms Intensity

- Since 2010, a notable effort has been made to reform the products market, which has outpaced the reform progress of the LMIC and APO 21 groups.
- Eliminating trade barriers played a greater role (over 2% p) for such progress by liberalizing overall stringent regulations, but as the regulatory intensity in the area has shown a negative growth, there is still much room for further improvement.

FIGURE 5

## OVERALL, TRADE, AND BUSINESS REFORMS IN VIETNAM BEFORE AND AFTER 2010.



**Notes:** (1) Reforms intensity is calculated as the average annual change in each decade (multiplied by 100) of the average reform index. (2) LMIC and APO 21 denote median growths of the respective groups.

## GVC Participation

- Vietnam has shown great increases in GVC participation for two decades. This is clearly shown in agriculture and manufacturing. The repercussions of increased GVC participation are reflected in the changing industrial landscape, mostly with positive effects of moving the ladder to high value added. Vietnam is hyperspecialized in light manufacturing, including leather and textile. Agriculture and food products are the sectors with high RCAs with increasing GVC participation.
- Relatively, services seem to have remained stable through industrial changes, with only a few exceptions such as education and health services.
- High-value-added services such as finance and telecommunications have still remained at low levels of RCAs and GVC participation.

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# LIST OF ACRONYMS

|               |  |
|---------------|--|
| <b>ADB</b>    | Asian Development Bank   |
| <b>AFC</b>    | Asian Financial Crisis   |
| <b>AI</b>     | Artificial intelligence  |
| <b>APEC</b>   | Asia-Pacific Economic Cooperation  |
| <b>APO</b>    | Asian Productivity Organization  |
| <b>BOP</b>    | Balance of payments  |
| <b>C-KIBS</b> | Cultural/creative knowledge intensive business services                      |
| <b>eSUTs</b>  | Extended Supply and Use Tables   |
| <b>FDI</b>    | Foreign direct investment  |
| <b>FIGARO</b> | Full International and Global Accounts for Research in Input-Output Analysis |
| <b>FinDev</b> | Financial development  |
| <b>GDP</b>    | Gross domestic product   |
| <b>GFC</b>    | Global Financial Crisis  |
| <b>GII</b>    | Global Innovation Index  |
| <b>GVC</b>    | Global value chain   |
| <b>HICs</b>   | High income countries  |
| <b>ICT</b>    | Information communication technology   |
| <b>IMF</b>    | International Monetary Fund  |
| <b>IT</b>     | Information technology   |
| <b>KDI</b>    | Korea Development Institute  |
| <b>KIBS</b>   | Knowledge intensive business services  |
| <b>LMICs</b>  | Lower-middle income countries  |
| <b>LP</b>     | Labor productivity   |
| <b>MNCs</b>   | Multinational companies  |
| <b>MNEs</b>   | Multinational enterprises  |
| <b>NPO</b>    | National Productivity Organization   |
| <b>OECD</b>   | Organization for Economic Co-operation and Development                       |
| <b>P-KIBS</b> | Professional knowledge intensive business services                           |
| <b>PMI</b>    | Purchasing Manager's Index   |
| <b>PPP</b>    | Purchasing power parity  |

|                |   |
|----------------|---|
| <b>PWT</b>     | Peen World Table  |
| <b>R&amp;D</b> | Research and development  |
| <b>SMEs</b>    | Small and medium-sized enterprises                                |
| <b>SOEs</b>    | State-owned enterprises   |
| <b>TFP</b>     | Total factor productivity   |
| <b>TiVA</b>    | Trade in value added  |
| <b>UMICs</b>   | Upper-middle income countries                                     |
| <b>UN</b>      | United Nations  |
| <b>UNECE</b>   | United Nations Economic Commission for Europe                     |
| <b>VA</b>      | Value added   |
| <b>WB</b>      | World Bank  |
| <b>WG-GVC</b>  | Working Group on Balance of Payments Statistics relevant for GVCs |
| <b>WIOD</b>    | World Input-Output Database                                       |
| <b>WTO</b>     | World Trade Organization  |

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# **APO** **PRODUCTIVITY** **OUTLOOK 2023**

Services Sector Productivity  
Trends and Prospects



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