

How LMICs Could Increase Productivity: A Policy Study on Structural Change and Productivity Growth Patterns



Asian Productivity Organization

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FOREWORD

The future of Asian economic growth lies with the group of emerging middleincome economies given their advantages of large populations and rapid development. The majority of APO economies are now in the lower middleincome country (LMIC) category. The key challenge for this group is to sustain their high growth rates. An efficient structural transformation that simultaneously generates productivity growth within sectors and shifts toward more productive sectors will contribute to advancing their economic growth, while avoiding the risk of falling into the middle-income trap. This growth will create more and better-remunerated formal jobs, consequently enhancing economic development.

The APO initiated a study to examine the sources of productivity growth which could enable and lead effective structural transformation of 11 APO LMIC members. The study was conducted in partnership with the Institute of Economic Growth (IEG) of India, a leading think tank. It focused on analyzing new opportunities and challenges for structural transformation in light of changes in the pandemic-influenced landscape. While noting the role of within-sector effects, the study emphasized the contribution of structural transformation as a determinant of productivity convergence. In intersectoral terms, it emphasized that the industrial sector is capable of creating forward and backward linkages, thus generating employment opportunities especially for low- and semi-skilled workers. This publication of the study results contains key recommendations to help surplus labor move into more productive economic activities.

The cooperation of the team of experts from the IEG India is greatly appreciated. The APO thanks all the researchers for their contributions to the study. The Policy Study on Productivity-enhancing Structural Transformation in LMICs is expected to be useful for economic policymaking, enabling APO LMICs to maximize the benefits of structural transformation.

Secretary-General Asian Productivity Organization, Tokyo

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EXECUTIVE SUMMARY

Research has demonstrated significant variations in both the level and the growth rate of productivity across different countries. The overall change in aggregate labor productivity can broadly be attributed to two main factors: (1) the within-sector component, which captures the changes in productivity within individual sectors that comprise the aggregate; and (2) the structural component, which reflects changes in the composition of the overall economy. The second component, structural transformation, lies at the heart of economic development and pertains to the movement of resources from sectors with low productivity to those with high productivity. Typically, during the early stages of a country's development, there is a shift in labor and output from agriculture to manufacturing, followed by a transition to services in later stages. This reallocation of labor across sectors and alterations in the economy's composition can lead to overall improvements in productivity and income. Studies show that countries that effectively shift from agriculture to manufacturing and services tend to achieve higher growth, as labor engaged in non-agricultural sectors is capable of generating more output for a given amount of input. Based on the review of literature, we observe that while the differences in aggregate productivity growth rates across economies have been established, there is a need for more detailed investigation into why the impact of structural transformation on productivity growth is limited in certain countries, as well as how we can enhance the growth effects resulting from reallocations between sectors.

In this study, we aim to quantitatively assess the extent of structural transformation and withinsector growth, examining their respective contributions to overall growth. Additionally, we will analyze labor productivity growth patterns within different subsectors of the economy. Furthermore, we will delve into the sources of structural transformation and growth to gain a deeper understanding of these processes. This study is based on 11 lower-middle-income Asian economies, namely Bangladesh, Cambodia, India, Indonesia, Lao PDR, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, and Vietnam, for the period 1970–2019 using data from the APO. The dataset is based on national accounts of each of the countries and uses the growth accounting framework to compile productivity estimates. This provides us with a consistent framework to estimate productivity across all the countries in our sample and make valid comparisons between them. Another key strength of this study is that the long-time horizon of data allows us to examine the growth patterns of these countries over the last five decades. This helps us to identify long-term trends and changes in productivity that may not be apparent in shorter intervals.

Our decomposition analysis, using the shift-share methodology, reveals distinct country-specific patterns of productivity growth and structural transformation. In general, our findings indicate that the within-sector component exerts a bigger influence on overall labor productivity growth, overshadowing the impact of structural change. Furthermore, we observe country wise variations in the contributions made by different sectors to the overall productivity growth. In order to assess the potential of various sectors in driving sustainable structural transformation and convergence to global productivity frontiers, we utilize a club convergence framework. We find that the services sector emerges as a sustainable driver of structural transformation, while the secondary sector, particularly manufacturing, has not been very promising from the point of view of sustainable structural transformation for a lot of these countries.

While acknowledging the significant roles played by both the industrial and services sectors in driving economic development, compelling arguments suggest that the industrial sector holds greater relevance in fostering structural transformation and fueling productivity growth, particularly in developing economies. This sector possesses the potential of establishing forward and backward linkages, thereby creating employment opportunities that are particularly beneficial to low- and semi-skilled workers. Regarding its contribution to overall productivity within an economy, our results reaffirm that the industrial sector typically exhibits higher levels of labor productivity compared with the services sector. Recognizing the pivotal role of industrialization in structural transformation and productivity, it becomes imperative to address the prevailing impediments in the economies under consideration and provide feasible solutions that facilitate sustained productivity-enhancing structural transformation.

Based on the extent of structural transformation achieved so far, we divide the 11 countries in our study into three broad groups:

- (1) Group 1: This group comprises countries that have failed at structural transformation and continue to have extremely high shares of employment in agriculture. Nepal and Lao PDR belong to Group 1.
- (2) Group 2: This group has countries that have achieved partial structural transformation by bringing down the share of agricultural employment. However, for this group, structural transformation has not yet led to higher shares of industrial employment. Countries like Bangladesh, Cambodia, Indonesia, Mongolia, Pakistan, the Philippines, and Sri Lanka belong to this group.
- (3) Group 3: Countries that have achieved success in structural transformation, as reflected in the low share of agricultural employment as well as relatively high shares of employment in the industry, are part of this group. India and Vietnam belong to this group.

Considering the differences in the extent of structural transformation among the three groups, we suggest certain policies that address the specific impediments corresponding to each group's respective stage. The primary objective of policies for countries in Group 1 is to facilitate the transition of surplus labor from agriculture, as this sector typically exhibits the lowest productivity within the economy. In the case of Group 2, the challenge lies in ensuring that workers transitioning from agriculture move to the industrial sector rather than predominantly migrating to the services sector. Consequently, policies in these countries should focus on removing barriers that hinder the creation of employment opportunities within the industrial sector. As for Group 3, where structural transformation has achieved reasonable success, policies must ensure that this sustains and leads to higher productivity growth in all sectors.

In sum, this study contributes to understanding trends in aggregate productivity and the progress of structural transformation in 11 lower-middle-income Asian economies. It underscores the heterogeneity of experiences among the countries in the sample and provides insights into the sectoral composition of their economies, the contributions of different sectors to productivity growth, and the challenges and opportunities for each country. Based on the findings, the study provides policy recommendations tailored to the different groups of countries identified. The policy recommendations aim to guide policymakers in formulating strategies to support sustained productivity-enhancing structural transformation in each country and promote inclusive economic development.

INTRODUCTION

An important aspect of growth of developing countries is that the transition from low-income status to high-income status is accompanied by a process of transformation in the productive structure of their economies. Structural transformation involves reallocation of labor from agriculture to manufacturing and further toward services as the economies mature. This pattern can be observed in Hong Kong, Singapore, the Republic of Korea (ROK), and the Republic of China (ROC), i.e., the first generation of Asian economies to make transition from developing to developed status. PR China, another major Asian economy has also followed a similar trajectory.

PR China's experience in growth and structural transformation serves as a more recent example for other developing economies in Asia. As a consequence of a series of economic reforms, PR China's per capita real GDP grew at more than 8% per year between 1978 and 2004 [1]. On a per worker basis, this amounts to 6.96% growth, implying that aggregate labor productivity doubled every ten years. This spectacular growth performance was accompanied by two important structural changes: first, a decline in sectoral share of employment in agriculture from 69% to 32%; and second, reallocation of labor and other resources from state-owned enterprises to the private sector. However, PR China's rapid growth based on low-cost manufacturing and exports, and investment, has now moderated. PR China has consequently moved from an investment-driven growth model to a new growth model that addresses the many imbalances in the economy, such as declining labor force growth and sluggish productivity growth.

On comparing the growth experiences of a few Asian economies in the recent past, we see a marked difference from the standard East Asian path. For instance, an analysis of India's economic growth indicates that structural transformation was driven by the services sector, including information technology, business process outsourcing, and professional services, rather than manufacturing. Growth in Bangladesh, on the other hand, has almost singlehandedly been due to the readymade garments manufacturing industry. These examples highlight the fact that the role and pattern of structural transformation in enhancing growth and productivity can be different across countries.

How do we make sense of these varied growth experiences? In the standard workhorse model, i.e., the Solow model, growth depends on the incentive to save, and the accumulation of physical capital and technology. However, this neoclassical framework is not very useful to analyze structural transformation and its productivity-enhancing effects, particularly in developing countries. A more appropriate framework in this context would be the dual-economy model introduced by Arthur Lewis.

In this study, we examine the pattern of aggregate labor productivity over time from the perspective of broad sectoral productivity and structural transformation. Our study includes 11 lower-middleincome economies of Asia, namely, Bangladesh, Cambodia, India, Indonesia, Lao PDR, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, and Vietnam. First, we compute the aggregate labor productivity growth of these countries for a long time period of 1970–2019, using the APO database. To understand the aggregate productivity path of each country, we further decompose the observed growth rates of productivity into three components: within-sector growth, static component of structural transformation, and dynamic structural transformation. The within-sector component will help us identify whether the country has experienced balanced growth across different sectors or whether there are key growth-driving sectors in the economy. The structural transformation components will help us understand the effect of labor reallocation from agricultural to non-agricultural sectors on aggregate productivity.

A finding that emerges from several studies examining the relative contributions of within-sector and structural-change components is that the latter is an important factor in driving labor productivity growth for countries with lower income levels. This implies that policies aimed at structural transformation are likely to be more effective for countries such as Lao PDR, Nepal, Pakistan, and the Philippines. As economies develop and transition to higher income levels, production shifts from agriculture to other sectors. Therefore, for countries like Bangladesh, India, Indonesia, and Vietnam, policies should aim to accelerate productivity growth rates of the overall economy by placing due focus on creating an environment that is conducive for growth of manufacturing and services. In sum, it is important to understand that policies will be effective only if tailored to an economy's size, resource endowment, and stage of development.

This study is organized into seven chapters. In the first chapter, we introduce the main objectives of the study. In the second chapter, we review a wide range of studies that examine the role of structural transformation in productivity growth for countries in our sample, to evaluate recent advances in the field. The third chapter provides information on the data and the methodology used in this study. In the fourth chapter, we provide a descriptive analysis of the countries in our sample, focusing on key macroeconomic variables indicating trends in GDP, per capita income, and sectoral employment shares.

The fifth chapter includes the three main empirical exercises in the study. First, we estimate aggregate labor productivity for each country. This is followed by the decomposition of aggregate growth rates into within-sector and between-sector components. Second, we analyze various correlates to examine the determinants of structural transformation and productivity. Third, we study whether the countries in our sample exhibit convergence in terms of productivity rates to the two reference countries, namely, Japan and the ROK.

The sixth chapter highlights the main challenges and issues faced by the countries in our sample and discusses some of the key insights and policy recommendations that emerge from our findings. The seventh chapter concludes the study.

In this study, we aim to contribute to the understanding of aggregate productivity trends; structural change and economic development; and income convergence in lower-middle-income Asian economies. Given the varied development experiences of each country in our sample, we do not expect to see a common path of productivity and structural transformation in our analysis. The decomposition for each country will also enable us to understand the relative contribution of the three broad sectors in aggregate productivity growth.

We conclude this chapter by providing a brief overview of the countries included in this study. In the following section, we focus on the broad structural composition and some of key policy reforms that have shaped these economies.

Brief Overview of Countries

Bangladesh

Even in times of heightened global uncertainty, with a growth rate of 6.9% in 2021, Bangladesh is one of the fastest growing economies in Asia. From being one of the poorest countries at the time

of its formation in 1971, Bangladesh reached the lower-middle-income status in 2015; and is aspiring to be an upper-middle-income country by 2031. Data from the World Bank's World Development Indicators show that its per capita GDP increased from USD128 in 1971 to USD2,458 in 2021 and poverty declined from 34% in 2000 to 13% in 2016.

Driven by a robust readymade garments industry, inflow of remittances, and demographic dividend, Bangladesh has experienced rapid economic growth and development over the past few decades. Manufacturing and exports growth stemming from its readymade garments industry not only led to an increase in foreign exchange reserves, but also increased female labor force participation rates from 21% in 1990 to 35% in 2021. Since bulk of the workforce in the garments industry comprised rural women, it led to huge inflow of funds into rural areas of the country. Increased incomes in rural Bangladesh in turn led to an expansion of agricultural and rural non-farm activities.

The economy of Bangladesh has been growing at approximately 6% since the late 2000s, despite prolonged periods of political instability, inadequate infrastructure, widespread corruption, insufficient power supplies, and slow implementation of economic reforms. Government initiatives like the liberalization of telecommunications in the early 1990s, power sector program in 2010, and regulatory reforms in 2011 have resulted in a transformative change in the economy.

According to data from the World Bank, the share of agricultural sector in GDP was 11.63% in 2021, while the shares of industry and services sectors were 33.3% and 51.3%, respectively. The share of the agriculture sector in employment has gradually declined over the decades, from a substantial 69% in 1991 to 38% in 2019. Other sectors have witnessed subsequent rise in their employment shares, with services' share in employment growing significantly from 16.9% in 1991 to 40.4% in 2019 and industry's share rising from 13.6% in 1991 to 21% in 2019.

Despite significant progress, it is important to note that Bangladesh's economy faces multiple challenges. The banking sector has a large number of NPAs leading to financial distress. Due to deficiencies in energy and transportation infrastructures, and poor investment climate and excessive regulations, Bangladesh ranks 168th among 190 countries on the Ease of Doing Business Index. To achieve its vision of attaining upper-middle-income status by 2031, Bangladesh needs to create jobs and employment opportunities. This would necessitate a competitive business environment, skilled labor force and better quality of human capital, better infrastructural capabilities, and a policy environment that attracts private investment.

Cambodia

Cambodia experienced very high growth rates during the 1990s and early 2000s. The annual average growth in GDP increased from 10% in 1995 to 12.7% in 1999. It further rose to 13.3% in 2005. Backed by robust growth in the GDP, and with the per capita GDP reaching USD1,170, Cambodia attained the lower-middle-income status in 2015. However, in the late 2000s, growth began to slow down and was 7% in 2019.

Agriculture still remains a main source of income in Cambodia, with the sector contributing 22.85% to the GDP and 34.53% to employment as per recent estimates. As of 2021, the shares of industry and services in the GDP were 36.83% and 34.18%, respectively. Textiles and tourism are two of the leading industries in Cambodia. According to 2018 estimates of the ILO, the garments, textiles, and footwear industry in Cambodia employed around 1 million workers, 80% of whom were women. The industry also provided income to around 20% of the households in the country.

The tourism sector provided employment to 12.4% of the labor force, accounting for 11.5% of Cambodia's GDP and generating USD2.2 billion of foreign exchange. Despite the high growth in GDP, compared with other lower-middle-income countries, Cambodia lags in terms of human development. However, data shows that indicators such as life expectancy at birth and infant mortality rates have improved considerably between 2000 and 2021.

Between 1998 and 2019, Cambodia's economy grew at an average annual rate of 7.7%, one of the fastest growth rates in the world. During the COVID-19 pandemic, the Cambodian economy shrunk, recording a -3.1% growth rate in 2020. Post-pandemic, although the traditional drivers of growth like manufacturing and agricultural commodities exports have recovered, the overall growth in the economy has been uneven. Sectors like travel and tourism, and construction and real estate continue to remain well below pre-pandemic levels. Furthermore, Cambodia's export-oriented manufacturing sector is expected to suffer due to the ongoing trade hostility between the USA and PR China.

Going forward, diversification of production and exports; addressing infrastructure gaps, especially between rural and urban areas; boosting investments in human capital; and improving the accountability and responsiveness of public institutions are crucial areas of reform for Cambodia to meet its target of achieving the middle-income status by 2030.

India

As of 2021, India had a nominal GDP of USD3.18 trillion and was the fifth largest economy in the world according to the International Monetary Fund (IMF). The per capita nominal GDP for 2021, however, was only USD2,256. After gaining independence in 1947, India adopted a Soviet-style plan-based approach toward economic growth, focusing on developing heavy industries. During the 1950s, industrial development in India was characterized by import substitution. The strategy meant insulation from the world economy and industrialization under the aegis of state enterprises. Private enterprises were heavily regulated till the 1980s, with scholars referring to this period as the *'license-quota-permit raj*, ' implying the heavy hand of the state in regulating private economic activity. India instituted an elaborate system of exchange controls and allocation to ensure that any foreign exchange profits earned by exporters were used to import only those commodities that conformed to the priorities set in the five-year plans [2]. Until 1980, owing to a set of inward-oriented trade and investment policies, India's share in world exports was marginal.¹

Due to a balance of payments crisis, India was compelled to open up and liberalize its economy in 1991, which set in motion a series of measures that led to gradual withdrawal of the state's control from the economy. Adoption of a comprehensive set of reform measures following market principles was expected to improve export competitiveness through efficient resource allocation, greater specialization, diffusion of international knowledge, and heightened competition, thereby resulting in structural transformation of the Indian economy.

Along with progressive dismantling of trade barriers, India undertook exchange rate reforms to eliminate the anti-export bias of overvalued currencies. The pegged exchange rate system was terminated. The rupee experienced a two-step downward adjustment, by 9% and 11% in July 1991. India's exchange-rate regime shifted from a basket peg to a dual-exchange-rate system, which allowed exporters to sell 60% of their foreign exchange earnings at the market rate and 40% to the government at the lower official rate. This system was later replaced by a unified market-determined

¹ In 1979, India's share in world merchandise exports was 0.5%. Author's calculations are based on WDI data.

regime in March 1993. In April 1993, a further move toward deregulation of the external sector took place when the government adopted full convertibility on trade account by unifying the official exchange rate with the market rate. Finally, these steps led to the adoption of full current account convertibility in August 1994. Since 1994, India has followed a 'managed floating' exchange rate system.

India removed most of the quantitative restrictions (QRs) on importing capital goods and intermediates in 1992, though the ban on importing several consumer goods continued until the late 1990s. Alongside the removal of QRs, custom duties in several manufacturing industries were gradually reduced. Although the liberalization policy measures have gone a long way in easing the entry barriers, multiple exit barriers due to 'factor market' rigidities continue to remain and act as major impediments to the process of interindustry resource allocation in India [3].

India's average GDP growth rate from 1991 till 2011 was about 6%, after which economic growth slowed down due to a decline in investments because of high interest rates, rising inflation, and accumulation of nonperforming assets (NPAs) in banks' balance sheets. Growth picked up again in 2014 due to expectations of economic reforms after the national elections. However, it slowed down again around 2017. This slowdown is attributed to the twin shocks following the introduction of goods and services tax (GST) and the demonetization of the INR500 and INR1,000 denomination banknotes. The latter shock, in particular, is argued to have affected the informal economy heavily. Furthermore, India experienced one of the largest GDP declines in the world due to COVID-19 lockdowns. Nevertheless, the IMF estimates that India's real GDP will grow by 6.1% to 6.8% between 2022 and 2025, which is relatively strong compared with the predicted growth rates for the rest of the world.

Indonesia

Indonesia became a USD1 trillion economy in 2017, growing at the rate of 5.5% per annum on average between 2010 and 2016. Following a negative growth of -2% in 2020, the economy rebounded to a positive growth rate of 3.7% in 2021. Classified as a newly industrialized country, Indonesia had a per capita income of USD4,332.7 as of 2021.

According to the World Bank, agriculture accounted for approximately 13% of Indonesia's GDP in 2021. Palm oil production is crucial to the economy as Indonesia is the world's biggest producer of palm oil, accounting for about half of the world's supply. Manufacturing industries account for approximately 40% of the country's GDP. The government has ambitious plans to propel the country among the top ten economies in the world by 2030, with manufacturing being at the heart of this goal. The services sector holds the lion's share of the Indonesian economy, contributing roughly 43% to the GDP. Employment share of the agricultural sector stood at 28.5% in 2019, declining steadily over the decades from 55.5% in 1991. On the other hand, the services sector's share of employment gradually expanded from 29.3% in 1991 and reached a whopping 49.1% in 2019, as per data from the World Bank.

During the 1980s, the economy of Indonesia undertook several reforms with the aim of integrating itself with the global economy. The subsequent years saw significant economic growth before a slump due to the Asian financial crisis in 1997. Indonesia has since averaged around 5% growth over the years till the pandemic hit the economy. Poverty and unemployment, inadequate infrastructure, labor unrest, corruption, a complex regulatory environment, and income inequality are still part of Indonesia's economic landscape.

Lao PDR

Lao PDR is a landlocked, socialist state in southeast Asia. The economy reported 2.5% growth in GDP and a per capita income of USD2,535.6 in 2021. In 1986, Lao PDR introduced several reform measures under the New Economic Mechanism aimed at decentralizing government control and encouraging private activity. What followed was a period of sustained economic growth averaging more than 6% per year during the period 1988–2008.

According to the World Bank, as of 2021, the agricultural sector remained dominant, employing more than 60% of the population, followed by the services sector (25%) and the industry sector (13%). The agricultural sector, however, contributed just 16% to the GDP while the shares of industry and services sectors were 34% and 38%, respectively. Employment share of the agricultural sector has steadily fallen over the decades, from 86% in 1991 to 61% in 2019. At the same time, there has been a rise in the employment share of the industry sector from 2% in 1991 to 13% in 2019, and of the services sector from 10% in 1991 to 25% in 2019. Tourism is the fastest growing sector in the economy and plays a vital role in the economic growth of Lao PDR.

In spite of a consistent growth, which was driven predominantly by large-scale investments in capitalintensive sectors, job creation has remained stagnant. The COVID-19 pandemic exacerbated structural vulnerabilities, leading to macroeconomic instability, heightened financial risks, and negative trends in state expenditure; compelling a cut down in crucial social services like health, education, and social protection. Lao PDR remains one of the poorest countries in southeast Asia, with nearly one-quarter of its population below the poverty line and an underdeveloped infrastructure, particularly in rural areas. The economy is heavily dependent on capital-intensive natural resource exports and foreign direct investment to sustain its growth. In terms of employment, the labor market in Lao PDR is characterized by a high degree of informality, excessive reliance on public-sector jobs, and dependence on agriculture. The economy would benefit greatly by diversifying into labor-intensive exports, which require removal of trade barriers and investment in infrastructure, education, and skills development.

Mongolia

Mongolia is one of the most sparsely populated sovereign nations in the world. Data from the World Bank shows that nominal GDP in Mongolia in 2021 was USD15 billion. From a negative growth rate of 4.6% in 2020, the economy slowly recovered to a GDP growth of 1.6% in 2021.

From the 1920s to the late 1980s, Mongolia had close links with the erstwhile Soviet Union/USSR. In the aftermath of the disintegration of the USSR, Mongolia experienced a severe crisis during the early 1990s, facing high unemployment and triple-digit inflation. During the 1990s, Mongolia underwent reforms to transition from a Soviet-style centrally planned economy to a market-based economy. This resulted in strong economic growth, which later levelled down during the Asian financial crisis and natural disasters in the 2000s. Growth averaged nearly 9% per year during 2004–08, largely because of high copper prices globally and gold production.

As of 2021, World Bank data shows that Mongolia's share of agriculture in GDP was only 13%, while industry and services sectors had substantial shares of 37% and 39.56%, respectively. The employment share of the agriculture sector has declined over the decades, from a significant 44.10% in 1991 to 25.32% in 2019. Because of Mongolia's harsh climate, it is unsuited for most of the cultivations, so the agriculture sector remains heavily focused on nomadic animal husbandry. The manufacturing sector's share of employment rose from 19.39% to 21.58% while the share of services expanded from 36.52% to 53.11% over the corresponding time period.

Mongolia depends on PR China for more than 60% of its international trade, with PR China buying almost 90% of Mongolia's exports and supplying Mongolia with more than one-third of its imports. Minerals represent the majority of exports. The country also relies on Russia for 90% of its energy supplies, leaving it vulnerable to price increases. The economy is currently trying to recover from the shocks induced by the pandemic. Rising private and public investments and household consumption are expected to support domestic demand. However, border tensions with PR China, weaker global economic prospects, and higher prices of imports due to the Russia–Ukraine war are expected to impede economic recovery.

Nepal

The economy of Nepal has seen an increase in GDP from USD16 billion in 2010 to USD36 billion in 2021, growing at an average rate of 4.3% per annum. The country has a long history of political turmoil, insurgency, and civil war. In 2015, a 7.6-magnitude earthquake resulted in massive destruction of lives and livelihoods in Nepal. Official estimates suggested that close to one-third of the population was affected. Public and private infrastructure was severely damaged, which hampered the delivery of crucial public services. In late 2017, elections were held for all three tiers of the government (federal, state, and local). This was the successful result of a complex and long-drawn-out process of political transition initiated in 2006, which ended a 10-year civil war. Since the formation of a new government in 2018, there has been immense optimism in the country regarding improvements in governance and political stability. Some key structural challenges, however, remain.

Nepal's economy is heavily dependent on agriculture and remittances. As of 2019, agriculture accounted for 64% of total employment, whereas 15% of all employed people were in the industrial sector and 21% in services. While agriculture accounted for 21.32% of the GDP, shares of industry and services were 11.72% and 52.58%, respectively. Industrial activity in Nepal mainly comprises processing of agricultural products. Remittances play a big role in the economy, contributing 22.6% to the GDP.

Between 2009 and 2019, Nepal averaged a GDP growth rate of 4.9%. The disruption due to COVID-19 resulted in Nepal's first ever GDP contraction of –2.4%. However, a strong recovery in domestic demand led by its vaccination program and reopening of borders has strengthened economic recovery, with World Bank estimates suggesting a 5.8% growth rate during the financial year 2021–22. Nepal has made considerable progress toward building its political and governance infrastructure. Experts suggest that while this effort at state-building must continue, key economic challenges such as domestic job creation, physical infrastructure gaps, and vulnerability to natural disasters and climate change must also be addressed simultaneously.

Pakistan

Pakistan reported a growth rate of 6.5% in 2021, reaching a nominal GDP of USD348 billion. According to recent estimates of the ADB, Pakistan is expected to grow at 3.5% in 2023. If we examine the composition of output, we see that in 2021 agriculture contributed 22.96% to the GDP, while industrial and services sector's shares were 18.7% and 52.15%, respectively. The agricultural sector's share in employment has declined over the decades, from 44.81% in 1991 to 36.92% in 2019, while that of the industrial sector has risen from 21.60% in 1991 to 24.96% in 2019. Services' share in employment also saw a small increase from 33.59% in 1991 to 38.13% in 2019. Although the economic importance of agriculture has declined since independence, when its share of GDP was around 53%, the majority of the population, directly or indirectly, continues to be dependent

on the agricultural sector. It is also the largest source of foreign exchange earnings for the economy. As far as the industrial sector is concerned, large-scale manufacturing is the fastest-growing sector in Pakistan's economy. Major industries include textiles, fertilizers, cement, oil refineries, dairy products, food processing, etc.

According to the World Bank, the level of poverty in Pakistan dropped from 64.3% in 2001 to 21.9% in 2018. Pakistan is currently undergoing a process of economic liberalization aimed at attracting foreign investment and decreasing budgetary deficits. Decades of internal political disputes and low levels of foreign investment have led to the underdevelopment in Pakistan. Growth in per capita GDP has been low, averaging only around 2.1% annually over the 2000–18 period as per the World Bank. As of 2022, the official estimate of unemployment was 6.2%. However, this fails to capture the true picture, because majority of the economy is informal and underemployment remains high.

The Philippines

Following a small contraction in 2020, the Philippines reported a growth rate of 5.7% and its GDP reached USD394 billion in 2021. The Philippines is regarded as a newly industrialized country, transitioning from an agriculture-centric economy to a services-and-manufacturing-centric economy. The Philippines is one of the fastest growing emerging economies in the world, growing at an average of more than 5% since early 2000s.

According to data from the World Bank, as of 2021, the services sector held the lion's share of output, contributing 61% to the GDP, followed by industry and agriculture at 29% and 10%, respectively. Employment share of the agricultural sector stood at 22% in 2019 after declining steadily over the decades, from 44.9% in 1991. The type of activity in the agricultural sector ranges from small subsistence farming and fishing to large commercial ventures with significant export focus. The Philippines is the largest producer of coconut and one of the largest producers of rice, pineapples, and sugar in the world. The share of the services sector in employment has gradually expanded from 40% in 1991 to reach 58% in 2019. Business activities have been buoyant with noteworthy performances in the services sector including business process outsourcing, real estate, and finance and insurance industries.

The economy of the Philippines has been relatively resilient to global shocks because of lower dependence on exports, large remittances from about 10 million overseas workers and migrants, and a rapidly expanding services industry. However, the COVID-19 pandemic has negatively affected economic growth and poverty reduction. The GDP contracted in 2020, driven by heavy declines in consumption and investment growth. This was further exacerbated by the slowdown in tourism and remittances. The economy also faced a stubbornly high poverty rate of 23.1% in 2021, according to the ADB. This was mainly due to weak governance; corruption; elite capture; inadequate education, health services, and infrastructure; and limited access to financing. Although the economy is expected to recover in the coming years, there are downside risks from the weak external environment, rising inflation, fears of recession and a geopolitical turmoil.

Sri Lanka

Sri Lanka has the highest per capita GDP (PPP-based) among all the lower-middle-income countries in Asia. In 2021, the country reported a GDP of USD88 billion and per capita GDP of USD4,013.

Development strategies that shaped the Sri Lankan economy over the last five decades can be distinguished by two eras. The first era covering the period of 1948–76 focused on achieving

equity and economic growth using import substitution, industrialization, and large welfare expenditures. These reforms resulted in an annual GDP per capita growth rate of just 0.2%. The second era, i.e., the period after 1977, aimed at liberalizing the economy and making the private sector the engine of growth. Stimulated by enhanced levels of foreign aid and investments, the economy was successful in recording real growth rates of about 6% per year until 1986 and an annual average growth of 5% during 1990–2000. This transition led to a significant fall in unemployment, but at the cost of high inflation and deteriorated currency.

According to data from the World Bank, as of 2021, agriculture accounted for approximately 9% of Sri Lanka's GDP. Rice is the principal food crop and the main livelihood for majority of Sri Lanka's rural population. Manufacturing industries account for approximately 28% of the GDP. Chief manufactures include textiles, ceramics, petroleum products, and vegetable oils. The services sector is the largest component of the Sri Lankan economy, contributing roughly 57% to the GDP. Tourism, banking, finance, and retail trade are the major components of the services sector. The agricultural sector's share in employment has gradually declined over the decades, from 42.84% in 1991 to 24.98% in 2019. On the other hand, the services sector has witnessed a substantial rise in employment share, from 30.58% in 1991 to 47.15% in 2019.

Sri Lanka has a well-established education system that has successfully created a vast supply of skilled labor. The population had a literacy rate of 92% in 2020, higher than that expected for a developing country and the highest in south Asia. Foreign trade is an important segment of the Sri Lankan economy. Major imports include petroleum, consumables, and machinery; and major exports include garments, tea, rubber, coconut products, etc. Unfortunately, the economy faces a major financial crisis today, due to increasing reliance on imports, civil wars, falling foreign exchange reserves, and massive defaults on debt payments.

Vietnam

After reaching a peak of 7.4% in 2019, Vietnam's GDP growth rate dropped to 2.6% in 2021. The latest figures show that Vietnam has a GDP of USD366 billion and per capita income of USD3,756. It is a densely populated country that has been transitioning since 1980s from the rigidities of a centrally planned, highly agrarian economy to a more industrial and market-based economy. The country experienced rapid growth with the GDP per capita increasing almost 3.6 times between 2002 and 2021.

As of 2021, the agricultural sector's share of GDP was just 14.85%, while those of the industrial and services sectors were 33.72% and 41.63%, respectively. Over the last decades, the employment share of the agriculture sector has fallen steadily, from 70.88% in 1991 to 37.22% in 2019, thereby nearly halving over the period. The other two sectors have witnessed a subsequent expansion in employment share over the last decades, with the industrial sector's share growing from just 10.12% in 1991 to 27.44% in 2019; and the services sector's employment share rising from 19% in 1991 to 35.34% in 2019.

Over the years, Vietnam has become a leading agricultural exporter and served as an attractive destination for foreign investment in southeast Asia. Vietnam has grown bolder in its development aspirations, aiming to become a high-income country by 2045. In recent times, Vietnam has begun to rely more on foreign direct investment to sustain its economic growth. On the downside, the country's population is rapidly aging. To make matters worse, the pandemic has presented unprecedented challenges for the economy.

REVIEW OF LITERATURE

Research has shown that there are large and persistent differences in the levels and growth rates of productivity across countries. While both labor productivity and total factor productivity can be used to measure productivity, throughout this study, we refer to labor productivity as the primary measure of productivity. A change in aggregate labor productivity can broadly be decomposed into (1) a within component that reflects the change in productivity of individual sectors that comprise the aggregate; and (2) a structural component that reflects changes in the composition of the aggregate economy.

Structural transformation is a central feature of economic development and refers to the movement of resources from low- to high-productivity sectors and activities. Typically, labor and output shift from agriculture to manufacturing in the early stages of a country's development, and to services in the later stages of development. This reallocation of labor between sectors results in aggregate productivity and income gains. This between-sector effect is in contrast with the within-sector component that can be developed by accumulation of 'fundamentals' such as skills, human capital, technology, and institutional capabilities [4].

Dual-economy models are considered to be the first attempts to model the mechanisms of structural transformation and economic growth [5, 6]. The seminal Lewis model consists of two sectors: a traditional sector with zero marginal productivity of labor and a high-productivity modern sector. Unlimited supply of labor in the traditional sector enables workers to move to the modern sector and earn higher wages. In this model, aggregate growth is associated with economic transformation and depends on the rate at which labor moves from the traditional sector to the modern sector.

By contrast, one-sector models focus on growth within the modern sector, which depends on savings, capital accumulation, technological changes, and innovation [7–9]. That is, while dualeconomy models focus on resource allocation between two sectors, neoclassical models emphasize how accumulation of fundamentals leads to growth within the modern sector. Precisely for this reason, the framework of neoclassical growth models is not the most appropriate for analyzing growth and structural changes in developing countries [10]. In the context of developing countries, the point of interest is to analyze the process by which these economies transition from one form to another. The concept of structural dualism is therefore considered a useful framework to explain the growth pattern of developing countries. However, it is important to realize that the two sets of models offer complementary perspectives on economic growth [11].

More systematic and comprehensive empirical studies on structural transformation began in the 1960s [12–15]. Kuznets [13] has noted that growth of all countries is accompanied by massive structural changes in their economies. In his 1971 Nobel lecture, Kuznets illustrated changes in the distribution of labor from agriculture and related industries to non-agricultural sectors. In the USA, the share of labor in the agricultural sector declined from 53.5% in 1870 to less than 7% in 1960. Similarly, in Belgium, the share of labor in agriculture declined from 51% in 1846 to 7.5% in 1961.

The remarkable average growth rates across Asia in recent years mask significant variation within and between countries, as well as over time [16]. While countries like PR China and Vietnam have

witnessed rapid economic growth, some others have lagged. Consequently, there are considerable differences in the speeds and patterns of shifts in economic structures across countries. The nature and the speed with which structural transformation takes place is a key factor that differentiates successful countries from unsuccessful ones [17].

McMillan and Rodrik [17] analyze labor productivity of 38 countries from 1990 to 2005 and find substantial differences in the extents and natures of structural changes across countries and over time. While reallocation of labor between sectors had a growth-enhancing effect in Asia, its effect on overall growth in the case of Latin America and Africa was negative. That is because labor moved in the wrong direction (from more productive to less productive activities) in Latin America and sub-Saharan Africa. Productivity of Asian countries grew 3.87% during 1990–2005, with structural change accounting for close to 15%.¹ Within the sample of Asian countries, annual average productivity growth rate was the highest in PR China (8.9%) and the least in the Philippines (0.95%). The study also shows that the intersectoral productivity gaps are larger in developing countries than in high-income countries and decline with sustained economic growth.

Our study contributes to the growing literature on structural change and productivity growths of developing countries in Asia. We include 11 Asian countries, namely, Bangladesh, Cambodia, India, Indonesia, Lao PDR, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, and Vietnam in our analysis. In the following section, we review some of the important studies that have outlined the pattern and role of structural transformation for the set of countries in our sample.

Country-wise Review

Bangladesh

Moazzem and Arno [18] argue that Bangladesh has experienced slow progress in structural transformation. Although the agriculture sector's relative productivity has been falling since 1985, it continues to employ a major share of the total labor force. On the other hand, sectors with higher productivity, such as manufacturing, employ a smaller share of labor. While the share of agriculture in GDP declined from 21.4% to 15.5% between 1995 and 2015, the sector employs around 43.9% of the labor force. During the same period, the share of industry in employment increased from 12.7% to 19.6% and that of services from 36.2% to 36.5%. The growth rate of labor productivity increased from -0.9% in 1986 to 5.8% in 2015. Using the decomposition technique of McMillan and Rodrik [17], the paper finds that it is the withinsector component that explains most of the growth in labor productivity in Bangladesh. They find that the between-sector productivity growth, indicating structural transformation, decreased from 0.3% in 1985 to 0.2% in 2015.

Driven by its readymade garments sector, the share of employment in Bangladesh's manufacturing sector increased from 9.5% in 2000 to 14% in 2017. This sector has made a huge contribution to the country's economy in terms of employment generation, women's empowerment, and export earnings. However, the export basket of Bangladesh is highly concentrated since the non-garment manufacturing sectors have performed rather poorly. Also, compared with other countries like Vietnam, Bangladesh has not been able to attract FDI inflows due to lack of infrastructure and high cost of doing business [19].

¹ The set of Asian countries included in McMillan and Rodrik [17] are Hong Kong, Singapore, the ROC, the ROK, Malaysia, Thailand, Indonesia, the Philippines, PR China, and India.

Cambodia

Bathla, *et al* [20] find that the process of structural transformation in Cambodia has been faster, compared with other Asian economies.² There has been a significant reduction in the intersectoral labor productivity gap over time: the ratio of labor productivity in the non-agricultural sector to the agricultural sector has declined from 4.82 in 1991 to 2.78 in 2016. The study attributes the reduction in this gap in Cambodia to high agricultural growth, expansion of the garments industry, and adoption of market reforms since 1989. Decomposing labor productivity growth into within and between components, Bathla, *et al* [20] found that compared with the other seven countries in their study, Cambodia stood out because growth during 1991–2000 was almost equally explained by both the components, and also because of the growth-enhancing effect of the structural change.

India

Ahsan and Mitra [21] have used the McMillan and Rodrik [17] decomposition technique and found that India's productivity growth has been largely driven by the within-sector component, especially in the early 2000s. Labor productivity increased rapidly from around 3% per annum in the 1980s and 1990s to 6.5% during 2000–04, 95% of which can be attributed to within-sector productivity growth. Notably, the manufacturing sector contributed substantially to within-sector productivity growth during 2000–04. Although structural change has had a growth-enhancing effect, with workers moving out of low-productivity to high-productivity sectors, the productivity growth declined from 1.3% in the 1990s to 0.3% during 2000–04.

Structural transformation of the Indian economy has led to a sharp decline in the agriculture sector's output share from 40% in 1960 to 15% in 2004 and a modest decrease in employment share from 71% to 61%. However, India seems to have bypassed the industrialization stage, which was crucial for the success of east Asian economies.³ Workers moving out of agriculture have largely sidestepped manufacturing, the share of which in both employment and output has remained low and stagnant, at about 12%. This is in sharp contrast to PR China, the ROK, and Vietnam, where almost one-third of the GDP comes from manufacturing. Instead, rapid economic growth of the Indian economy has been driven by an expansion of the service sector. Share of services in the GDP has risen to almost 60% from 40% in 1960, though the employment share is much lower, at around 28%.

Ahsan and Mitra [21] have also examined how different sectors of the economy have performed in relation to aggregate productivity and found that labor productivity in the agriculture sector has been below average throughout the period 1960–2004. Relative productivity of the agriculture sector has declined steadily over the years: productivity in the 1960s was 30% lower than that of the entire economy and dropped further to 62% below average in the 2000s. Over the same period, productivity of both manufacturing and service sectors was above average. Labor productivity in the manufacturing sector increased from 32% in the 1960s to 64% in the 1980s before dropping to 45% during 2000–2004.

Results in Ahsan and Mitra [21] are similar to those reported in de Vries, *et al* [23]. They find that driven by the services sector, India's average annual aggregate productivity growth increased from about 3% in 1981–1991 to 4.7% during the post-reform period of 1991–2008. Results from shift-share analysis indicate that although the contribution of structural change is positive, a major part of aggregate productivity growth is due to the within component.

² Bathla, et al [20] have studied Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines, Thailand, Vietnam, and Malaysia.

³ Felipe [22] argues that the single-most important factor that explains east Asia's development success is rapid structural transformation toward industrialization, particularly manufacturing.

Erumban, *et al* [24] have analyzed whether India follows the traditional path of structural transformation as observed in advanced economies. They use detailed industry-level disaggregated data (from 27 industry groups) to understand the role of structural change in India's aggregate productivity growth during 1980–2011. They find that in general, 50–80% of productivity growth during the entire period can be attributed to within-industry growth. Aggregate and within-industry productivity growth were highest during 2003–11, at 4.5% and 3.3%, respectively. The structural change component has had a positive but limited impact on aggregate labor productivity. Interestingly, on further splitting the structural change component into static and dynamic components, they find that there has not been any significant dynamic structural change during the entire period. That is, although workers have moved to industries with higher productivity levels, they have not moved to fast growing industries.

The findings of these papers are consistent with other studies such as Kochhar, *et al* [25] and Sen [26] that have outlined the atypical nature of structural transformation in India. Erumban, *et al* [24] note that no country has attained high levels of development without a solid manufacturing base. Therefore, the absence of industrialization stage in India's structural change process is a concern because it might eventually reduce the overall productivity growth. Reasons for inefficient reallocation of labor can be attributed to a range of policy impediments that affect the proper functioning of product and factor markets, as well as market failures relating to access to credit and human capital [27].

Indonesia

Kim, *et al* [28] have analyzed labor productivity growth in Indonesia for a long period (1973–2012) and found that the growth rate was 2.52% per annum, with structural transformation and within-sector components contributing 55.7% and 44.3%, respectively. Most importantly, during 1973–1986, almost all of the labor productivity growth was due to structural transformation.⁴ Between 1986 and 1996, GDP growth and labor productivity growth recorded very high rates of 7.72% and 4.81%, respectively. However, unlike the earlier period, the contribution of structural transformation declined, and 65% of labor productivity growth was due to the within-sector component. During 1999–2012, while labor productivity grew at 3.12%, the contribution of structural transformation declined further to 29.8%.

Similar results are reported in Badriah, *et al* [29] for the period 2003–14. The decomposition results show that around 68% of aggregate labor productivity growth in Indonesia was due to the within component. Decomposing the structural component into two, the paper finds that while the static effect of structural change was positive, the dynamic structural change had a small negative effect on aggregate labor productivity growth. The growth-reducing effect of structural transformation in the case of Indonesia is also seen in Timmer and Szirmai [30] and Fagerberg [31]. Timmer and Szirmai [30] examine the role of structural change in explaining labor productivity growth in the manufacturing sector for four Asian countries (India, Indonesia, ROK, ROC) using shift-share analysis. They find that structural change had a negative effect on productivity growth in Indonesia, due to reallocation of labor into sectors that had lower productivity both in terms of levels as well as growth rates⁵.

⁴Labor productivity in Indonesia grew at 2.04% per annum between 1973 and 1986 [28].

⁵ Timmer and Szirmai [30] find that structural change had a growth-reducing effect of 15% in Indonesia during 1975–93.

Lao PDR

Bathla, *et al* [20] have found that the pace of structural transformation in Lao PDR has been sluggish. Their study samples eight southeast Asian economies from 1991 to 2016 and finds that in countries such as Lao PDR that experience stagnant or slowly declining productivity differentials, the pace of structural transformation is slower. In order to accelerate the process of structural transformation in Lao PDR and create employment opportunities in high-productivity sectors, ADB [32] identifies measures such as export diversification; targeted public investment to boost agricultural growth; and better infrastructure to develop the services sector, especially tourism.

Mongolia

Transition economies like Mongolia experience several impediments to their growth and productivity, such as underdeveloped financial system, inefficient state enterprises, lack of infrastructure and skilled labor, and inadequate technology [33]. Furthermore, Mongolia is one of the most commodity-dependent countries in the world. During 2011–15, exports of mineral fuels, lubricants, non-ferrous metals, and non-monetary gold accounted for 96% of Mongolia's total exports and 39% of total GDP. Copper is the largest exported product, accounting for 37% of total exports [34]. Csordas [35] observes that aggregate labor productivity growth in commodity-dependent developing countries is lower than that in non-commodity dependent countries. Commodity dependence is associated with not just low levels of labor productivity, but also slower productivity shocks. Also, the negative effect of commodity dependence is found to be stronger in the manufacturing sector.

Nepal

Compared with India, Vietnam, Bangladesh, Lao PDR, and Cambodia, economic growth during 1991–2019 was lowest in Nepal [36].⁶ During the same period, Nepal also reported the lowest per capita GDP growth of 3%.⁷ Furthermore, the growth enhancing effect of structural change has been limited in Nepal [36, 37]. While more than half of the labor force is still engaged in agriculture, which is predominantly traditional and subsistence-based, labor productivity in the agricultural sector remains stagnant [37, 38]. Kharel [36] finds that except for the subsector 'transport, storage, and communications,' structural transformation in Nepal has been productivity-decreasing for industry and services sectors. Bulmer, *et al* [39] found that during 1998–2018, the contribution of structural transformation to per capita value-added growth was only 2% per annum, primarily due to the static 'between effect.' On the other hand, dynamic reallocation of labor had a slightly negative effect.

Khan [38] and Kharel [36] argue that the weak effect of structural transformation in Nepal is not only due to low levels of productivity in major sectors but also due to premature deindustrialization. The stagnation in the manufacturing sector has resulted in labor shifting from agriculture to lowproductivity activities, and informal employment. Low levels of labor productivity in Nepal are mostly due to inadequate capital such as lack of infrastructure, obsolete technology, and low levels of investment rather than labor, since the labor becomes immensely productive on migrating from Nepal [37]. Another worrisome feature of the structural transformation in Nepal is the lack of female participation in productive employment, with women typically engaged in

and Vietnam had a per capita income of USD220. However, by 2012, per capita income in Vietnam (USD1,400) was double that of Nepal's.

⁶ The average annual real GDP growth of Nepal during 1991–2019 was 4.39% [36].

⁷ To illustrate the differences in per capita income further, we consider a comparison between Nepal and Vietnam. In 1989, both Nepal

unpaid or self-employed farm jobs [38]. Basnett, *et al* [37] and Kharel [36] argue that policy uncertainty, and distortions in labor markets caused by foreign migration, corruption, red tape, and limited access to finance are some of the constraints to economic growth and structural transformation in Nepal.

Pakistan

The rate of structural transformation in Pakistan has been lower and much slower compared with other Asian countries [40, 41]. Over 40% of Pakistan's labor force is still employed in agriculture and contributes only 20% to the GDP. The services sector accounts for more than half of the GDP but employs only one-third of the labor force. Although the output share of Pakistan's services sector is relatively large compared with other countries at the same level of per capita GDP, Sharma [41] notes that labor is concentrated in low-skilled services such as wholesale and retail trade, which constitutes almost 40% of the total service industries in employment. On the other hand, between 1992 and 2004, the share of high-skilled service industries in employment increased from 2% to only 3%. The output share of the manufacturing sector has been stagnant since the 1970s, and the sector is heavily concentrated in a few industries such as food, beverages, and textiles.

Felipe [40] has reported that Pakistan's labor productivity grew at 2.59% per annum during the period 1973–2002, 83% of which was contributed by within-sector productivity. Decomposing the within-sector productivity growth further, the paper found that while the agricultural sector accounted for 31% of the intrasectoral growth, 45% was due to within-services growth. Also, 83% of the structural transformation component of productivity growth was due to reallocation of labor from agriculture to services, rather than industry. Compared with other developing countries, the impact of the shift of labor out of agriculture on Pakistan's overall productivity is weak because the productivity gap between agriculture and non-agriculture sectors is small [42].

The Philippines

Bathla, *et al* [20] found that more than 80% of the labor productivity growth in the Philippines during 1991–2000 was due to the within-sector component. Similarly, the decomposition exercise by Felipe, *et al* [43] shows that during 2009–19, 79% of the overall labor productivity growth was due to the within effect. On the other hand, structural change had a negative effect on labor productivity growth in the Philippines [20]. A similar result is also reported in Fagerberg [31]. The study uses a sample of 39 countries for the period 1973–1990 to analyze the impact of structural change on productivity growth of manufacturing industries. The results show that the contribution of structural change to manufacturing productivity growth is negative for Indonesia, the Philippines, and Sri Lanka.

Sri Lanka

Yatawara [44] found that between 1963 and 2000, all subsectors in Sri Lanka recorded positive productivity growth. Productivity growth was highest in the services sector, which employed about 41% of the labor force and accounted for 60% of the GDP. While there have been significant changes in the underlying structure of the Sri Lankan economy since 1980, the impact of between-sector resource allocation on labor productivity growth has been less in Sri Lanka compared with other south Asian countries [45]. Using data between 1980 and 2008, the authors found that the contribution of sectoral reallocation to average annual labor productivity in Sri Lanka was only 15%, as compared with 25% in India and 40% in Bangladesh. Yatawara [44] argues that excessive regulations in product and factor markets have a negative impact on productivity and employment generation in Sri Lanka.

Vietnam

Vietnam experienced rapid economic growth with real GDP growing at 7% per annum between 1986 and 2008. This was associated with a decline in the share of agriculture in GDP from 34% to 17%, increase in the share of manufacturing from 17% to 25%, and increase in the share of services from 46% to 54%. This also led to a drastic change in the composition of employment, with the share of agriculture declining from 70% to 54%, the share of manufacturing growing from 8% to 14%, and the share of services increasing from 18% to 32%. A comprehensive set of economic reforms introduced in the 1980s covering the agriculture sector, a restructuring of state-owned enterprises, expansion of private enterprises, inflow of foreign investment and technology, and greater integration with the global economy have contributed to higher productivity in non-agriculture sectors, thereby leading to labor reallocation and overall productivity gains.

McCaig and Pavenik [46] have explored the role of structural change in Vietnam's economic development during 1990–2008 and found that labor productivity grew by 5.1% per annum on average, with structural change accounting for close to 38% of the growth. A significant feature of the role of structural change in Vietnam is that its effect on productivity growth was positive throughout the period, and more importantly, the relative contribution increased from 19% in the 1990s to 55% in the 2000s, surpassing the within-sector component in 2001.

Nguyen [47] extends the work of McCaig and Pavcnik [46] to analyze the role of structural change in the years after 2007 when Vietnam began to slow down.⁸ The paper finds that while structural change played a modest role in the 1990s, it became the dominant driver of growth during 2000– 07. However, the impact of structural change declined considerably during 2007–13.

Chapter Summary

In sum, most of the studies we reviewed show that compared with structural change, it is the within-sector component that has contributed more to aggregate productivity growth. The pace of structural transformation has been rather sluggish, especially in countries like Lao PDR, Pakistan, the Philippines, and Sri Lanka. More importantly, even the two fast-growing economies of Asia, India and Vietnam, appear to be following different paths of structural transformation. Despite the limited contribution to aggregate productivity growth, structural change has largely been growth-enhancing in India. However, the nature and magnitude of its effect is considerably different from that in Vietnam. Like PR China, structural change in Vietnam has been driven by expansion of the manufacturing sector, both in terms of employment and labor productivity. The reallocation of labor between sectors in Vietnam is consistent with the conventional path of structural transformation, followed by advanced economies. On the other hand, structural transformation in India is driven by the services sector.

Although only a few studies have decomposed structural change into static and dynamic reallocation effects, existing evidence shows that the dynamic component has a negative effect on productivity. It remains to be seen what hinders the movement of labor to fast-growing sectors of the economy.

From our review of the literature, we understand that the nature of structural transformation in developing economies, especially at disaggregated sectoral levels for the countries in our sample, is not well documented. Although differences in the rates of aggregate productivity growth across

⁸ While Vietnam registered impressive growth rates, of 7% in the 1990s and 7.5% during 2000–07, growth slowed down significantly to 5.6% during 2007–13. Consequently, labor productivity growth rate dropped from 5% during 1990–2007 to 3.5% during 2007–13.

Asian economies are established, it needs to be studied in more detail why the role of structural transformation on productivity growth is limited in some countries and how one can boost the growth-enhancing effect of between-sector reallocations.

In this study, we aim to provide quantitative assessment of the magnitude of structural transformation and within-sector growth and examine their relative contribution to aggregate growth. We will also examine labor productivity and growths of components for different subsectors of the economy. Further, we will analyze the sources of structural transformation and growth.

DATA AND METHODOLOGY

This chapter describes the data and methodology used in the study.

Data

Data for Shift-share Exercise

We use the shift-share method to analyze the contributions of structural change and within-sector growth to labor productivity growth for each country in our sample. We decompose labor productivity into different components for the entire economy as well as for several subsectors.

This study uses APO data, which provides harmonized productivity accounts for Asian countries, developed by a joint project of the APO and the Keio Economic Observatory (KEO), Keio University, Tokyo. The dataset is based on national accounts of countries and uses the growth accounting framework to compile productivity estimates. We analyze labor productivity growth of 11 Asian countries for the period 1970–2019 using information on GDP and employment for the whole economy as well as for the three broad sectors of agriculture, industry, and services¹. The industrial sector is further analyzed to include mining and quarrying; manufacturing; utilities (electricity, gas, and water supply); and construction. The services sector comprises wholesale and retail trade; transport, storage and communication; financial intermediation, real estate, and business; and community, social and personal services. The long-time horizon of data allows us to examine the growth pattern of these countries for the last five decades.

Data for Correlates and Sources of Productivity Growth

To identify the new sources of structural transformation and growth of these economies, we identify various correlates of the structural transformation using their socioeconomic, demographic, fiscal, and administrative characteristics. The data on various correlates is sourced from the World Bank Development Indicators and International Monetary Fund (IMF). The time periods for which the data is available are not uniform. Nonetheless, for most of the correlates, data is available from 1991 onward.

After decomposing the growth of labor productivity for the 11 Asian LMIC countries, we move on to study the correlates of the decomposed parts, i.e., 'within sector' and 'structural change.' The data on correlates represents the socioeconomic, financial development, administrative, trade, and human capital aspects of each country.

Existing studies suggest that the age composition of the population is a crucial determinant of economic growth. Using data for the USA, Gagnon, *et al* [48] and Maestas, Mullen, and Powell [49] show that there is a negative relationship between the share of people aged 60 years or more in the population and the GDP growth. Therefore, we consider the *share of working-age population*, and *aged population* in the total population as potential determinants of economic growth.

A second indicator of interest is the financial development of a country. Evidence shows a positive linkage between financial development and economic growth [50]. We use the *number of bank* branches per unit of area and the total credit to GDP ratio as indicators of financial development.

¹ Agricultural sector refers to agriculture, hunting, forestry, and fishing.

Endogenous growth theories establish the role of human capital, innovation and knowledge in promoting economic growth [51, 52]. In order to incorporate the human capital stock of a country, we use the share of the literate population and the share of public expenditure on education in total expenditure.

In a globalized world, countries are linked with each other through different forms of economic indicators such as investment flows, labor flows, trade of goods and services, and participation in global value chains (GVCs). A measure of trade openness, FDI, and GVC index each will be included as proxies for integration with the world economy. Further, in order to capture the economies of scale, we will include a measure of total population, as well as the share of urban population. Following Wu, Tang, and Lin [53] on evidence in favor of Wagner's law that government spending is helpful for economic growth, we will include a measure of the fiscal size of the government captured as public expenditure to GDP ratio.

Methodology

Labor Productivity and Decomposition

Growth in labor productivity can be achieved through productivity growth within sectors and/or reallocation of labor from low-productivity to high-productivity sectors. To assess the relative contribution of the 'within' and 'between' components in explaining aggregate labor productivity, we use the shift-share method pioneered by Fabricant [54]. It is used widely in the context of cross-country analysis of structural change and productivity growth.

Aggregate labor productivity at time T can be written as:

where P_t is aggregate labor productivity in year t, s_{it} denotes the proportion of labor employed in sector i at time t, and p_{it} denotes labor productivity in sector i at time t.

Further, change in aggregate labor productivity can be written as:

where the Δ operator denotes the change in productivity or employment shares between times *t-k* and *t*, where *t>k*. The equation shows that aggregate labor productivity can be segregated into 'within sector' and 'structural change' components. The first term in the RHS of Equation (2) is the weighted sum of productivity growth within individual sectors, where the weights are the shares of employment in each sector at the beginning of the period. As in McMillan and Rodrik [17], we call this the 'within-sector' component of productivity growth. The within effect will be positive when the weighted labor productivity in sectors is positive.

The second term captures 'structural change' and provides a measure of how much of aggregate labor productivity gains are due to labor reallocations from one sector to another. It is the product of productivity levels (at the end of the period) with the change in employment shares across sectors. This is a static measure of the reallocation effect as it only depends on differences in productivity levels across sectors, not the differences in productivity growths. However, as sectors differ not only in terms of productivity levels but also in terms of growth rates, making a distinction between static and dynamic reallocation effects is considered useful. Therefore, for the purpose of this study, we use an alternative decomposition method as in de Vries, *et al* [23], which can be written as:

$$\Delta P_t = \sum_{i=1}^n s_{i,t-k} \Delta p_{i,t} + \sum_{i=1}^n p_{i,t-k} \Delta s_{i,t} + \sum_{i=1}^n \Delta p_{i,t} \Delta s_{i,t} \dots \dots \dots \dots (3)$$

The first term in the RHS of Equation (3) is the within-effect, same as that in Equation (2). The second term in Equation (3) is the 'static' component of structural change. It will be positive if workers move from sectors with below-average productivity levels to sectors with above-average productivity levels. The third term denotes the joint effect of changes in employment shares and sectoral productivity growths and is referred to as the 'dynamic' component of structural change. It will be positive if workers move to sectors with positive productivity growth. The sum of the second and third terms is the total structural change as denoted in Equation (2). Dividing both sides of Equation (3) by aggregate labor productivity in *t*-*k*, we obtain the decomposition of aggregate labor productivity growth rate.

Club Convergence

The Phillips–Sul test or log-t test is a regression-based convergence test that accommodates heterogeneity in the cross-sectional behavior of economies/units in the panel. This is done by modelling the panel as follows:

Equation (4) decomposes the behavior of each economy/unit X_i over time into short-run idiosyncratic (unit-specific) effects represented by α_i , and a factor that is common to all units over time represented by μ_t . The idiosyncratic elements in the panel, which include the error term ϵ_{it} , allow for short-run heterogeneity in the dynamics of the units in the panel. Equation (4) can be rewritten as a time-varying, dynamic factor model:

Equation (5) rearranges the idiosyncratic elements (α_i and ϵ_{it}) affecting the long-run movement of units X_i together. These elements are together represented by b_{it} , which signifies distance of an individual unit from the common trend component μ_t . Therefore, a variety of transition paths can be taken by units in the panel, with b_{it} reflecting the economy-specific characteristics that determine this variety.

In the general case presented by equation (5), the number of observations in the panel are less than the number of unknowns in the model, making it impossible to estimate b_{it} . Therefore, testing for convergence in the framework presented by equation (5) requires imposing some structure on b_{it} and μ_t . In order to solve this issue, convergence is defined through a relative transition coefficient h_{it} , where:

Like b_{it} , h_{it} traces out the transition path of each unit *i* in the panel. This is done relative to the crosssection average of the panel at each point in time, eliminating μ_t , and defining transition solely in terms of the idiosyncratic element b_{it} . For convergence, we require that $h_{it} \rightarrow 1$ for each unit *i* as $t \rightarrow \infty$. Thus, this framework in Equation (6) allows room for heterogeneity in the transition paths of individual economies in the short run, while still allowing for ultimate convergence in the long run as $h_{it} \rightarrow 1$. This is a key advantage of the log-t test over the popular OLS regression framework used for testing absolute convergence, while cross-sectional homogeneity is imposed in the latter [55].

Next, the cross-sectional variance of h_{it} is defined by Equation (7):

Wherein the property that H_t 0 over time translates into the null hypothesis of convergence among units in the panel. Further structure is imposed on b_{it} , in order to formalize a null hypothesis of convergence. It is assumed that b_{it} follows a decay model that has the semi-parametric form given in Equation (8):

In Equation (8), b_i represents a fixed value that b_{it} may reach in the long run, σ_i is an idiosyncratic scale parameter, and ζ_{it} represents a random variable that is *iid* (0,1) across the cross-section *i*, but may be a weakly dependent time series. L(t) is a slowly varying function, like log(t), for which $L(t) \rightarrow \infty$ as $t \rightarrow \infty$. β is the decay rate, which governs the rate at which the variation in the cross section decays to zero over time.

In terms of equation (8), the null hypothesis can be written as:

$$H_0: b_i = b \text{ for all } i \text{ and } \beta \ge 0$$

This null hypothesis implies that all idiosyncratic transition elements b_i converge toward a common value *b* over time. The alternative hypothesis is defined as follows:

 $H_A = Either (1) b_i = b \text{ for all } i \text{ and } \beta < 0 (absolute divergence)$ $Or (2) b_i \neq b \text{ for some } i \text{ and } \beta \ge 0 (club convergence)$

Note that the second case embeds the possibility of club convergence in the test. Thus, in case the null hypothesis of absolute convergence is rejected, the alternative is not just absolute divergence but also club convergence, wherein the transition paths b_i for some units in the panel converge toward their respective long-run values b. In this manner, multiple equilibria on the road toward convergence are accommodated.

Last, to test for convergence, a regression model is proposed that tests whether H_t , the crosssectional variance of the relative transition coefficient h_{it} , tends to become zero in the long run. Using Equations (6), (7), and (8), Phillips and Sul [56] prove that this condition can be reduced to the following regression:

$$log\left(\frac{H_1}{H_t}\right) - 2logL(t) = p + q log t + u_t, for t = [rT], [rT] + 1, ..., T(9)$$

Equation (9) is the log-t test, where $\hat{q} = 2\beta$, with β being the decay rate in equation (8). H_1 is the variance of the relative transition coefficient at time t = 1, and H_t is its variance at any given point in time. Since convergence of the relative transition coefficients would require H_t to go down over time as a proportion of H_1 , $\log \left(\frac{H_1}{H_t}\right)$ represents a measure of this convergence. L(t) is assumed to be a slowly varying function of time, with Phillips and Sul suggesting that $L(t) = \log (t)$. Equation (9) is estimated over a truncated sample, defined by a parameter r and the size of the total sample T. The truncated sample thus goes from rT (or its closest integer) to T. The parameter r can take any value between zero and one. Based on simulation experiments, Phillips and Sul [56] suggest a value of r = 0.3 for all log-t tests, which balances the limit distribution and power properties of the test. Using an autocorrelation and heteroscedasticity consistent with one-sided t test, Equation (9) is estimated on the truncated sample, and the null hypothesis of convergence, i.e., $\beta \ge 0$ is tested. If the t-statistic has a value less than -1.65, the null hypothesis of convergence is rejected at 5% significance level.

As mentioned above, the log-t test allows for the possibility of club convergence in case the null hypothesis of absolute convergence is rejected. Assuming the null hypothesis is, in fact, rejected, the next step involves identifying subgroups, clusters, or clubs in the panel for which the null hypothesis of convergence does hold. If such clusters cannot be identified, one can arrive at the conclusion that the panel exhibits absolute divergence.

Phillips and Sul [56] developed an algorithm for identifying such clusters. The steps that the algorithm follows are:

- (1) **Sorting:** In the last period for which data is available, units in the cross-section are sorted in descending order by the variable of interest (say, per capita income). The units thus ordered are indexed as *I*, ...,*N*.
- (2) Core-group formation: Next, a core group of units is identified. For this, the k highest units in the panel are selected, with 2 ≤ k < N. 'k' is chosen such that the t-statistic from Equation (9) is maximized among all the subgroups that do not reject the null of convergence. These k units constitute the core group.</p>
- (3) **Sieving:** Once the core group has been formed, additional units are 'sieved' into it if their inclusion does not lead to the rejection of the null of convergence. The core group, with some additional members sieved in, together form the first convergence club.
- (4) Recursion: With the leftover units, the same steps as noted above are repeated in order to identify further clubs until no unit is left or there are some units that do not converge to any club. Units in the latter case exhibit absolute divergence.

Finally, in case multiple convergence clubs are identified, tests are conducted in order to determine whether some clubs can be merged to form larger clubs. In order to do this, first the two highest clubs and their respective units are taken together. A log-t test is conducted and if the null of convergence is not rejected, the two clubs are merged and now constitute a single club. Members from the third club are then included in this new, merged club and the log-t test is conducted again. If the null of convergence is not rejected, the third club too gets subsumed within this larger club. If the null is rejected, the same process is repeated with the remaining clubs in order to identify possible mergers. After the first merger, the process continues until all possible mergers are concluded.

MACROECONOMIC ANALYSIS OF APO LMICs

The structural change in an economy is understood as a long-term phenomenon. The rate at which a nation transforms its production base from agriculture to industry and services can significantly vary across countries. The movement of labor out of the subsistence agricultural sector is influenced not only by the size, productivity, and absorptive capacity of non-agriculture sectors but also by the initial levels of productivity and sectoral composition. This chapter discusses the important aspects in economic profiles of the 11 countries, including trends in the per capita GDP; size of workforce; share of each sector in GDP and labor force; and sectoral labor productivity of all the countries. In particular, we answer the following questions: Did these countries experience a rise in per-capita GDP and had a similar growth path? Was the rise in per-capita GDP accompanied by structural changes in the economy? Has the sectoral composition of GDP and labor stagnated over time or experienced a significant shift?

GDP Per Capita

All the 11 countries are lower-middle-income Asian countries. It can be observed from Figure 1 that the levels of per-capita GDP were at low levels in 1970 and have increased over the years. The growth in per-capita GDP has been distinct for these countries. Broadly, two trends can be observed. Out of the 11 countries, in south Asia, except Sri Lanka, four countries, namely, India, Pakistan, Nepal, and Bangladesh have experienced a slow increase in per-capita GDP and have a much lower levels of per-capita GDP in the lot. Sri Lanka remains an exception where the level of per-capita GDP has increased manifold over the years. Rest of the countries (except Cambodia), Indonesia, Mongolia, the Philippines, Lao PDR, and Vietnam have experienced a sharper increase in per-capita GDP.

Further, we look at the size of the workforce in each of these countries. It tells us about the magnitude of total population that is engaged in productive activities and generates the GDP. We find that the countries with lower growths in GDP, namely India, Pakistan, Nepal, and Bangladesh also have a smaller proportion of workforce of up to 40%. Pakistan has the lowest workforce at 30.8%. The highest size of workforce is in Cambodia (63.5%), followed by Vietnam (56.8%).

Labor Productivity

Let us see whether the rise in per-capita GDP was accompanied by rise in labor productivity in these economies and which sector has experienced larger gains in labor productivity.

Labor productivity, computed as GDP per unit of labor force, has followed a path similar to that of the per-capita GDP (see Figures 1 and 3). Bangladesh, Cambodia, and Nepal have not experienced significant improvements in labor productivity. On the contrary, Indonesia, Mongolia, and Sri Lanka have shown significant increase in labor productivity over the years.


TABLE 1 SIZE OF WORKFORCE PART	ICIPATION RATE, 2019.
Country	Workforce in %
Cambodia	63.5
Vietnam	56.8
Lao PDR	50.8
Indonesia	48.7
Philippines	41.0
Nepal	40.8
Bangladesh	40.1
India	38.0
Sri Lanka	37.5
Mongolia	35.0
Pakistan	30.8

The sector-wise labor productivity displays an interesting contrast among these countries (see Figure 4). While the agricultural labor productivity has remained largely constant over the years in all the 11 countries, labor productivity in industrial and services sectors has increased over the years. Three broad trends can be observed. First, in four countries, namely, Indonesia, Lao PDR, Mongolia, and the Philippines, the industrial labor productivity has dominated over the other two sectors. Second, the services sector has experienced larger gains in India, Pakistan, Nepal, and Sri Lanka. Third, the trends in industry and services sectors' labor productivity are nearly indistinguishable in Bangladesh and Vietnam, indicating that labor in both these sectors have been nearly equally productive in the two countries.

GDP Share of Each Sector

A critical aspect of the structural change hypothesis is how the production base of the sector changes over time. Also, which sectors contribute the most to the GDP? Does the production base of the economy shift from low-productivity sectors to high-productivity sectors? Does the magnitude of transition vary across countries? Do all economies follow a similar path of growth and transition?

In the 1970s, not all of the 11 countries had agriculture as the largest GDP contributor. While Sri Lanka and Bangladesh had the highest share of GDP coming from the services sector, the Philippines and Mongolia had the industrial sector as the largest contributor to GDP. The remaining seven countries had agriculture as the largest sector by GDP share.

A closer look at the sectoral contribution of each sector in GDP shows drastic shifts over the years (see Figure 5). The rise in overall per-capita GDP of the 11 countries has been followed and led by shifts in the sectoral compositions of GDP. All countries have experienced a fall in the share of agriculture in GDP, which has been replaced by either the industrial sector or the services sector or both.







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However, the fall in the share of agriculture in GDP varies across the 11 countries. The largest decline was observed for Lao PDR where the share of agricultural was down from nearly 100% in 1970 to 21% in 2019. This was followed by India where the share of agriculture declined from 51.8% of the GDP to 16.5% of the GDP in 2019. The sector made the lowest contributions in Sri Lanka and the Philippines at 8.5% and 9%, respectively. Among other countries, excluding Nepal, none of the countries had more than one-fourth of the GDP coming from the agricultural sector.

The structural transformation can be observed from the significant contribution of industrial and services sectors in the economy. In all countries, except in Lao PDR, the services sector has emerged as the largest contributing sector in GDP terms. The highest share is observed in Sri Lanka at 62%, followed by the Philippines and India at 60.7% and 60.4%, respectively.

Although the contribution of the industrial sector in GDP has also grown over the years, some countries had a limited industrial progress. For instance, Nepal and Pakistan, with 15% and 18% industrial shares of GDP in 2019, respectively, have not been able to industrialize as much as other countries such as Lao PDR and Mongolia where it contributes around 40% of the GDP.

The comparison across sectors shows that these economies have experienced a structural shift in the production base, which is largely observed toward the services sector, while the share of the industrial sector has stagnated.

Sector-wise Share of Employment

Another important component of structural change is the sectoral composition of the labor force. Does labor shift away from the less-productive agriculture sector to the more-productive sectors of the economy? Which sector, industrial or services, emerges and persists as the largest employer in the economy? Figure 6 summarizes the movement of labor across sectors and answers these questions.

For the whole period, in line with agricultural GDP, we observe a decline in the agricultural employment in each country. Although the agriculture sector makes less than one-fourth of the GDP in all 11 countries, its share in labor force was observed to be much higher in 2019 in some countries. This indicates that the agriculture sector remains the least productive sector, as also shown in Figure 4. For instance, agriculture remained the largest employer in Lao PDR, Nepal, and India with 68.9%, 67.7%, and 42% of labor force, respectively, in 2019.

On the contrary, the Philippines, Sri Lanka, and Mongolia have experienced a larger shift of labor out of their agriculture sectors, with their shares of agricultural workforce being 22%, 25%, and 25%, respectively, in 2019.

One critical aspect of the structural change in 11 countries is that labor movement has not necessarily been toward the sector with highest labor productivity. For instance, while industry has emerged as the sector with increasing and the highest labor productivity in Indonesia, Mongolia, the Philippines, and Lao PDR, the labor movement has been toward the services sector in the first three countries while agriculture dominates in the fourth. This shows that the industrial sector, despite having the highest labor productivity, has not emerged as largest employer in these economies.

Similarly, although the services sector has the highest labor productivity in India, Pakistan, and Nepal, the agriculture sector remains the largest employer followed by the services sector in these countries.



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KEY GROWTH TRENDS AND STRUCTURAL TRANSFORMATION PATHS

This chapter has three parts. Part one is the shift-share exercise that decomposes labor productivity growth into 'within sector' and 'structural transformation' components. Part two carries out an analysis of the correlates of structural transformation. Part three deals with sectoral and subsectoral productivity convergence.

Trends in Labor Productivity Growth

In this section, we look at the decadal trends in labor productivity growth of the 11 Asian LMICs. Using the shift-share decomposition exercise, we study the relative roles of within-sector productivity growth (fundamentals) and structural transformation (composed of static and dynamic components), in driving the aggregate productivity growth. We extend this analysis to sectors and subsectors of the economy to ascertain which of them is driving (relatively) higher growth in each of these economies.

Bangladesh

Bangladesh has manifested a continuous increase in aggregate labor productivity growth during the last four decades (see Figure 1). Starting from negative growth in the early 1980s, we find that the growth rate rose sharply in the first half of this decade and steadily increased thereafter. The total labor productivity growth has largely been due to growth within the sectors, with structural transformation playing a limited role. The rate of structural transformation has also been uneven. First, structural transformation has been entirely due to the static component; with the dynamic component having a negative value throughout the period, has diminished both structural transformation and growth of aggregate labor productivity.

The performance of aggregate labor productivity growth as well as those of the industrial and services sectors have improved tremendously in the last two decades in Bangladesh (see Table 1). During the first of the recent two decades (2001–10), the increase in productivity was due to a significant increase in growth both within the sectors as well as structural transformation. In particular, there was a significant increase in productivity within the services sector during this period. Structural change played an important role as well, both in industrial and services sectors. The jump in aggregate labor productivity growth in the last decade (2011–19) was however, mainly due to the increase in productivity growth within sectors, while the contribution of structural change continued to be similar to that in the last decade. The increase in productivity growth within sectors happened in all the three sectors and was particularly strong in the industry sector.

In Table A in the Appendix, we look at this issue at a more disaggregated level. During the fourth decade (2001–10), the increase in productivity growth within the sectors was due to manufacturing and construction in the industry sector and almost all the subsectors in the services sector. Structural change in the industrial sector was driven by manufacturing and construction and in the services sector by financial services. The strong performance by labor productivity growth in industry in the

last decade (2011–19) was led mainly by productivity growth within the manufacturing sector. However, construction, and to a lesser extent, mining, also helped push labor productivity growth up during this decade.



TABLE 1

DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN BANGLADESH.

Bangladesh	Sector	Total productivity	Within	Static	Dynamic
	Total	-3.066	-4.129	1.455	-0.392
1071 00	Agriculture	-1.138	-1.190	0.125	-0.073
1971-80	Industry	-1.433	-0.645	-0.951	0.163
	Services	-0.495	-2.295	2.281	-0.482
1981-90	Total	1.860	0.504	1.501	-0.145
	Agriculture	0.170	0.570	-0.394	-0.007
	Industry	0.583	0.374	0.229	-0.020
	Services	1.107	-0.441	1.666	-0.118

(Continued on next page)

Bangladesh	Sector	Total productivity	Within	Static	Dynamic
	Total	1.915	1.540	0.526	-0.151
1001 2000	Agriculture	0.144	0.299	-0.154	-0.002
1991-2000	Industry	0.736	0.562	0.283	-0.109
	Services	1.035	0.679	0.397	-0.041
	Total	3.155	2.248	1.161	-0.254
2001 10	Agriculture	0.217	0.370	-0.139	-0.014
2001-10	Industry	1.150	0.577	0.656	-0.084
	Services	1.788	1.301	0.643	-0.156
	Total	5.207	4.284	1.190	-0.267
2011-19	Agriculture	0.307	0.665	-0.342	-0.016
	Industry	2.293	1.962	0.532	-0.201
	Services	2.607	1.657	1.000	-0.050

(Continued from previous page)

Cambodia

The average annual growth rate of labor productivity in Cambodia during 1971–80 was significantly negative (see Table 2). In the subsequent decades, there has been a rising trend of growth in productivity, which reached 4.6% during 2001–10 before declining slightly to 3% in the last decade. While the relative contribution of structural transformation in the earlier decades was negligible, it rose to around 40% of the total productivity growth in the 1990s and 2000s. However, in the last decade, the role of structural transformation has declined to 27%. It is also worth noting that despite comparable growth rates in static between-sector and within-sector components, the consistently negative growth rate in the dynamic component of structural transformation has pulled down the overall growth.

If we further analyze growth rates by sectors, we find that the high growth during 2000–10 was driven by a combination of growth in all three major sectors (agriculture, industry, and services). This was due to significant within-sector growth in the agricultural sector and structural transformations in industry and services sectors. The slowdown in the last decade is mainly due to a negative productivity growth in agriculture.

In Table B of the Appendix, we find that the construction, manufacturing, and financial services subsectors made significant contributions to the rise in productivity growth during 2001–10. However, due to growth-reducing effects of structural transformation in the agricultural sector, it declined somewhat in the last decade. All the services subsectors continued to have significant structural transformation during 2011–19. However, this did not result in high growth for the services sector because of negative dynamic growth and negative within-sector growth in all these subsectors.



DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN CAMBODIA.

Cambodia	Sector	Total productivity	Within	Static	Dynamic
	Total	-5.603	-5.577	0.012	-0.038
1071 80	Agriculture	-1.297	-1.265	-0.033	0.001
1971-00	Industry	-2.112	-1.964	-0.130	-0.018
	Services	-2.194	-2.348	0.175	-0.021
	Total	1.702	1.606	0.808	-0.712
	Agriculture	-0.167	-0.127	-0.041	0.001
1901-90	Industry	1.002	1.042	-0.031	-0.009
	Services	0.867	0.691	0.88	-0.704
	Total	2.638	1.496	1.612	-0.471
1991–2000	Agriculture	0.836	1.24	-0.386	-0.018
	Industry	1.129	-0.085	1.414	-0.201
	Services	0.673	0.342	0.584	-0.253

(Continued on next page)

Cambodia	Sector	Total productivity	Within	Static	Dynamic
	Total	4.56	2.635	2.309	-0.385
2001 10	Agriculture	0.866	1.922	-0.975	-0.082
2001-10	Industry	1.718	0.443	1.313	-0.037
	Services	1.975	0.271	1.971	-0.266
2011-19	Total	3.101	2.271	1.693	-0.862
	Agriculture	-0.750	1.032	-1.683	-0.099
	Industry	2.425	2.2	0.344	-0.120
	Services	1.426	-0.961	3.031	-0.644

(Continued from previous page)

India

India has manifested a continuous increase in aggregate labor productivity growth during the last four decades (see Figure 3). Starting from a low growth of 0.54% per annum in the seventies, we find that growth rates rose sharply in the next decade and steadily increased thereafter. The total labor productivity growth has largely been due to growth within sectors, with structural transformation playing a limited role. The rate of structural transformation became visible only in the 1990s and post 2010.

In the 1970s, India experienced low growth of aggregate labor productivity and low sectoral productivity growth rates (see Table 3). The contribution of the agriculture sector was negative to the overall labor productivity growth. Growth picked up during the next decade when overall labor productivity growth was 3.069%, with the services sector being the main contributor. The agriculture sector also contributed positively. This turnaround was the result of mainly the growth within sectors, while structural transformation had a small and negative impact.

Moderate growth continued in the next decade, of 3.35%, contributed mostly by the services sector. Although the overall growth was driven by within-sector growth, the role of structural transformation also became visible in this decade. The contribution of structural transformation was nearly 41%, driven by the services sector.

In the decade of 2000s, the Indian economy experienced a growth of 6.45% in overall labor productivity. This significant jump in growth was mainly led by within-sector growth. The role of structural transformation was nearly negligible. Among all sectors, the service sectors contributed the most to overall growth. The trend slowed down a little in the next decade. The overall growth of labor productivity came down to 5.48%. The within-sector growth dominated but unlike in the previous decade, structural transformation contributed positively with nearly 20% share in overall growth. The services sector played a major role in within-sector growth as well as in structural transformation.

Among the subsectors, the comparatively high industrial productivity growth during 2001–10 came mainly from the manufacturing sector (see Table C in Appendix). The jump in within-sector growth in the last two decades had some contributions from all the three sectors, but most significantly from the services sector. All subsectors of services contributed to this. The sporadic growth from structural change was also mostly from all the service subsectors.



DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN INDIA.

India	Sector	Total productivity	Within	Static	Dynamic
	Total	0.541	0.045	0.512	-0.015
	Agriculture	-0.339	0.106	-0.450	0.004
19/1-80	Industry	0.3	-0.132	0.443	-0.011
	Services	0.579	0.07	0.519	-0.009
	Total	3.069	3.092	0.021	-0.044
1091 00	Agriculture	0.515	0.504	0.008	0.003
1981-90	Industry	0.859	0.879	-0.009	-0.011
	Services	1.695	1.71	0.022	-0.036
	Total	3.355	1.973	1.405	-0.023
1001 2000	Agriculture	0.326	0.833	-0.493	-0.014
1991-2000	Industry	0.77	0.234	0.53	0.005
	Services	2.259	0.905	1.369	-0.014
	Total	6.448	6.3	0.285	-0.137
2001 10	Agriculture	0.666	0.799	-0.127	-0.006
2001-10	Industry	1.768	1.584	0.304	-0.120
	Services	4.014	3.918	0.108	-0.011
	Total	5.48	4.395	1.232	-0.146
2011-19	Agriculture	0.49	0.967	-0.450	-0.027
	Industry	1.109	0.748	0.425	-0.064
	Services	3.882	2.68	1.257	-0.055

Indonesia

Labor productivity growth in Indonesia has gone through several ups and downs over the four decades since the 1970s, eventually stabilizing in the last decade (see Table 4). It was at a high level in the 1970s but fell to much lower levels during the next two decades before recovering in the last two decades. This has been due to the volatility in both within-sector growth and structural transformation during this period. Despite this volatility, the within-sector growth has been a large part of labor productivity growth for the whole period. The contribution of structural transformation has been more varied. Moreover, this contribution has also been restricted significantly by the relatively large negative growth rates from the dynamic component for the whole period. During 1971–80, backed by very strong growth in the static component, the contribution of structural transformation from this component then declined, even turning growth-reducing during 1981–90. In the last decade, it has risen again, contributing 36% to the labor productivity growth.

Labor productivity during the first, fourth, and fifth decades was relatively higher due to contributions from both industry and services. Industry was the larger contributor during the 1970s while services played a bigger role in the last two decades. Our decomposition exercise suggests that in the 1970s as well as in the 2010s, contributions from both industry and services were mainly due to significant rates of structural transformation in these sectors; while in the period 2000–10, the within-sector growth component of industry and services contributed more to the overall productivity than structural transformation.

If we further analyze growth rates in the decomposition exercise, we see that the structural transformation in the 1970s was quite broadbased, coming from most of the industrial and services subsectors (see Table D in Appendix). In the last decade, however, it came mainly from the financial sector. The within-sector growth during 2000–10 came mainly from manufacturing; retail and wholesale trade; and transport, storage, and communication.



Indonesia	Sector	Total productivity	Within	Static	Dynamic
1071 00	Total	4.776	2.212	3.745	-1.180
	Agriculture	0.112	0.868	-0.694	-0.062
1971-00	Industry	2.737	0.605	2.693	-0.561
	Services	1.927	0.739	1.746	-0.557
	Total	2.28	3.459	0.104	-1.283
1001 00	Agriculture	0.165	0.169	-0.003	-0.001
1981-90	Industry	0.716	1.253	-0.108	-0.429
	Services	1.399	2.037	0.215	-0.853
	Total	2.654	1.391	1.812	-0.549
	Agriculture	0.172	0.607	-0.377	-0.058
1991-2000	Industry	1.644	0.527	1.503	-0.386
	Services	0.838	0.257	0.686	-0.105
	Total	3.156	2.575	1.527	-0.946
0001 10	Agriculture	0.26	0.523	-0.240	-0.023
2001-10	Industry	0.989	0.834	0.786	-0.631
	Services	1.907	1.219	0.98	-0.292
	Total	3.114	2.004	2.143	-1.033
011 10	Agriculture	0.27	0.916	-0.595	-0.051
2011-19	Industry	0.984	0.677	0.449	-0.142
	Services	1.859	0.411	2.289	-0.840

DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN INDONESIA.

Lao PDR

Aggregate labor productivity growth in Lao PDR has fluctuated over the years, with low growth rates during the 1970s and 1980s, and relatively faster growth rates of 3% and 3.4% during the next two decades, before dropping to 2.4% during 2011–19 (see Table 5). During the entire period, we also see similar fluctuations in within-sector growth and structural transformation. From the decomposition results, we see that the higher growth during 1991–2010 was significantly due to structural transformation, whose contribution went up to around 80% of the aggregate productivity growth during 2001–10. However, in the last decade, this trend reversed, with the contribution of structural change declining to 20%. By contrast, within-sector growth contributed very little during the period 2001–10 but more significantly in the third and the last decades.

From the decomposition exercise, we find that the relatively higher growth in 1991–2000 was due to within-sector growth in industry while services exhibited a large negative growth rate. There was also some contribution from structural transformation in the industrial and services sectors during this period. The growth rate was sustained in 2001–10 largely due to significantly higher structural transformation in both industry and services. The fall in the growth rates in the last decade was due to a stark fall in structural transformation in industry and to a smaller extent in services, as well as a negative within-sector growth in services.



DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN LAO PDR.

Lao PDR	Sector	Total productivity	Within	Static	Dynamic
	Total	1.61	1.642	-0.069	0.036
1071 00	Agriculture	-1.213	-1.267	0.039	0.015
1971-00	Industry	0	0	0	0
	Services	2.823	2.909	-0.108	0.021
	Total	0.061	0.464	-1.456	1.053
1001 00	Agriculture	-0.657	-1.154	0.539	-0.042
1981-90	Industry	0	0	0	0
	Services	0.718	1.618	-1.995	1.094
	Total	3.085	1.494	1.433	0.157
1001 2000	Agriculture	0.208	0.547	-0.329	-0.011
1991-2000	Industry	3.138	2.438	0.67	0.03
	Services	-0.261	-1.491	1.092	0.138
	Total	3.428	0.653	2.902	-0.128
2001 10	Agriculture	-0.797	-0.263	-0.531	-0.002
2001-10	Industry	1.402	-0.082	1.64	-0.156
	Services	2.822	0.999	1.794	0.03
	Total	2.397	1.886	0.942	-0.432
2011-19	Agriculture	-0.649	-0.559	-0.088	-0.002
	Industry	2.226	2.498	-0.191	-0.081
	Services	0.82	-0.052	1.221	-0.349

The main subsectors contributing to within-sector growth in industry during 1991–2000 were manufacturing, EGS, and construction; while those contributing to structural transformation during that period were wholesale and retail trade (see Table E in Appendix). During the period 2001–10, most of the growth came from structural transformation in mining, wholesale and retail trade, and the financial sector.

Mongolia

Aggregate labor productivity growth in Mongolia has had two clear episodes (see Figure 6). It followed a sharp downward trend from the 1970s till the mid-1990s, and then a similar upward trend, stabilizing around the middle of the last decade. This has been driven by a similar U-shaped behavior in both within-sector growth and structural transformation. The fall and subsequent rise in within-sector growth has played a larger role in driving the two episodes, although structural transformation has also added to this bust-and-boom behavior.

The fall in growth during the first three decades (1970–2000) was driven by a fall in within-sector growth across all the three sectors, i.e., agriculture, industry, and services (see Table 6). Although the fall was largest in services, it was large enough in industry as well. Structural transformation also fell across all three sectors during this period. During the revival in the last two decades, the rise in growth rate was due to a large rise in within-sector growth in services and to a limited extent in agriculture. While the industrial sector did not contribute to this rise in terms of within-sector growth, it made a larger contribution through structural transformation.

In terms of the fall in within-sector growth during the first episode, the subsectors that drove this trend were manufacturing, wholesale and retail trade (WRT), and transport, storage, and communication (TSC) (see Table F in Appendix). The drivers for the fall in structural transformation during the period included manufacturing; construction; and community, social, and personal services (CSPS). The rise in the second episode can be attributed to a significant within-sector growth in WRT and TSC along with a structural transformation in mining.



M	Castan	Total considerations	14/14/1-1	C 1-11-	Demonia
Mongolia	Sector	lotal productivity	Within	Static	Dynamic
1071 00	Total	5.862	4.686	1.369	-0.192
	Agriculture	-0.243	0.315	-0.543	-0.014
1971-00	Industry	3.23	2.293	1.118	-0.181
	Services	2.874	2.077	0.794	0.003
	Total	1.821	0.977	1.15	-0.305
1001 00	Agriculture	0.674	0.904	-0.194	-0.036
1981-90	Industry	0.168	-0.535	0.869	-0.167
	Services	0.98	0.608	0.475	-0.103
	Total	0.822	1.976	-0.726	-0.429
1001 2000	Agriculture	0.409	-0.039	0.474	-0.027
1991-2000	Industry	0.258	1.336	-0.907	-0.171
	Services	0.156	0.679	-0.293	-0.231
	Total	4.145	1.34	3.425	-0.620
2001 10	Agriculture	-0.226	0.021	-0.228	-0.020
2001-10	Industry	2.218	0.313	2.215	-0.310
	Services	2.153	1.005	1.438	-0.290
	Total	6.682	5.35	2.511	-1.179
2011-19	Agriculture	0.736	1.127	-0.301	-0.090
	Industry	2.217	0.889	2.104	-0.776
	Services	3.729	3.335	0.708	-0.313

DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN MONGOLIA.

Nepal

Nepal has been witnessing episodes of rising and falling aggregate labor productivity growth during the last four decades (see Figure 7). As a result, the 1970s and the 1990s had low rates of growth, while the 1980s and 2010s had relatively higher growth rates (see Table 7). The volatility in aggregate growth has been driven by corresponding ups and downs in both within-sector growth and structural transformation. The higher growth in the 1980s was completely driven by very high rates of structural transformation whereas the one in the last decade was more due to within-sector growth, though structural transformation was also important in this period.

The relatively higher growth and high structural transformation in the 1980s had significant contributions from both industry and services. By contrast, in the period 2010–19, the structural transformation was mainly in the services sector. The within-sector growth also came mainly from services, though agriculture also made a smaller contribution.

Among the subsectors, the structural transformation during the 1989s was driven by construction, and to a lesser extent by manufacturing within the industrial sector (see Table G in Appendix). In contrast, all the services sectors exhibited structural transformation during this decade. During the last decade, however, structural transformation was somewhat significant only in the financial sector. The within-sector growth, although quite moderate, came from wholesale and retail trade and CSPS.



DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN NEPAL.

Nepal	Sector	Total productivity	Within	Static	Dynamic
	Total	0.349	0.066	0.78	-0.497
	Agriculture	-0.311	-0.239	-0.073	0.002
1971-80	Industry	0.447	1.735	-0.981	-0.306
	Services	0.212	-1.430	1.833	-0.192
	Total	3.537	-1.411	5.607	-0.659
1001 00	Agriculture	1.232	1.766	-0.514	-0.020
1981-90	Industry	0.645	-1.296	2.349	-0.408
	Services	1.661	-1.881	3.773	-0.231
	Total	1.839	-3.409	6.037	-0.789
1001 2000	Agriculture	-0.041	0.827	-0.844	-0.024
1991-2000	Industry	0.384	-2.059	2.889	-0.446
	Services	1.496	-2.178	3.992	-0.318
	Total	2.669	2.887	-0.057	-0.161
2001 10	Agriculture	0.764	0.457	0.308	-0.001
2001-10	Industry	0.433	0.559	-0.111	-0.015
	Services	1.472	1.87	-0.253	-0.145
	Total	3.402	2.087	1.308	0.007
2011-19	Agriculture	0.501	0.67	-0.165	-0.004
	Industry	0.511	0.332	0.177	0.002
	Services	2.39	1.085	1.296	0.009

Pakistan

There are two episodes of labor productivity growth in Pakistan (see Figure 8). In the first episode, growth rose significantly in the first two decades since 1970, reaching a peak of 4% in the 1980s (see Table 8). In the second episode starting in the early 1990s, growth rates dropped sharply, stabilizing at a low level in the last decade. During most of this period, growth was driven entirely by within-sector growth, whereas structural transformation was either negligible or had a negative impact on growth. An important factor behind this is the significant and growing negative contribution from the dynamic component of structural transformation.

The highest rate of labor productivity growth was reached during the 1980s, when growth rates reached almost 4%. This growth was entirely due to the within-sector growth, most significantly in the services sector, but agriculture and industry sectors also contributed to it. There was also a limited extent of structural transformation in the services sector.

From the decomposition exercise, we find that in case of the industry sector, it was the withinsector growth in manufacturing that pushed up growth rates during this decade (see Table H in Appendix). Within the services subsectors, it was wholesale and retail trade that contributed significantly to growth during this period.



Pakistan	Sector	Total productivity	Within	Static	Dynamic
Takistan	Total	1.483	1.342	0.496	-0.355
	Agriculture	-0.256	0.121	-0.388	0.011
1971-80	Industry	0.352	0.406	0.253	-0.306
	Services	1.387	0.816	0.631	-0.059
	Total	3.932	3.9	0.458	-0.426
	Agriculture	0.681	0.968	-0.243	-0.044
1981–90	Industry	0.922	1.107	0.009	-0.194
	Services	2.328	1.825	0.691	-0.188
	Total	2.833	3.373	0.286	-0.827
1001 2000	Agriculture	0.946	0.998	0.004	-0.057
1991-2000	Industry	0.456	1.101	0.003	-0.648
	Services	1.431	1.274	0.279	-0.122
	Total	0.584	0.175	0.696	-0.286
2001 10	Agriculture	-0.304	-0.043	-0.239	-0.022
2001-10	Industry	0.325	0.081	0.308	-0.064
	Services	0.563	0.137	0.626	-0.200
	Total	1.746	2.792	0.428	-1.474
2011-19	Agriculture	0.016	0.511	-0.479	-0.015
	Industry	0.222	-0.155	0.687	-0.310
	Services	1.508	2.436	0.22	-1.149

DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN PAKISTAN.

The Philippines

The Philippines exhibits two distinct episodes of labor productivity growth (see Figure 9). In the first episode, we find that the growth rate of total labor productivity in the Philippines fell sharply from 2% in the 1970s to -0.1% in the 1980s (see Table 9). In the second episode, which took place in the last three decades, productivity growth picked up and rose to 4% in the period 2011–19. Our decomposition exercise reveals that the within-sector growth follows a trend similar to that of the overall productivity growth. Thus, the fall and subsequent rise of aggregate labor productivity growth is almost entirely driven by a fall and rise in within-sector growth. This also implies that the role of structural transformation in the Philippines has been rather limited, partly because the dynamic component has been consistently negative in the economy throughout the period.

The rise in productivity growth from the second to the last decade has been driven mainly by the services sector, and to an extent, by the industrial sector. This has been supported by the increase in within-sector growth in these two sectors. The services sector has also gained from the increasing structural transformation during the last two decades.



DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN THE PHILIPPINES.

Philippines	Sector	Total productivity	Within	Static	Dynamic
	Total	2.001	2.488	0.396	-0.884
	Agriculture	0.008	0.055	-0.023	-0.024
1971-00	Industry	1.472	1.841	-0.160	-0.209
	Services	0.521	0.593	0.579	-0.651
	Total	-0.122	-0.362	0.593	-0.353
1091 00	Agriculture	-0.160	0.107	-0.255	-0.011
1901-90	Industry	-0.576	-0.342	-0.058	-0.177
	Services	0.614	-0.127	0.905	-0.164
	Total	1.825	1.261	0.738	-0.174
1001 2000	Agriculture	0.134	0.464	-0.308	-0.022
1991-2000	Industry	0.473	0.407	0.169	-0.103
	Services	1.217	0.39	0.876	-0.049
	Total	2.108	1.749	0.468	-0.109
2001 10	Agriculture	0.123	0.235	-0.110	-0.002
2001-10	Industry	0.417	0.831	-0.349	-0.065
	Services	1.568	0.683	0.927	-0.042
	Total	3.984	3.144	1.058	-0.218
2011-19	Agriculture	-0.013	0.527	-0.516	-0.024
	Industry	1.18	1.084	0.163	-0.067
	Services	2.817	1.534	1.411	-0.127

The within-sector growth in the industry sector has come mainly from its manufacturing subsector (see Table I in Appendix). In the services sector, it is the WRT subsector that has seen an increase in its contribution to productivity growth. The gains from structural transformation are restricted mainly to the financial services subsector.

Sri Lanka

Sri Lanka has witnessed episodes of rising and falling aggregate labor productivity growth in the four decades under consideration (see Figure 10). In terms of average decadal growth rates, however, there has been a slight upward trend, with average growth rates increasing from around 2.5% in 1971–80 to around 4% in the last two decades (see Table 10). This growth trend has been largely driven by the contribution from the within-sector component. As far as the structural transformation is concerned, we see that it has played a limited role in contributing to the aggregate productivity growth. The dynamic effect has been consistently negative and showed a downward trend over the four decades. On the other hand, the static effect, in spite of being positive, rose only in the period between 1990s to 2010s, after which it again came down.



Sri Lanka	Sector	Total productivity	Within	Static	Dynamic
1971-80	Total	2.595	2.054	0.589	-0.048
	Agriculture	0.228	0.451	-0.218	-0.005
	Industry	0.568	-0.163	0.763	-0.033
	Services	1.799	1.766	0.043	-0.011
1981-90	Total	2.65	2.401	0.413	-0.165
	Agriculture	0.149	0.228	-0.070	-0.009
	Industry	0.829	0.807	0.089	-0.067
	Services	1.672	1.366	0.394	-0.088
1991–2000	Total	3.119	2.148	2.081	-1.110
	Agriculture	0.061	0.505	-0.390	-0.054
	Industry	1.389	1.037	0.844	-0.492
	Services	1.669	0.606	1.627	-0.564
2001-10	Total	4.279	4.028	1.203	-0.952
	Agriculture	0.199	0.387	-0.145	-0.042
	Industry	1.268	1.414	0.045	-0.191
	Services	2.812	2.228	1.303	-0.719
2011-19	Total	3.809	3.267	0.854	-0.311
	Agriculture	0.161	0.435	-0.258	-0.016
	Industry	1.083	0.731	0.398	-0.045
	Services	2.565	2.1	0.715	-0.251

DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN SRI LANKA.

The relatively higher productivity growth in the last two decades has been driven significantly by the services sector, with some contribution from the industrial sector as well. This has been made possible by higher contributions from within-sector components of these two sectors. The role of structural transformation was quite small during this period.

During 2001–10, manufacturing contributed significantly to the within-sector growth component of the industrial sector (see Table J in Appendix). In services, the growth came from CSPS and TSC subsectors. During the last decade, the only subsector that contributed significantly to within-sector growth was the financial sector.

Vietnam

Vietnam has exhibited two episodes of labor productivity growth since the 1970s (see Figure 11). The first episode was during the 1970s and 1980s when Vietnam recorded very low decadal growth rates of 0.13% and 0.18%, respectively (see Table 11). The second episode took off from the 1990s when the growth rate shot up phenomenally to reach 5.37% per annum during that decade. The growth rates have remained at high levels during the subsequent two decades as well. The within-sector component has played a significant role in this high labor productivity growth, except during the fourth decade (2001–10). Structural transformation has also played a significant role, especially in the last two decades.



DECOMPOSITION OF GROWTH AND CONTRIBUTION OF MAJOR SECTORS IN VIETNAM.

Vietnam	Sector	Total productivity	Within	Static	Dynamic
1971–80	Total	0.131	0.387	0.087	-0.343
	Agriculture	0.028	-0.026	0.071	-0.017
	Industry	0.12	0.183	0.022	-0.085
	Services	-0.017	0.229	-0.006	-0.240
1981–90	Total	0.182	-0.267	0.543	-0.094
	Agriculture	-0.188	-0.372	0.204	-0.019
	Industry	0.353	-0.039	0.424	-0.032
	Services	0.016	0.144	-0.085	-0.042
1991–2000	Total	5.372	4.935	0.52	-0.083
	Agriculture	0.571	0.892	-0.308	-0.012
	Industry	2.614	2.937	-0.237	-0.085
	Services	2.187	1.107	1.066	0.014

(Continued on next page)

Vietnam	Sector	Total productivity	Within	Static	Dynamic
2001-10	Total	4.225	1.143	3.309	-0.227
	Agriculture	0.479	1.134	-0.623	-0.032
	Industry	1.705	0.328	1.402	-0.025
	Services	2.041	-0.318	2.53	-0.170
2011-19	Total	4.774	3.371	1.562	-0.159
	Agriculture	0.2	0.962	-0.718	-0.045
	Industry	1.99	1.392	0.653	-0.055
	Services	2.584	1.016	1.627	-0.059

(Continued from previous page)

High growth, driven by the within-sector component during 1991–2000, came mostly from the industry sector, though services did not fare too badly either. During 2011–19, however, the contributions from these two sectors were more comparable, although industry continued to play a bigger role. On the other hand, the period 2001–10 can be characterized as that of structural-transformation-driven high growth. The Vietnamese economy experienced a large structural transformation during this period, mainly led by the services sector, followed by the industry sector.

During the period 1991–2000, the industrial subsector that strongly pushed up the within-sector component was mining, with very moderate contribution coming from manufacturing (see Table K in Appendix). There were no services subsectors that stood out during this period. During 2011–19, however, manufacturing was the industrial subsector that drove up the within-sector component. Within services, both WRT and CSPS did well to contribute to within-sector growth during this period. Structural-transformation-led growth in the period 2001–10 was driven very significantly by the financial services subsector within services, and also moderately by the manufacturing sector within industry.

Correlates of Productivity Growth and Structural Transformation

In this section, we examine some of the factors that are expected to drive aggregate labor productivity growth, either through within-sector productivity growth (fundamentals) or/and through structural transformation. The analysis below helps us understand whether these factors correlate with labor productivity growth in our sample of Asian LMICs and whether they work through within-sector growth or structural transformation or both. The variables that we include cover macroeconomic factors (trade, savings, investment, FDI, etc.); demographic factors (life expectancy, dependency ratio, urban population); and infrastructure variables (education, financial development, transport, etc.). It may be noted that all these variables are expected to have positive relationship with the productivity growth variables, except for the dependency ratio, which should exhibit a negative relationship.

Bangladesh

In the case of Bangladesh, we find that all factors show expected correlations with aggregate labor productivity growth (see Figure 12). They also exhibit similar correlations with the within-sector productivity growth. The results are more varied and surprising when we look at their relationship with structural change.





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We find that macroeconomic and demographic factors have no significant correlations with structural change. Oddly, increases in infrastructure seem to be negatively correlated with structural transformation.

Cambodia

We observe that in Cambodia, all the three factors, i.e., macroeconomic, demographic, and infrastructural, exhibit expected correlations with aggregate labor productivity growth (see Figure 13). These factors also depict similar correlations with productivity growth within sectors. However, correlations with structural transformation are not on expected lines. Among the macroeconomic factors, only trade-to-GDP increments seem to correlate positively with structural changes. Among demographic factors, only urban population share shows expected positive correlation with structural transformation. Similarly, within infrastructure, only air transport shows expected positive correlation with structural transformation. On the contrary, the bank deposits-to-GDP ratio seems to be negatively correlated with structural change.

India

In India, all factors seem to show expected relationship with aggregate productivity growth (see Figure 14). The only exception is the government education expenditure, which displays a negative relationship. Similarly, we observe strong correlations with productivity growth within sectors. However, most of the factors fail to display any significant correlation with structural transformation.

Indonesia

We observe that in Indonesia, most of the explanatory variables do not exhibit expected correlations with aggregate productivity growth (see Figure 15). Other than domestic savings and FDI inflows, none of the other drivers show expected positive correlations. We observe a similar stark result in the case of within-sector growth, with educational expenditure being a notable exception. As far as structural change is concerned, we see that demographic and infrastructure-related factors do not exhibit any significant correlation, and it is a mixed picture with macroeconomic variables.

Lao PDR

In Lao PDR, all three drivers of growth, i.e., macroeconomic, demographic, and infrastructure, have expected correlations with the aggregate labor productivity growth (see Figure 16). We also see that all the macroeconomic factors show positive correlations with within-sector growth. However, except for the age-dependency ratio, all other demographic factors show unexpected results with the within-sector growth. Infrastructure-related factors also show positive correlations, with the notable exception of financial development. All of these factors also depict strong correlations with structural transformation.

Mongolia

In Mongolia, all the macroeconomic and infrastructure characteristics seem to correlate with productivity growth in line with our prior expectations (see Figure 17). The only notable exception is educational expenditure, which shows a negative correlation. Interestingly, none of the demographic factors seem to be significant drivers of productivity growth or structural transformation. We also observe expected correlations between most of the factors and within-sector growth and structural change. Oddly, domestic savings and education expenditure seem to show negative correlations with structural transformation and within-sector growth, respectively.



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Nepal

Nepal does not exhibit a strong correlation between the various drivers and aggregate productivity growth (see Figure 18). For instance, among the macroeconomic factors, gross capital formation and trade show expected positive correlations, while surprisingly, trade in services and savings depict negative correlations with aggregate productivity growth. Most of the demographic factors show a positive relationship. Noticeably, bank deposits seem to correlate positively with aggregate growth, but oddly, education expenditure displays a negative correlation. As far as within-sector growth is concerned, although the demographic factors show expected correlations, both macroeconomic and infrastructural factors seem to show mixed results. While gross capital formation, FDI, financial development index, and bank deposits ratio show expected signs, other factors report negative correlations with the within-sector growth. Structural transformation is seen to be positively correlated with all the main drivers except FDI inflows, gross capital formation, age-dependency ratio, and financial development.

Pakistan

There are significant differences in the nature of relationship between various factors considered in this exercise and aggregate productivity growth in Pakistan (see Figure 19). While there are positive correlations between productivity and most of the macroeconomic factors (with the notable exception of FDI inflows), none of the demographic factors seems to be correlated with labor productivity growth. Among the infrastructure-related variables, as expected, educational expenditure and air transport show positive relationships, whereas financial development index and bank deposits ratio show negative relationships. Most of the factors also display odd and inconsistent relationships with within-sector growth. Although the demographic factors show expected signs, among the macroeconomic and infrastructure characteristics, FDI inflows, gross capital formation and financial development display unexpected negative correlations with some of the factors like trade and transportation. All the demographic factors also show unusual negative correlations with structural transformation.

The Philippines

In the Philippines, we observe that the aggregate productivity growth seems to show expected relationships with most of the factors considered here, with the exceptions of gross domestic savings and education expenditure, which surprisingly depict negative correlations (see Figure 20). Similar relationships are also seen in the case of within-sector growth. As far as growth due to structural transformation is concerned, as expected, it displays significantly strong correlations with the demographic and infrastructural factors. However, with macroeconomic factors, the relationship is either insignificant or unexpected.

Sri Lanka

Aggregate productivity growth in Sri Lanka seems to have expected and strong correlations with almost all the factors driving growth, except for urban population share and educational expenditure, which show negative correlations (see Figure 21). These factors exhibit similar correlations with within-sector growth with the same exceptions. However, their relationship with structural transformation is less clear. Most macroeconomic factors do show a positive correlation, with only gross capital formation oddly reporting a negative correlation with structural transformation. By contrast, most demographic and infrastructural factors fail to show any significant correlation with structural transformation, with the exception of educational expenditure.

















Vietnam

Aggregate productivity growth in Vietnam shows expected positive correlations with most of the growth characteristics, with the notable exceptions of trade in services and government education expenditure exhibiting negative correlations (see Figure 22). Similar correlations are observed with productivity growth within sectors. Here, however, bank deposits and trade in services are the ones showing unexpected negative correlations. Looking at the relationship between structural transformation and drivers of growth, we see that the correlation is mostly as expected in most cases. However, FDI inflows and education expenditure exhibit negative correlations with structural transformation.





Sectoral and Subsectoral Productivity Convergence

While early theories of structural transformation focused on transfer of labor from lowerproductivity to higher-productivity sectors, current definitions also emphasize that the recipient sector should not only have a higher level of productivity but also high productivity growth. Transfer of labor to such sectors would allow structural transformation to be sustainable, instead of slowing down over time. One way to identify such sectors is to test whether they are converging to global productivity frontiers. Sectors that exhibit such convergence would be drivers of sustainable structural transformation, while other sectors may have spurts of structural transformation that slow down over time.

In order to analyze this phenomenon for the countries in our sample, we adopt the clubconvergence framework described in the methodology section of the third chapter. Our sample includes the 11 countries of our interest, as well as Japan and the Republic of Korea (ROK), representing the global frontier. In order to apply the Phillips and Sul [56] or log-t test on our data, we first separate the trend component of each of our labor productivity variables using the Hodrick–Prescott (HP) filter. We exclude the mining subsector from our analysis since it has a lot of missing data.¹ Thus, the industrial sector in our analysis is created by adding up the subsectors manufacturing, electricity generation, and construction. This implies that for this analysis we have three sectors: agriculture, industry, and services.

Club Convergence at the Sectoral Level

Applying the log-t test to each of the three aggregated sectors (agriculture, secondary, and services), we find that absolute convergence is rejected for agriculture and industry but not for services. Table 12 reproduces the results from the test.

TABLE 12

LOG-T TEST BY SECTOR.

Sector	Coefficient	SE	T-stat
Agriculture	-0.5151	0.0385	-13.3706
Industry	-0.8085	0.0100	-91.0697
Services	0.1726	0.0739	2.3360

Note: T-statistic less than -1.65 indicates rejection of absolute convergence at the 5% level.

Next, we dive deeper into the above result to examine whether we find club convergence in each of the three sectors. Using the procedure developed by Phillips and Sul [56], we indeed find the existence of clubs in the three broad sectors. Table 13 below classifies each country in our panel by the club it belongs to in each of the three broad sectors. Agriculture and Industry have two clubs whereas services only has one.

¹ The HP filter and log-t test do not work with missing data.

TABLE 13

CLUB CLASSIFICATION BY SECTOR.

Country	Agriculture	Industry	Services
Bangladesh			
Cambodia			
India			
Indonesia			
Japan			
ROK			
Lao PDR			
Mongolia			
Nepal			
Pakistan			
Philippines			
Singapore			
Sri Lanka			
Vietnam			
Club 1	Club 2	Divergent unit	

These results indicate that for the agricultural sector, a large number of the LMIC countries (club 2) are not converging to the global production frontier in club 1. A similar result holds for the industry. However, we find absolute convergence in the services sector, implying that structural transformation for this sector may be sustainable. Graphs for the average productivity time path of each club by each sector are given in Figure 23.



Club Convergence at the Subsectoral Level

Next, we test for absolute and club convergence at the subsectoral level to understand which subsectors may be driving these results. Since agriculture does not have subsectors in our data, we begin with the industrial sector. Applying the log-t test to its four subsectors, we obtain the results as given in Table 14.

TABLE 14

LOG-T TEST BY SUBSECTOR (INDUSTRY).

Subsector	Coefficient	SE	T-stat
Manufacturing	-0.9387	0.0098	-95.3764
Electricity generation	-0.2160	0.0033	-65.0130
Construction	0.5107	0.1221	4.1825

Note: T-statistic less than -1.65 indicates rejection of absolute convergence at 5% level.

Within the industrial sector, t-statistics from Table 14 show that absolute convergence is rejected for manufacturing and electricity generation but not for construction. Testing for the existence of clubs, we find three clubs for manufacturing, two clubs for electricity generation, and one club for construction, as shown in Table 15.

TABLE 15

CLUB CLASSIFICATION BY SUBSECTOR (INDUSTRY).



This is consistent with the results from the log-t test in Table 14 wherein absolute convergence is not rejected for construction. It seems, therefore, that the overall lack of absolute convergence for industry as a whole is being driven by club convergence within manufacturing and electricity generation, which strongly reject absolute convergence as seen by their t-statistics of -95.37 and -65.01 in Table 14. Thus, structural transformation may be sustainable in construction, but not in manufacturing and electricity. Graphs for the average productivity time path of each club by each subsector in the industrial sector are given in Figure 24.



Within services, we observe that absolute convergence is rejected only for the subsector WRT (Table 16). Does club convergence exist for service subsectors? Table 17 shows that it does but only for WRT, which has 1 club except for Nepal which is a divergent unit and thus, a club by itself. The remaining subsectors TSC, finance, and CSPS all have one club. This is consistent with the log-t test results given in Table 16, wherein absolute convergence is not rejected for these three subsectors.

TABLE 16

LOG-T TEST BY SUBSECTOR (SERVICES).

Subsector	Coefficient	SE	T-stat
WRT	-0.1666	0.0550	-3.0295
TSC	0.5104	0.0143	35.6589
Finance	0.1395	0.0435	3.2081
CSPS	0.5306	0.0800	6.6290

Note: T-statistic less than -1.65 indicates rejection of absolute convergence at 5% level.

TABLE 17

CLUB CLASSIFICATION BY SUBSECTOR (SERVICES).

Country	WRT	TSC	Finance	CSPS
Bangladesh				
Cambodia				
India				
Indonesia				
Japan				
ROK				
Lao PDR				
Mongolia				
Nepal				
Pakistan				
Philippines				
Sri Lanka				
Vietnam				
Club 1 Divergent unit				

Graphs for the average productivity time path of each club by each subsector in the services sector are given in Figure 25.



From the results of this section, it seems clear that for the Asian LMIC countries under consideration, structural transformation to the services sector has been a sustainable process. However, for most of them, structural transformation to the secondary sector has led to 'productivity traps' or clubs with lower levels of productivity growth paths. Moving to subsectors, construction and most of the services subsectors have led to sustainable structural transformation. However, the manufacturing sector has not been very promising from the point of view of sustainable structural transformation for a lot of these countries.

POLICY RECOMMENDATIONS FOR PRODUCTIVITY-ENHANCING STRUCTURAL TRANSFORMATION

Having discussed the decomposition of labor productivity and the contribution of structural transformation, it becomes relevant to focus on the major policy practices of the sample economies for the past four decades. This is to pinpoint the driving as well as deterring factors for the productivity levels of the respective countries. The next section presents a country-wise analysis while relating the productivity performance with the intertemporal economic structure as well as the countries' policy priorities since the 1970s.

Bangladesh

The labor productivity growth of the economy has been impressive in the recent past decade, partly linked with increased access to finance for specialized industries, mainly the labor-intensive ones such as the textiles subsector. The private-credit-to-GDP ratio had doubled in the recent past decade compared with the level of 1990s (see Figure 2A), complemented by higher investment rate of the country (increasing from 20% in 1990s to 30% during 2011–19). This was accompanied by massive domestic savings, going up from 24% to 38% in the same period (see Figure 2B). Increased manufacturing base with continuous upsurge in investment might have helped the country realize the scale economy to achieve higher labor productivity growth post 2000. The construction sector plays a strong role in the economy amidst continued urbanization, with increasing personal income and a government-driven boost toward massive investments in large-scale infrastructure projects.

Our computation of structural transformation finds the average labor productivity growth of 'between sector' at 0.9% during 1970-2019 being lower and stagnant in past two decades as compared with the level of 1980s. The contribution of structural transformation in labor productivity has remained around one-fifth since 1990s (see Figure 1). The country has noted a structural shift with agriculture's share coming down from two-fifths of the GDP in 1973 to 16% in 2017, and industry's share almost doubling to 31% in the same period [57]. As noted in Figure 1, the country had a lower contribution of structural transformation, mainly on account of lacking in major drivers such as lower access to GVCs, lack of diversified exports, limited foreign investment, higher tariff barriers, discouraging business environment, sub-potential level of educational attainment, etc. Bangladesh's liberalization has created the scope for exports mainly in labor-intensive industrial segments [58] and restrained the economy from enjoying the fruits of export diversification [18]. The country's exports have increased sixfold since 2000 and doubled post 2010, mainly driven by garments exports, which account for more than 80% of total exports [59]. In one of the studies in the context of south Asian countries, Naher [60] has noted that human capital is the prime factor for productivity-led growth, but the country has allocated little funds for such purpose. The educational expenditure by the government has remained less than 2% of the GDP in Bangladesh (see Figure 2C).

The economy has suffered on account of lower participation in GVCs as is evidenced from the lower exports share, which came down to 15% of the GDP in 2019 from 20% in 2012. Moreover, it was concentrated toward lower-value-added sectors such as garments, for almost four decades, despite the industrial uproot since 1963. This is more obvious when comparing with the experiences of the ROK and Vietnam that have recorded higher productivity-led growth in a time span of two decades. Their growth is attributed to export diversification toward high-value-added exports like steel, machinery, chemicals, and electronics products, i.e., the sectors that are among the top sectors in global trade, while inviting foreign MNCs.

The possible factors for Bangladesh include sluggish private investment, mainly constrained by credit to SMEs and deterioration in business environment (slipping to 168th position in 2020 compared with 65th position in 2006), and a relatively closed economy with tariff barriers that are twice the average for lower-middle-income countries. Although private credit has increased significantly in the economy (see Figure 2A), the scale of credit access is still much lower compared with the NIEs of Asia. The country has not remained much attractive to foreign investment due to lower compliance, quality, and reliability. Foreign partnership has been low, with FDI as percentage of GDP remaining much below 1%, except for the recent past decade (see Figure 2D). It is pointed out that countries with higher labor productivity such as Vietnam and Singapore have managed to invite foreign capital from neighboring countries such as Japan and the ROK, particularly in highvalue sectors such as electronics, wherein Bangladesh has lacked considerably. Bangladesh was ranked 100th on Logistic Performance Indicators in 2018 compared with 39th position of Vietnam. FDI is key to exports diversification and the same can be utilized by Bangladesh. For labor productivity, the focus should be on quality of human capital through deepening of technical and managerial skills; firm commitment to openness; and setting up of conglomerates in line with models such as Korean Chaebols, Taiwanese contract manufacturers, and Vietnamese conglomerates to drive the phenomena of exports-led growth.







Cambodia

The Cambodian economy has experienced various transitions of promoting the mixed economy model before 1970s (state as well private ventures); gradual movement toward laissez faire till mid–1970s; and again, moving toward closed economy till late 1980s while mainly promoting the agrarian economy and deindustrialization with destruction of private capital. Being more socialist, the country has been limited in availing fruits of GVCs in terms of access to global markets (through exports) as well as technology transfer (through foreign investments). Also, the country got confronted on grounds of removal of humanitarian aid and credit flow from the erstwhile Soviet Union; monetary financing of budgets causing massive inflation (70% in 1989 to 200% in 1992); and erosion of state revenues amidst higher unit costs, thereby limiting public investment expansion. These factors have resulted in a lower factor productivity on both fronts, i.e., within and structural, as is observed in Figure 3.

Since 1990s, the country has adopted the gradual withdrawal from agrarian economy and shift toward exports of manufactured goods and services, along with promotion of open economic environment. These reforms have included liberalization, tax exemptions for exports and intermediate goods imports, joining of foreign markets through ASEAN FTA and WTO, termination of non-viable state enterprises, incentivizing foreign investment, and many more.¹ As an outcome, the country realized an average growth rate of around 7% in the first decade of the 21st century on account of its endowment in tourism; industrial expansion, especially in garments and improved infrastructural spending for residential and hotel constructions.² The growth was supported by export-oriented policies (increasing from 0% to 65.0% of GDP in 2007) and attracting FDI into labor-intensive industries, particularly garments or, more recently, natural resources such as gold and natural gas [62, 63]. The growth experience of the country has been consistent with absorption of manpower in productive sectors as labor productivity reached an all-time high of 4.6% during 2001-10, with structural transformation contributing around twofifths of the labor productivity (see Figure 3). The numbers of SMEs increased from 25,000 in 1993 to 36,000 in 2009 registering a growth rate of 44% in 10 years. The Cambodian economy has maintained a significant jump in trade ratio, including services, in the beginning of 21st century, a time when labor productivity almost doubled compared with the previous period (see Figure 4D). Cuyvers, et al [64] reported that the increasing foreign equity participation led to increases in labor productivity. However, Seng [65] noted that the potential drivers of productivity in Cambodia included political stability; role of the government; hard work and skillsets; and exports-oriented strategy. Kea, at al [66] reported that irrigation, production techniques, and amount of agricultural support staff were the prime factors contributing to the efficiency of rice production, a dominant crop in Cambodia.

The increase in productivity growth could not be sustained as the financial system could not channelize the large chunk of funds toward productive investment purposes. The investment rate stood at only 20%, despite the credit-to-GDP ratio increasing from 14% during 2001–10 to 71% during 2011–19 (see Figures 4A and 4B). Labor productivity has moved in a direction opposite to the inflation rate (see Figure 4F). The lower investment, coupled with high inflation, indicates supply-side bottlenecks in the economy, thereby restraining higher labor productivity growth.

¹ By the end of the first decade of 21st century, 96 of the total establishments were from the private sector. State enterprises accounted for only 3% and absorbed only 8% of the manpower [61]. The inflow of FDI increased from just USD124 million in 1993 to USD520 million in 2009 and to over 1,500 million in 2012.

² Share of textiles, wearing apparel, and footwear in manufacturing value added has grown from barely 20% in 1993 to around 60%.

The rise in structural productivity during 1991–2010 can be linked to the channelization of agriculture workers toward micro enterprises (92% of the total establishments as of 2011 absorbing almost half of the workforce). However, the contribution of structural transformation has stagnated and declined in the past decade, which may be linked to lesser upgradation of micro enterprises to medium or large enterprises. So, a policy support for scale expansion through enhanced foreign participation and linkage with GVCs appears a viable solution for enhanced productivity linked to structural transformation. As of 2011 statistics, 450 out of the total 612 large enterprises were engaged in textiles, footwear, and rubber; plastic; cement; metals; and casting sectors. Less than 30 enterprises were involved in high-value-added sectors such as machinery; chemicals and medicines; and vehicles. Setting up conglomerates so as to convert micro enterprises into medium enterprises (0.7% of the total) is a key policy area for the economy.

The existing empirical literature on labor productivity hails that the lack of institutional supports for policy mechanism, lack of skilled manpower and credit facilities, poor research facilities, and local manufacturing of equipment at small scale are major deterrents for labor productivity growth in the country. Therefore, a policy support toward infrastructure investment, especially in tourism; a boost for the garments industry; increased role of the government in skillsets development; and expanding the horizon of small-scale production through global integration can contribute to the productivity growth of the country.







India

Labor productivity growth in India had been very low during 1970s (0.5%), but increased to 3.1% in 1980s, largely driven by within-sector growth (see Figure 5). This finding is in line with Mallick [67] reporting the labor productivity growth for India at 2.9% during 1980s. The lower level of structural transformation in India during 1970s can be linked with relatively lesser contribution by labor-intensive manufacturing as had been the case with NIEs of Asia [68]. The labor productivity growth continuously increased during 1990 (3.4%), with increasing contribution of structural transformation (above 40%).³ This was a period when India had carried out the economic reforms for opening up the economy in terms of trade, foreign investment, and financial deregulation. During 2000s, the labor productivity continued to rise, but the structural component could contribute marginally. This phenomenon might have happened on account of structural shift toward services and division of manufacturing into formal and informal sectors. In the formal sector, a small numbers of firms operated with protected workforce. The informal sector deployed a huge workforce but remained beyond the incentive schemes like social security, employment protection, and other benefits [69]. Besides, the problem of credit market imperfections restrained small and medium enterprises from exploiting the full potential of manufacturing activities [68]. Moreover, studies underline that the capital deepening has been the major contributor to gains in labor productivity in India, with the country experiencing a significant jump in capital investment in the early phase of 21st century [70, 71]. The empirical studies also confirm the role of structural change, globalization, and human capital in contributing to the labor productivity growth in India [67, 72-74].



³ Mallick [67] reports a labor productivity growth of 3.82% in 1990–2000 and 6.11% in 2000–10 for India.





In India, the sporadic productivity growth from structural change is mostly from the services sector. The industries prone to more ICT-enabled mechanisms, such as business and financial services, have been the leading sources of productivity growth post the global financial crisis [75].

Indonesia

Labor productivity growth in Indonesia was significantly high (4.8%) during 1970s, backed by strong structural transformation that contributed more to the growth than the within-sector productivity growth component (see Figure 7). A large part of this growth stemmed from the industrial sector (2.7%), with a significant structural transformation (2.15%) happening in this sector. This is consistent with other contributions to the literature that suggests higher growth post 1968 on account of open economic environment [76]. Also, the manufacturing sector's share increased from 8% in 1967 to 13% in 1982 and then doubled in 1996 (26%) and reached 27% by 2009 [77].

During the 1970s, the country invited significant foreign investment amounting to 1.8% of the GDP (see Figure 7). It is worth noting that the economy was significantly supported by the mining sector during the 1970s, with the sector accounting for 17% of the GDP and 70% of the total exports, on account of global oil boom. During 1980s, the momentum of productivity was lost, mainly due to a significant decline in structural transformation, which appeared negative for the industrial as well as the services sector. The slowdown can be linked to the global recession of 1980 (felt by Indonesia belatedly in 1982); and the decline was very deep as the manufacturing sector's output growth reduced to 0.8% in 1982 from 8% per annum in the 1970s [78]. Foreign investment came down to 0.5% of the GDP compared with 1.8% in the previous decade.

The economy got adversely affected during the Asian financial crisis. Poor infrastructure, especially electricity supply, had been a key constraint for productivity growth. Also, the large exports dependence in natural resources offered little space for the country to incentivize industrialization, implying that the so-called 'Dutch Disease' was a deterrent for productivity growth in Indonesia [76]. After the Asian financial crisis, the economy showed an upsurge in labor productivity growth as there was gradual increase in foreign partnership and a shift toward diversified non-oil exports. Our computation finds that stagnant labor productivity growth (marginally higher than 3%) and structural transformation contributed less than 30% in Indonesia for the last two decades (see Figure 7). This finding goes in line with the existing literature pointing out that structural change contributed only less than a third of the overall labor productivity growth, or 1.0 out of 3.4 percentage points per annum during 2000–18 [79].

This slower pace of labor productivity growth can be linked to the limited positive impact of foreign investment on neighboring industries within the region and reallocation of resources (employment and credit) toward relatively unproductive service subsectors, particularly wholesale and retail trade, bypassing the manufacturing sector in response to the shift toward services [80–92]. Also, the larger firms have been lackluster whereas the small and medium size firms noted stagnant productivity amid diseconomies of scale [81]. It should be noted, however, that Indonesia is far behind other ASEAN countries on the openness measures: 43% in trade-to-GDP; 22% in FDI stock-to-GDP, and 6% in FDI inflows-to-gross fixed capital formation (GFCF). Patunru and Rahardja [83] attribute this problem of Indonesia to its increased protectionism amidst intensified regional competition for FDI.



Lao PDR

The economy had low levels of labor productivity growth during 1970–90 and significant jumps during 1990s and 2000s (see Figure 9). Structurally, almost half of the output in the economy came from agriculture till the late 1980s, with a much smaller share coming from the industrial sector (8.3%). With the launch of open economic reforms, the country has achieved significant growth rates well above 6%, except during the Asian financial crisis. As a result, there has been a structural shift toward the industrial sector that is now contributing about one-fourth of the GDP, with a corresponding fall in agricultural share (down to about 30%). The country has experienced a significant jump in exports (almost fourfold between 1996 and 2010). However, total factor productivity (TFP) growth contributes negligibly to the output growth (around 0.03%), according to Nolintha and Yee [84]. This may be linked to the economy relying mainly on primary products, which, studies show, lead to less gains from structural transformation. Natural resources comprise the major area of exports, and the mining sector's share in GDP increased from 0.2% before 2002 to an average of 10% in the period between 2006 and 2010 [84].

The manufacturing sector in Lao PDR appears to struggle to access skilled workers amidst lower educational attainment [85]. Moreover, manufacturing firms fail to attract or get workers on account of low capital base and investment-discouraging factors. The ease-of-doing-business ranking had been poor and deteriorated further to 152 in 2019 [86–98]. Other factors impeding investment include higher tax rates with complex regulations, lower access to financing, and inadequate supply of infrastructure [89, 90].




Mongolia

Labor productivity growth in Mongolia exhibited a U-shaped pattern during 1971–2019 with higher values in 1970s, then falling till late 1990s, and again upsurging in the past two decades (see Figure 11). This needs to be understood in terms of external shocks such as the erstwhile Soviet Union's collapse and termination of its aid, the Asian and Russian economic crises in 1997 and 1998, as well as the adoption of the market-oriented reforms in 1991 with the opening up of the economy. Mongolia's economy experienced massive challenges during the early phase of transition with declining crop production due to supply-side bottlenecks of fertilizers and equipment. Also, the problems of obsolete machinery as well as shortage of intermediate goods and lack of transport facilities restrained the industrial sector from expanding while causing the problem of huge inflation (more than 200% during 1991–94).

After mid-1990s, the country witnessed a mild recovery with stable investment rate, diversified trade destinations, and declining inflation [91]. Evidence suggests that the early market-oriented reforms, including establishment of an open trade regime and a floating exchange rate, significantly helped the recovery. TFP has turned positive and increased from the mid-1990s as resource efficiency gains induced by structural reforms and a more competitive economy began driving growth [92]. In line with other literature for Mongolia, Cheng [93] decomposed the output growth and found that during 1980–94, the TFP contribution was negative to the tune of -1.17% with total growth of 7.11%. TFP growth deteriorated further in the early phase of transition but turned positive (1.72%) during 1995–2001, albeit with lower aggregate growth of 2.54%.⁴

The TFP gain is noted with the transition of economy mainly on ground of stabilizing policies aimed at unearthing the underindustrialized sector. The lower level of TFP growth in the economy

⁴ There was a negative TFP growth of -1.76% during 1980-94, -1.98% during 1985-99, and -3.58% during 1990-95.



can be linked to its economic structure where mining has remained a primary pillar of economic growth, contributing around 30% of the GDP and 80% of exports [94]. It is noted that with the structural reforms of privatization and liberalization, various enterprises, including viable and nonviable, had closed down [95]. Experiences suggest that a country depending largely on primary products would have limited gains from structural transformation. The Mongolian structural transformation has remained limited, with the share of manufacturing stagnating below 10% for the past two decades, though the shares of industrial and services sectors have increased [96].



Nepal

Labor productivity growth in Nepal had remained low during 1970s (0.35%). However, an upsurge is noticed in the next decade (3.5%). This momentum was lost during 1990s, with the growth declining to 1.8%. The growth went up to 2.7% in the subsequent decade and settled at 3.4% during 2011–19 (see Figure 13). Thus, labor productivity growth has witnessed a volatile trend, with upsurge during 1980s and 2010s but slowdown during 1990s and 2000s. The relatively lower level of labor productivity growth during the 1990s and 2000s can be linked to the periods when the country experienced Maoist insurgencies, the people's war, political instability, ethnic movements, earthquake, and economic blockade. These factors have been termed with adverse impact on TFP growth of Nepal's FDI firms during 1992–2018 [97]. The country has experienced a stagnation in the manufacturing sector (14–15% share since 2000) and has a larger dependence on the primary sector, at around one-third of the GDP [98].

Generally, an economy that is over-reliant on natural resources with stagnant manufacturing, gains little from a structural transformation. The country has lagged behind comparable countries in terms of foreign investment, industrial growth, and investments in productive assets, partly due to low quality and limited transports, that too at higher costs.⁵ The lower contribution of structural

⁵ The cost of exporting and importing a container is approximately 20% more than the south Asian average.





transformation can be linked to a very large outward migration from the country (evidences suggest that one-third of the GDP is from remittances sent home). Higher energy costs on account of a more regulated electricity sector forcing the independent producers to align with the Nepal Electricity Authority is one of the critical factors discouraging private investment [37]. Studies underline the role of remittances and rapid urbanization as key drivers of productivity growth in the economy.

In the beginning of the 21st century, Nepal noticed a downfall in export ratio (of GDP) whereas the import ratio has remained at more than double the size of the export ratio, thereby suggesting a problem with the internationalization of economy [99]. There has been much delay in promoting industrialization in terms of adopting laws pertaining to industrial expansion through foreign investment, establishment of special economic zones, electricity regulation commission, etc. [98]. The effect of higher education on TFP is quite contradictory, with a negative impact in the short run and a positive impact in the long run.



Pakistan

The labor productivity of Pakistan has been decreasing since 1980s. Even the contribution of structural transformation has remained negative during the past decade and this finding goes in line with López-Cálix, *et al* [100], highlighting the role of factor accumulation in growth processes rather than that of productivity. Javaid and Ahmed [101] have noted that 0.7% of overall growth of 4.7% during 1982–2016 was contributed by TFP and recommended an increase in the scale of human capital as its impact on TFP had been negligible in explaining the TFP growth. Furthermore, lack of investment in technology has also restrained productivity growth in Pakistan [102]. In terms of drivers of productivity, macroeconomic stability, foreign direct investment, and financial sector development play important roles in the increase of TFP. In a majority of these indicators, the performance of Pakistan's economy has been very poor since 2000s.





As per Figure 16B, it is evident that Pakistan has experienced a lower level of investment (blow 20%), which has slowed down since the beginning of the 21st century. The country has failed to sustain the level of financial development as reflected in the huge decline in bank credit (see Figure 16A). On the external environment front, there has been a downfall in trade ratio as well as foreign investment (see Figure 16D). Pakistan's exports fall under relatively unsophisticated export activities and are suitable for few alternative uses that are yet to be exploited, thus limiting the opportunities for jumping to new activities [103].



In case of Pakistan, the manufacturing sector's share in GDP had stagnated at around 15% for almost three decades during 1970–2004. Investment has slowed down as well, and this may be a major cause for lower labor productivity growth rate in Pakistan.⁶ Reallocation of labor to industry accounted for only 17% of the intersectoral increase in labor productivity growth, while the remaining 83% was due to reallocation of labor to services. This puts the economy in a 'structural burden' state, which is a term indicating that labor is being largely absorbed in the services sector (assumed to be relatively less productive) and hence is bypassing the manufacturing sector.

⁶ Labor productivity growth was 2.6% during 1973–2002, largely contributed by intrasectoral growth (83% of the total growth).





The Philippines

The economic structure of the Philippines with an industrial share of around 40% during 1980s was similar to that in Malaysia or the ROK. However, it lacked the dynamism of labor productivity growth in these more developed Asian economies. We find that the growth rate of total labor productivity in the Philippines fell sharply from 2% in 1970s to -0.1% in 1980s (see Figure 17). This was mainly due to negative growth rate in the industrial sector, particularly in manufacturing and construction. This finding is in line with the existing literature estimating the TFP growth during 1967–2000 and reporting that it had largely been negative for three decades before turning into a positive growth of 0.92% during 1998–2000 [104]. This outcome may be linked to resource-intensive manufacturing, which accounted for over 50% of total manufacturing output during the 1980s.

In the first decade of the 21st century, labor productivity growth again rose above 2%, perhaps due to more success with manufacturing with high economies of scale and higher technology accounting for a little over 50% of total manufacturing value added during 2001–03. With the gradually rising share of scale-intensive and differentiated goods, the share of resource intensive manufacturing also came down to 36% by 2003 [105]. In the decade of 2011–19, productivity growth picked up and rose to 4%. Similarly, TFP growth, which was 0.11% during 1989–92, gradually increased to 2.5% during 2010–16 and has contributed two-fifths of the overall output growth [106]. Investments in education, more government expenditure for improving human capital, greater openness of the economy, and macroeconomic stability are important sources of TFP growth in the Philippines [107].

The role of structural transformation has been rather limited in the Philippines. Together with low levels of within-sector growth, this has led to relatively low labor productivity growth for the whole period. Overall, this is related to the slow industrialization, especially in manufacturing. The country had initiated efforts for the development of relatively high-productivity sectors such as electronics, but the desired outcome could not be realized on account of persistent underprovisioning of basic infrastructure and weak business and investment climate [108]. The failure of the country's industrialization program is also related to below-potential levels of technological investments and limited access of technological inputs in rural industrialization [109].







Sri Lanka

Starting from 1970s, Sri Lanka had recorded stable average growth of 2.6% in labor productivity till 1990 (see Figure 19), largely driven by the within-sector productivity in the majority of sectors, except for the industrial sector. Sri Lanka paid significant attention to labor-intensive industries, starting with the opening of garments sector in 1977 and followed by the launch of the government's 200 Garment Factories Program. The availability of cheap labor, along with access to global markets through a 'multi-fiber arrangement' led to FDI-induced technology and human capital transfer during the early 1980s and also supported rural industrialization. This is evident in the industrial sector accounting for 28% share during 1981.



The next decade (1991–2000) showed a turnaround with a higher overall labor productivity growth of 3.12%, with almost one-third being contributed by structural transformation. During 1990s, garment exports accounted for more than 40% of total exports. This may be linked to policy variation with a mix of both protectionist and liberalization strategies and a greater focus on import substitution in the early 1970s as well as two waves of liberalization in the early 1980s and 1990s [110]. Until the beginning of the 2000s, the economy focused on garment exports and could not materialize the shift from labor-intensive exports like garments to more complex capital- and technology-intensive exports (like electronics) as has been practiced by the four east Asian 'dragon economies' of the ROK, the ROC, Singapore, and Hong Kong.

The labor productivity growth continued to rise in the first two decades of the 21st century and was close to 4% during 2001–19. This was mainly driven by within-sector growth in the services sector. The increase in tourism after the end of civil war was one of the important factors behind the improvement of the services sector. Moreover, exports of services also picked up significantly post 2009. Services' exports accounted for one-fifth of the total exports in 1981, and the share jumped to two-fifths by 2018.





While productivity growth has improved in the last few decades in Sri Lanka, it has not reached the higher rates that some of the other Asian countries have reached. The contribution of technological change to productivity has declined post conflict on account of a shift to investment in low yielding infrastructure projects [111]. Out of the total nominal gross domestic capital formation, 38.4% was used for government infrastructure development projects during this period, compared with 22.3% during the previous periods, as per the Central Bank of Sri Lanka data for 2011, 2014, and 2015. Moreover, infrastructure investment by the government has not led to complementary investment by the private sector on account of poor institutional support as well as absence of radical changes in policy [112]. Finally, structural transformation has contributed very marginally to productivity growth during the last two decades. This may be related to the long civil war till 2009 and temporary external shocks like the 2004 Boxing Day tsunami.

Vietnam

Vietnam had recorded very low average labor productivity growths of 0.13% and 0.18% during 1970–90. Growth picked up significantly in 1990s, when the average growth was observed to be 5.37% per annum (see Figure 21). The industry sector was the largest contributor followed by services. The within-sector growth played a significant role in overall labor productivity growth. The economy also experienced structural transformation, which happened toward the services sector. This finding relates well with Vietnam's switch from a hybrid economic model (a mixture of centrally planned and market economy) to a purely market-driven economy with major focus on global connectivity in the late 1980s. The country launched *doi-moi* policy programs in 1986 and followed that by joining the Association of South-East Asian Nations (ASEAN) and the ASEAN Free Trade Area in 1995 [113]. During the 1990s, the economy witnessed a significant increase in within-sector labor productivity growth. This coincided with the move toward an open economic environment since mid-1980s, which helped the economy to take advantage of scale economies in the manufacturing sector.

There has been a very significant structural transformation in the economy. The agricultural share dipped to 16% in 2012 compared with 34% in 1986. The share of manufacturing initially declined in the late 1980s due to closing down of state-owned enterprises, but returned to much higher levels, almost 25% by 2009. At the same time, the economy had consistently lower share from the mining sector [46]. The economy has also been more integrated with the rest of the world. Foreign investment stood at close to 7% of the GDP during the 1990s, which was the highest among all the economies in our sample. The trade ratio increased to 85% of the GDP in the same period (see Figure 22A) as did financial development, with credit to the private sector as percentage of GDP going up by around three times between 1990s and the 2000s (see Figure 22B).

In the 2000s, labor productivity grew at the rate of 4.2% per annum with significant structural transformation, mainly led by the services sector followed by the industry sector. Within the services sector, the financial subsector was the largest contributor. Within the industry sector, subsectors such as manufacturing, construction, and EGS had significant structural transformation during the decade. Major gains were noticeable in textile, cloth, and leather industries (their share increased two-and-a-half times to 7.5% in 2012 as compared with 2000); electrical machinery; and metal products [114]. Trade liberalization played an important role in the transformation process.⁷ In the decade of 2011–19, the aggregate labor productivity growth was 4.7%, one-third of which

⁷ During 2000–12, Vietnam signed two major free trade agreements: the Vietnam–US bilateral FTA and the WTO membership.

came from structural transformation. Across subsectors, manufacturing, construction, wholesale and retail trade, and financial services saw significant levels of structural transformation. One of the major factors behind this was the attention paid to investment in human capital creation. Allocating over 16% of the government's total expenditure (close to 5% of the GDP) on education helped the country reach higher levels of attainment in this sector [115].





CONCLUSION

We know that structural transformation is a key feature of economic development, and that the reallocation of labor between sectors and changes in the composition of the economy can result in aggregate productivity and income gains for countries. Studies have shown that countries that successfully transition from agriculture to manufacturing and services experience higher labor productivity growth, as workers in non-agricultural sectors are able to produce more output per unit of input. This transition also depends on the fundamentals of an economy, such as technological progress, infrastructure, institutional quality, trade patterns, and availability of human capital.

In this study, we addressed the role of structural transformation in productivity growth of 11 LMICs (developing economies) in Asia. We examined the aggregate labor productivity growth of 11 lowermiddle-income countries, namely, Bangladesh, Cambodia, India, Indonesia, Lao PDR, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, and Vietnam for the period 1970–2019 using APO data. The dataset was based on national accounts of the countries and used the growth accounting framework to compile productivity estimates. This provided us with a consistent framework to estimate productivity across all the countries in our sample and make valid comparisons between them. Another key strength of this study is that the long-time horizon of the data allowed us to examine growth patterns of these countries over the last five decades. This helped us identify longterm trends and changes in productivity that might not be apparent in shorter intervals.

For each country in our sample, we analyzed labor productivity of the whole economy as well as of several sectors, including agriculture; industry (which includes mining and quarrying, manufacturing, utilities, and construction); and services (which includes wholesale and retail trade, transport, storage and communication, financial intermediation, real estate, and business, community, social, and personal services).

Main Findings

In the fourth chapter, we provided an overview of the 11 countries in our sample by analyzing broad trends in per-capita GDP, sectoral share in GDP, and employment and sectoral labor productivity rates. We found that all 11 countries in our study have experienced an increase in per-capita GDP since 1970, with Sri Lanka seeing the most significant increase. Cambodia, Pakistan, Nepal, and Bangladesh had slower increases in per-capita GDP compared with other countries.

The sectoral composition of the economy can have an impact on the pattern of labor productivity growth. For instance, since the agricultural sector tends to have lower labor productivity than the modern sectors, shifts in the sectoral composition toward more productive sectors lead to an increase in the overall labor productivity of the economy. Therefore, understanding the sectoral composition of the economy is crucial to analyzing the pattern of labor productivity growth in a country. We found that the output share of the agriculture sector declined for all countries in the period of 1970–2019, while the share of the services sector has increased. The share of the industrial sector in total GDP, however, shows a mixed trend. Some countries, such as Sri Lanka and Vietnam, have experienced a significant increase in the share of the industry, while others, such as India and Nepal, have witnessed a stagnation in the share of the industrial sector.

Overall, our analysis in the fourth chapter revealed that the lower-middle-income Asian countries under consideration have experienced significant changes in their economic profiles over the past five decades. The growth in per-capita GDP has varied across countries, with some countries showing a slower increase than others. The sectoral composition of the GDP and labor vary significantly across countries and provide insights into the unique economic profiles of each country. The change in composition of the economy is consistent across all countries, with a decline in the share of the agriculture sector and an increase in the share of the services sector. This shift has been accompanied by an increase in labor productivity and per-capita GDP. However, the magnitude of this change has varied across countries. India falls in both sides--experienced fall in ag labour as well as services is largest component of GDP. Some countries like India, Nepal, and Pakistan have not been able to industrialize as much as others, such as Lao PDR and Mongolia.

To examine the role of structural transformation in a more comprehensive manner, in the fifth chapter, we used the shift-share methodology to decompose labor productivity growth into three components, namely, within-sector growth, static component of structural transformation, and dynamic structural transformation. The within-sector productivity growth component captures the extent to which labor productivity has increased within individual sectors of the economy. The between-sector productivity growth component captures structural transformation, i.e., the productivity gains that result from the shift of resources from low-productivity sectors to high-productivity sectors. The shift-share decomposition technique is considered a useful tool for policymakers because it helps identify the sources of labor productivity growth in an economy. It can be used to underpin sectors that are performing well and should be prioritized for investment or policy intervention, as well as to identify sectors that are lagging and require attention.

Our decomposition analysis reveals key differences in labor productivity growth and structural transformation across countries. Bangladesh has experienced continuous productivity growth largely due to the within-sector component, with only limited contribution from structural transformation. In Bangladesh, manufacturing and construction in industry and almost all subsectors in services have contributed to productivity growth within sectors. In Cambodia, there is a rising trend in productivity growth since the 1980s. The high growth during 2000–10 was driven by all three major sectors (agriculture, industry, and services). However, this declined in the last decade, due to negative productivity growth in agriculture. India has had a continuous increase in aggregate labor productivity growth, with the services sector being the main contributor. Structural transformation played a limited role until the 1990s and post-2010, while the agriculture sector had a negative impact on overall labor productivity growth in the 70s but contributed positively in the next decade. In Indonesia, labor productivity growth for the whole period, while the contribution of structural transformation has been more varied. Within-sector growth during 2000–10 came mainly from manufacturing; retail and wholesale trade; and transport, storage, and communication.

Lao PDR has experienced fluctuations in productivity rates, with significant contributions from structural transformation in mining, wholesale and retail trade, and the financial sector during the 1991–2010 period. Within-sector growth contributed very little during 2001–10 but more significantly in the third and the last decade. In Mongolia, there was a sharp downward trend in labor productivity growth until the mid-1990s, followed by an upward and stabilizing trend around the middle of the last decade. Within-sector growth in wholesale and retail trade and in transport, storage, and communication played a larger role in driving the two episodes, though structural transformation has also added to this cyclical pattern. Nepal has seen episodes of rising and falling

aggregate labor productivity growth, with higher growth rates in the 1980s and 2010s. The higher growth in the 1980s was mainly due to high rates of structural transformation, while growth in the last decade was more due to within-sector growth. Structural transformation in Nepal was mainly driven by industry and services in the 1980s, while growth in the last decade was mainly due to the services sector.

Pakistan has experienced two episodes of labor productivity growth, with growth rising significantly in the first two decades since 1970 and reaching a peak of 4% in the 1980s due to within-sector growth in the services sector. In the early 1990s, growth rates dropped sharply, stabilizing at a low level in the last decade. During most of this period, growth was driven entirely by within-sector growth, and structural transformation had either negligible or negative impact on growth. The Philippines has also experienced two distinct episodes of labor productivity growth. In the first episode, productivity growth fell sharply from 2% in the 1970s to -0.1% in the 1980s. In the second episode, productivity growth picked up and rose to 4% in 2011–19. This rise in productivity growth was driven mainly by the services sector and, to an extent, by the industrial sector, supported by increasing within-sector growth in these two sectors. Structural transformation has had a limited role in the Philippines, partly because the dynamic component has been consistently negative throughout the period.

Sri Lanka has had a relatively higher productivity growth in the last two decades, driven by the services sector and with some contribution from the industrial sector. However, the role of structural transformation has been limited in contributing to the aggregate productivity growth, with a consistently negative dynamic effect and a positive but small static effect. In Vietnam, the within-sector component has played a significant role in high labor productivity growth, except during 2001–10, when structural transformation played a significant role, especially in the services sector. The industrial sector, particularly manufacturing, has contributed significantly to the within-sector growth; and the financial sector has played a significant role during the period of structural transformation-driven high growth. Overall, we find that these countries have experienced different patterns of labor productivity growth and structural transformation, and are driven by different sectors and subsectors.

In the fifth chapter, we use the club-convergence framework to identify which sectors have the potential to drive sustainable structural transformation and whether the countries in our sample converge to global productivity frontiers. By excluding the mining subsector due to missing data, the analysis focused on three sectors: agriculture; secondary (which includes manufacturing, electricity generation, and construction); and services. Our results show that structural transformation of the services sector is a sustainable process. However, for most of the countries, structural transformation of the secondary sector has led them into 'productivity traps' or clubs with lower levels of productivity growth paths. Moving to subsectors, construction and most of the services subsectors have led to sustainable structural transformation. However, the manufacturing sector has not been very promising from the point of view of sustainable structural transformation for a lot of these countries.

While both the industrial and services sectors play important roles in economic development, there are compelling arguments to suggest that the industrial sector holds greater significance for structural transformation and productivity growth, especially in developing economies. The industrial sector is capable of creating forward and backward linkages, and generating employment opportunities, particularly for low and semiskilled workers and therefore serves as a steppingstone

for workers moving from agriculture to more productive sectors. In terms of contribution to overall productivity of the economy, the industrial sector typically exhibits higher labor productivity compared with the services sector. In fact, our analysis of sector-wise labor productivity of each country in the fourth chapter showed that in general, labor productivity of the agriculture sector is the lowest, and the productivity of the industry sector is higher than that of the services sector. Given that industrialization plays a vital role in accelerating productivity, it is important to address various impediments prevalent in the economies under consideration and provide plausible solutions for sustained productivity-enhancing structural transformation.

Policy Recommendations

Our analysis in the fourth chapter revealed that the overall declining trend in the share of agriculture in GDP is not always associated with a similar decline in the sector's share in employment. For all countries in our sample, the average share of the agricultural sector in total employment was 56% for the entire period of analysis. This suggests that in most of these countries, a substantial proportion of the workforce was still engaged in subsistence agriculture. A closer examination reveals that while most countries in our sample exhibited declining share of employment in agriculture, Lao PDR and Nepal continued to employ almost 70% of their workforce in agriculture in 2019. This evidence suggests that both these countries have failed in the process of structural transformation.

To gain more insights into the progress that the remaining countries have made in terms of industrialization and structural transformation, we compare them based on their shares of employment in high-productivity sectors. We find that as expected, the average share of employment in industry vis-à-vis services for the entire period is extremely low in Lao PDR and Nepal at 27% and 40%, respectively. On the other hand, countries like Bangladesh, India, Indonesia, Pakistan, Sri Lanka, and Vietnam show higher shares of industrial employment. As of 2019, in terms of employment shares of industry and services, Vietnam is leading at 85%, followed closely by India at 81%. Based on these two statistics, we classify the countries in our sample into three broad groups, namely, Group 1, Group 2. and Group 3.

- (1) In Group 1, countries have failed at any structural transformation and currently continue to have extremely high shares of employment in agriculture. Nepal and Lao PDR belong to Group 1.
- (2) In Group 2, countries have achieved structural transformation partially by bringing down the share of agricultural employment. However, for this group, structural transformation has not yet led to higher shares of industrial employment. A large number of the countries including Bangladesh, Cambodia, Indonesia, Mongolia, Pakistan, the Philippines, and Sri Lanka belong to Group 2.
- (3) In Group 3, countries have achieved low share of agricultural employment along with relatively high shares of employment for industry. India and Vietnam belong to Group 3.

What do these three groups mean for policy? From the perspective of economic development, the three groups are at different stages of structural transformation. Thus, policies need to address the impediments to structural transformation specific to the stage that each of these groups represent. The primary objective of policies for countries in Group 1 is to get large surplus labor out of

agriculture, as this is usually the sector with the lowest productivity in the economy. Clearly, in Lao PDR and Nepal, this remains a dire problem. For Group 2, the problem is that workers moving out of agriculture are moving to the services sector of the economy but not so much to the industrial sector. Thus, policies in these countries need to remove impediments to the creation of higher levels of industrial employment. For Group 3, since structural transformation is reasonably successful, the objective of the policy should be to sustain these processes and lead to higher productivity growth in all sectors.

We now discuss some of the countries in each group, pointing out policy approaches and interventions that address the specific needs of each of the countries.

In Group 1, although Nepal and Lao PDR face similar developmental challenges, it is important to recognize some of the key factors that distinguish them. The mountainous landscape of Nepal presents significant challenges for infrastructure, development of transportation networks, and accessibility to markets, thus leading to high transaction costs. Therefore, to modernize the economy, it is imperative to improve transportation links, expand access to education and healthcare, and promote rural development. Lao PDR on the other hand, is politically more stable, has a more diverse landscape, and has experienced some degree of transition from subsistence agriculture to mining activities. Therefore, a more comprehensive approach would include measures to diversify the economy and promote manufacturing and tourism, improve the ease of doing business, encourage investments in infrastructure and human capital, strengthen governance and institutional quality, and leverage trade opportunities by facilitating regional integration seems essential.

In group 2, the countries are quite diverse and hence country-specific policy approaches are needed. Let us take up two examples, Indonesia and Sri Lanka. Indonesia's pattern of development exhibits a growing focus on high-tech sectors and services, with several government initiatives to attract investment, promote innovation, and enhance research and development capabilities in sectors such as electronics, automotive, aerospace, information technology, and telecommunications. However, a substantial portion of Indonesia's labor force is engaged in the informal sector, including small-scale agriculture, services, and informal manufacturing. Also, there is a skills gap in high-tech and specialized sectors. Therefore, reforms in education and vocational training, collaborations between industry and educational institutions, and upskilling initiatives should be promoted to bridge skill gaps and foster higher employment in the industrial sector.

Sri Lanka faces a shortage of skilled labor, and the country also experiences several other unique constraints. The manufacturing sector in Sri Lanka is not as dominant as the services sector, as can be seen from its contribution to the overall GDP. The country also faces political instability, which hinders investment and business growth and limits the capacity for technological advancement and diversification of the manufacturing sector. Therefore, it becomes imperative to improve the ease of doing business, attract foreign investment, encourage innovation, diversify export markets, and promote value addition in manufacturing.

In Group 3, we move to the countries where employment shares have transitioned significantly away from agriculture, with relatively high proportions going to the industrial sector. However, it is important to recognize that the approaches and trajectories have been different in the two countries in this group, i.e., India and Vietnam. India has a significant share of the labor force in industry, but a large part is employed in the informal sector, mainly in informal manufacturing and construction. This limits the possibility of productivity growth and structural transformation as these are relatively stagnant sectors. Thus, policy in India has to focus on removing impediments to the development of the formal industrial sectors. Along with infrastructural constraints, India faces regulatory challenges that impact the ease of doing business and hinder industrial growth. For India to achieve sustained economic growth, it is thus crucial to bring down the costs of formalization by implementing factor market reforms.

Compared with the other economies in our study, Vietnam's success in structural transformation and industrialization has been remarkable. With a pool of skilled low-cost labor, Vietnam has become a hub for manufacturing and assembly operations, attracting multinational companies. Vietnam's manufacturing exports, particularly in electronics, textiles, and footwear, have contributed significantly to its economic growth and job creation. The policy challenge for Vietnam is to sustain this process of structural transformation and productivity growth in future.

Overall, this study has highlighted the diverse development paths and unique challenges faced by different countries in their pursuit of structural transformation and productivity growth. The classification of countries into three groups, based on their level of industrialization and extent of structural transformation, demonstrates the varied progress made by them. While our study reaffirms that structural transformation will continue to play a critical role in the economic development of these countries, the findings emphasize that country-specific factors heavily influence the extent and pattern of transition. Therefore, policy measures must go beyond broad strategies such as investments in physical and human capital, innovation and technology adoption, and competition and market liberalization. A targeted approach that addresses the specific needs and constraints of each country is essential to promote sustainable economic development.

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APPENDIX

TABLE A1

DECADAL DECOMPOSITION OF AGGREGATE LABOR PRODUCTIVITY GROWTH OF 11 ASIAN LMICs.

Decomposition (rolling 10-year average)					
Country	Year	Total productiv- ity growth	Within-sector	Between-sector (static)	Between-Sector (dynamic)
Bangladesh	1971–80	-3.07	-4.13	1.46	-0.39
	1981–90	1.86	0.50	1.50	-0.14
	1991–2000	1.92	1.54	0.53	-0.15
	2001–10	3.15	2.25	1.16	-0.25
	2011–19	5.21	4.28	1.19	-0.27
Cambodia	1971–80	-5.60	-5.58	0.01	-0.04
	1981–90	1.70	1.61	0.81	-0.71
	1991–2000	2.64	1.50	1.61	-0.47
	2001–10	4.56	2.64	2.31	-0.38
	2011–19	3.10	2.27	1.69	-0.86
India	1971–80	0.54	0.04	0.51	-0.02
	1981–90	3.07	3.09	0.02	-0.04
	1991–2000	3.36	1.97	1.41	-0.02
	2001–10	6.45	6.30	0.29	-0.14
	2011–19	5.48	4.40	1.23	-0.15
Indonesia	1971–80	4.78	2.21	3.74	-1.18
	1981–90	2.28	3.46	0.10	-1.28
	1991–2000	2.65	1.39	1.81	-0.55
	2001–10	3.16	2.58	1.53	-0.95
	2011–19	3.11	2.00	2.14	-1.03
Lao PDR	1971–80	1.61	1.64	-0.07	0.04
	1981–90	0.06	0.46	-1.46	1.05
	1991–2000	3.08	1.49	1.43	0.16
	2001–10	3.43	0.65	2.90	-0.13
	2011–19	2.40	1.89	0.94	-0.43

(Continued on next page)
Decomposition (rolling 10-year average)						
Country	Year	Total productiv- ity growth	Within-sector	Between-sector (static)	Between-Sector (dynamic)	
	1971–80	5.86	4.69	1.37	-0.19	
	1981–90	1.82	0.98	1.15	-0.31	
Mongolia	1991–2000	0.82	1.98	-0.73	-0.43	
	2001–10	4.14	1.34	3.43	-0.62	
	2011–19	991-2000 0.82 1 001-10 4.14 1 011-19 6.68 5 971-80 0.35 0 981-90 3.54 -1 991-2000 1.84 -3 2001-10 2.67 2 2011-19 3.40 2 971-80 1.48 1 981-90 3.93 3 991-2000 2.83 3 2001-10 0.58 0 0011-19 1.75 2 971-80 2.00 2 981-90 -0.12 -0 991-2000 1.82 1 2001-10 0.58 0 2011-19 1.75 2 971-80 2.00 2 991-2000 1.82 1 2001-10 2.11 1 2011-19 3.98 3 971-80 2.59 2	5.35	2.51	-1.18	
	1971–80	0.35	0.07	0.78	-0.50	
	1981–90	3.54	-1.41	5.61	-0.66	
Nepal	1991–2000	1.84	-3.41	6.04	-0.79	
	2001–10	2.67	-1.41 5.61 -3.41 6.04 2.89 -0.06 2.09 1.31 1.34 0.50 3.90 0.46 3.37 0.29 0.17 0.70 2.79 0.43 2.49 0.40 -0.36 0.59 1.26 0.74 1.75 0.47	-0.16		
	2011–19	3.40	2.09	Between-sector Between-sector Static) P 1.37 S 1.15 S -0.73 A 3.43 S 2.51 7 0.78 1 5.61 1 6.04 9 -0.06 9 1.31 4 0.50 0 0.46 7 0.79 0 0.43 9 0.40 5 0.59 6 0.59 6 0.59 6 0.59 9 0.40 5 0.47 4 1.06 5 0.59 0 0.41 5 0.59 0 0.41 5 0.59 0 0.9 0 0.9 7 0.54 4 0.52 4 <t< td=""><td>0.01</td></t<>	0.01	
	1971–80	1.48	1.34	0.50	-0.35	
	1981–90	3.93	3.90	0.46	-0.43	
Pakistan	1991–2000	2.83	3.37	0.29	-0.83	
	2001–10	0.58	0.17	0.70	-0.29	
	2011–19	1.75	2.79	0.43	-1.47	
	1971–80	2.00	2.49	0.40	-0.88	
	1981–90	-0.12	-0.36	0.59	-0.35	
Philippines	1991–2000	1.82	1.26	0.74	-0.17	
	2001–10	2.11	Within-sector (static) 4.69 1.37 0.98 1.15 1.98 -0.73 1.34 3.43 5.35 2.51 0.07 0.78 -1.41 5.61 -3.41 6.04 2.89 -0.06 2.09 1.31 1.34 0.50 3.90 0.46 3.37 0.29 0.17 0.70 2.79 0.43 2.49 0.40 -0.36 0.59 1.26 0.74 1.75 0.47 3.14 1.06 2.05 0.59 2.40 0.41 2.15 2.08 4.03 1.20 3.27 0.85 0.39 0.09 -0.27 0.54 4.94 0.52 1.14 3.31 3.37 1.56	-0.11		
	2011–19	3.98	3.14	Between-sector -sector (static) 1.69 1.37 9.98 1.15 .98 -0.73 .34 3.43 .35 2.51 0.07 0.78 1.41 5.61 3.41 6.04 2.89 -0.06 2.09 1.31 .34 0.50 3.90 0.46 3.37 0.29 0.17 0.70 2.79 0.43 2.49 0.40 0.36 0.59 1.26 0.74 1.75 0.47 3.14 1.06 2.05 0.59 2.40 0.41 2.15 2.08 4.03 1.20 3.27 0.85 0.39 0.09 0.227 0.54 4.94 0.52 1.14 3.31 3.37 1.56	-0.22	
	1971–80	2.59	2.05	0.59	-0.05	
	1981–90	2.65	2.40	0.41	-0.16	
Sri Lanka	1991–2000	3.12	2.15	2.08	-1.11	
	2001–10	4.28	4.03	1.20	-0.95	
	2011–19	3.81	3.27	0.85	-0.31	
	1971–80	0.13	0.39	0.09	-0.34	
	1981–90	0.18	-0.27	0.54	-0.09	
Vietnam	1991–2000	5.37	4.94	0.52	-0.08	
	2001–10	4.22	1.14	3.31	-0.23	
	2011–19	4.77	3.37	1.56	-0.16	

Note: For the period 2011–19, it is a nine-year average.

TABLE A2

COUNTRY-WISE DECOMPOSITION OF LABOR PRODUCTIVITY GROWTH BY SECTORS AND SUBSECTORS.

A. Bangladesh

Period	Sector	Total	Within	Static	Dynamic
	Total	-3.066	-4.129	1.455	-0.392
	Agriculture	-1.138	-1.190	0.125	-0.073
	Industry	-1.433	-0.645	-0.951	0.163
	Mining	-0.147	-0.021	-0.132	0.005
	Manufacturing	-0.742	-0.467	-0.364	0.089
1071 00	• EGS	-0.096	-0.096	-0.020	0.020
1971-80	Construction	-0.448	-0.061	-0.435	0.048
	Comilao	-0.495	-2.295	2.281	-0.482
	• WRT	0.059	-0.186	0.276	-0.032
	• TSC	-0.167	-0.159	0.003	-0.010
	• FI	-0.227	-1.675	1.820	-0.372
	• CSPS	-0.160	-0.275	0.182	-0.067
	Total	1.860	0.504	1.501	-0.145
	Agriculture	0.170	0.570	-0.394	-0.007
	Industry • Mining • Manufacturing	0.583	0.374	0.229	-0.020
		0.055	0.132	-0.064	-0.013
		0.289	0.195	0.093	0.000
1001 00	• EGS	0.077	0.056	0.022	-0.002
1901-90	• Construction	0.162	-0.010	0.177	-0.006
	Sorvico	1.107	-0.441	1.666	-0.118
	• WRT	0.283	-0.028	0.314	-0.003
	• TSC	0.254	-0.046	0.306	-0.006
	• FI	0.254	-0.284	0.640	-0.102
	• CSPS	0.316	-0.084	0.406	-0.007
	Total	1.915	1.540	0.526	-0.151
	Agriculture	0.144	0.299	-0.154	-0.002
	Industry	0.736	0.562	0.283	-0.109
1991–2000	Mining	0.021	-0.059	0.182	-0.102
	Manufacturing	0.448	0.466	-0.014	-0.004
	• EGS	0.037	0.027	0.011	-0.001
	Construction	0.231	0.128	0.104	-0.001

Period	Sector	Total	Within	Static	Dynamic
	Service	1.035	0.679	0.397	-0.041
		0.334	0.223	0.116	-0.006
1991–2000	• TSC	0.154	-0.020	0.181	-0.006
	FI CSPS	0.138	0.013	0.125	0.000
		0.409	0.463	-0.024	-0.029
	Total	3.155	2.248	1.161	-0.254
	Agriculture	0.217	0.370	-0.139	-0.014
		1.150	0.577	0.656	-0.084
	Industry • Mining	0.087	0.142	-0.013	-0.042
	Manufacturing	0.659	0.293	0.357	0.010
2001 10	EGSConstruction	0.070	0.128	-0.037	-0.021
2001-10		0.334	0.015	0.350	-0.031
	Service • WRT • TSC • Fl • CSPS	1.788	1.301	0.643	-0.156
		0.532	0.558	-0.024	-0.002
		0.437	0.284	0.161	-0.008
		0.285	-0.640	1.019	-0.094
		0.534	1.099	-0.513	-0.052
	Total	5.207	4.284	1.190	-0.267
	Agriculture	0.307	0.665	-0.342	-0.016
		2.293	1.962	0.532	-0.201
	Industry • Mining	0.110	0.232	-0.023	-0.099
	Manufacturing	1.556	1.205	0.375	-0.024
2011 10	EGSConstruction	0.100	0.134	-0.010	-0.024
2011-19		0.526	0.391	0.190	-0.055
		2.607	1.657	1.000	-0.050
	Service • WRT	0.814	0.675	0.139	0.000
	• TSC	0.531	0.326	0.222	-0.017
	• FI • CSPS	0.444	0.242	0.242	-0.040
		0.818	0.413	0.397	0.007

B. Cambodia

Period	Sector	Total	Within	Static	Dynamic
	Total	-5.603	-5.577	0.012	-0.038
	Agriculture	-1.297	-1.265	-0.033	0.001
		-2.112	-1.964	-0.130	-0.018
	IndustryMining	0	0	0	0
	Manufacturing	-1.056	-0.998	-0.061	0.003
	EGS Construction	0	0	0	0
1971-80	· construction	-1.056	-0.966	-0.069	-0.021
		-2.194	-2.348	0.175	-0.021
	Service • WRT	-1.657	-1.662	0.002	0.003
	• TSC	0	0	0	0
	• Fl	0.5	0.378	0.135	-0.013
	• CSPS	-1.038	-1.064	0.038	-0.012
	Total	1.702	1.606	0.808	-0.712
	Agriculture	-0.167	-0.127	-0.041	0.001
	Industry • Mining • Manufacturing • EGS	1.002	1.042	-0.031	-0.009
		0	0	0	0
		1.002	1.042	-0.031	-0.009
		0	0	0	0
1981–90	Construction	0	0	0	0
		0.867	0.691	0.88	-0.704
	Service	-0.018	0.111	-0.228	0.099
	• TSC	1.002	1.001	0.06	-0.059
	• Fl	-1.037	-1.300	0.57	-0.307
	• CSPS	0.92	0.879	0.478	-0.437
	Total	2.638	1.496	1.612	-0.471
	Agriculture	0.836	1.24	-0.386	-0.018
		1.129	-0.085	1.414	-0.201
1991-2000	Industry	0	0	0	0
	Manufacturing	0.505	-0.250	0.816	-0.061
	• EGS	0	0	0	0
	Construction	0.624	0.165	0.599	-0.140
		••••		•	

Period	Sector	Total	Within	Static	Dynamic
Service		0.673	0.342	0.584	-0.253
	Service	0.405	0.411	-0.026	0.02
1991–2000	• TSC	0.468	0.225	0.257	-0.014
	FI CSPS	-0.100	-0.187	0.231	-0.143
		-0.100	-0.106	0.122	-0.116
	Total	4.56	2.635	2.309	-0.385
	Agriculture	0.866	1.922	-0.975	-0.082
		1.718	0.443	1.313	-0.037
	Industry • Mining	0	0	0	0
	Manufacturing	1.115	0.617	0.531	-0.033
	EGS Construction	0	0	0	0
2001-10		0.604	-0.174	0.782	-0.004
	Service	1.975	0.271	1.971	-0.266
		0.487	-0.114	0.666	-0.065
	• TSC	0.022	-0.229	0.376	-0.125
	• FI • CSPS	0.591	0.204	0.381	0.006
		0.875	0.409	0.548	-0.082
	Total	3.101	2.271	1.693	-0.862
	Agriculture	-0.750	1.032	-1.683	-0.099
		2.425	2.2	0.344	-0.120
	Industry • Mining	0.361	0.612	-0.192	-0.059
	Manufacturing	0.762	1.05	-0.212	-0.076
2011 10	EGSConstruction	0	0	0	0
2011-19		1.302	0.538	0.749	0.015
		1.426	-0.961	3.031	-0.644
	Service • WRT	0.367	-0.494	1.049	-0.188
	• TSC	0.382	0.053	0.463	-0.134
	• FI • CSPS	0.563	-0.041	0.832	-0.228
		0.115	-0.479	0.688	-0.094

C. India

Period	Sector	Total	Within	Static	Dynamic
	Total	0.541	0.045	0.512	-0.015
	Agriculture	-0.339	0.106	-0.450	0.004
		0.3	-0.132	0.443	-0.011
	IndustryMining	0.049	0.015	0.035	0
	Manufacturing	0.153	0.007	0.148	-0.003
1071 90	EGS Construction	0.046	0.037	0.01	-0.001
1971-80	construction	0.052	-0.190	0.25	-0.008
		0.579	0.07	0.519	-0.009
	• WRT	0.183	-0.088	0.274	-0.004
	• TSC	0.095	0.055	0.04	0
	• FI	0.105	0.086	0.02	-0.001
		0.197	0.016	0.184	-0.004
	Total	3.069	3.092	0.021	-0.044
	Agriculture	0.515	0.504	0.008	0.003
	Industry Mining Manufacturing EGS 	0.859	0.879	-0.009	-0.011
		0.15	0.151	0.002	-0.003
		0.448	0.512	-0.058	-0.007
1001.00		0.106	0.105	0.001	-0.001
1981-90	construction	0.156	0.11	0.045	0
		1.695	1.71	0.022	-0.036
	• WRT	0.417	0.399	0.02	-0.002
	• TSC	0.116	0.151	-0.032	-0.003
	• FI	0.652	0.714	-0.034	-0.028
		0.511	0.446	0.069	-0.004
	Total	3.355	1.973	1.405	-0.023
	Agriculture	0.326	0.833	-0.493	-0.014
		0.77	0.234	0.53	0.005
1991–2000	IndustryMining	0.049	-0.015	0.064	0
	Manufacturing	0.402	0.128	0.271	0.003
	EGS Construction	0.128	0.027	0.1	0.001
	Construction	0.192	0.095	0.095	0.002

Period	Sector	Total	Within	Static	Dynamic
Service • WRT 1991–2000 • TSC		2.259	0.905	1.369	-0.014
	Service	0.703	0.507	0.188	0.009
	• TSC	0.219	0.101	0.114	0.003
	FI CSPS	0.633	-0.203	0.868	-0.033
		0.704	0.5	0.198	0.006
	Total	6.448	6.3	0.285	-0.137
	Agriculture	0.666	0.799	-0.127	-0.006
		1.768	1.584	0.304	-0.120
	Industry • Mining	0.104	0.147	-0.040	-0.004
	Manufacturing	0.918	1.293	-0.337	-0.038
	EGS Construction	0.107	0.252	-0.129	-0.016
2001-10		0.639	-0.109	0.81	-0.062
	Service	4.014	3.918	0.108	-0.011
		1.324	1.074	0.237	0.012
	• TSC	0.651	0.598	0.048	0.004
	• FI • CSPS	1.157	0.973	0.178	0.006
		0.882	1.272	-0.355	-0.035
	Total	5.48	4.395	1.232	-0.146
	Agriculture	0.49	0.967	-0.450	-0.027
		1.109	0.748	0.425	-0.064
	Industry • Mining	0.027	0.13	-0.095	-0.008
	Manufacturing	0.717	0.583	0.139	-0.006
	EGS Construction	0.11	-0.031	0.184	-0.043
2011–19		0.255	0.066	0.197	-0.008
		3.882	2.68	1.257	-0.055
	Service • WRT	1.326	1.037	0.283	0.006
	• TSC	0.414	0.185	0.224	0.005
	• FI • CSPS	1.299	1.179	0.181	-0.062
	251.5	0.843	0.279	0.569	-0.005

D. Indonesia

Period	Sector	Total	Within	Static	Dynamic
	Total	4.776	2.212	3.745	-1.180
	Agriculture	0.112	0.868	-0.694	-0.062
		2.737	0.605	2.693	-0.561
	IndustryMining	1.171	-0.043	1.305	-0.091
	Manufacturing	0.902	0.54	0.539	-0.176
1071 00	EGS Construction	0.027	0.035	0.076	-0.084
1971-80	construction	0.637	0.074	0.772	-0.210
		1.927	0.739	1.746	-0.557
	ServiceWBT	0.705	0.388	0.577	-0.261
	• TSC	0.227	0.079	0.16	-0.012
	• FI	0.566	0.025	0.539	0.002
	· CSFS	0.429	0.247	0.469	-0.286
	Total	2.28	3.459	0.104	-1.283
	Agriculture	0.165	0.169	-0.003	-0.001
	Industry • Mining • Manufacturing • EGS • Construction	0.716	1.253	-0.108	-0.429
		-0.577	0.004	-0.348	-0.233
		0.982	0.809	0.254	-0.081
		0.05	0.057	0.001	-0.009
1981–90		0.261	0.383	-0.016	-0.105
		1.399	2.037	0.215	-0.853
	Service • WRT	0.599	0.448	0.16	-0.009
	• TSC	0.113	0.153	-0.001	-0.039
	• FI	0.391	0.905	0.161	-0.675
	• CSF3	0.296	0.53	-0.105	-0.130
	Total	2.654	1.391	1.812	-0.549
	Agriculture	0.172	0.607	-0.377	-0.058
		1.644	0.527	1.503	-0.386
1991–2000	Industry • Mining	0.298	-0.023	0.604	-0.283
	Manufacturing	1.016	0.565	0.528	-0.076
	• EGS	0.07	0.096	0.019	-0.046
	- construction	0.26	-0.111	0.353	0.019

Period	Sector	Total	Within	Static	Dynamic
	Service	0.838	0.257	0.686	-0.105
		0.389	-0.147	0.537	-0.001
1991–2000	• TSC	0.135	-0.044	0.181	-0.002
	FI CSPS	0.172	0.15	0.028	-0.006
		0.141	0.298	-0.060	-0.097
	Total	3.156	2.575	1.527	-0.946
	Agriculture	0.26	0.523	-0.240	-0.023
		0.989	0.834	0.786	-0.631
	Industry • Mining	-0.100	-0.060	0.481	-0.521
	Manufacturing	0.585	0.626	-0.002	-0.039
2001 10	EGSConstruction	0.069	0.071	0.05	-0.052
2001-10		0.436	0.197	0.258	-0.019
	Service	1.907	1.219	0.98	-0.292
		0.624	0.61	0.049	-0.035
	• TSC	0.547	0.582	-0.017	-0.019
	• FI • CSPS	0.407	0.008	0.596	-0.197
		0.33	0.019	0.352	-0.041
	Total	3.114	2.004	2.143	-1.033
	Agriculture	0.27	0.916	-0.595	-0.051
		0.984	0.677	0.449	-0.142
	Industry • Mining	-0.047	0.066	-0.067	-0.046
	Manufacturing	0.548	0.344	0.22	-0.017
2011 10	EGSConstruction	0.031	0.025	0.049	-0.043
2011-19		0.453	0.242	0.248	-0.036
		1.859	0.411	2.289	-0.840
	Service • WRT	0.517	0.266	0.255	-0.005
	• TSC	0.528	0.596	-0.034	-0.034
	• FI • CSPS	0.456	-0.488	1.699	-0.754
		0.358	0.036	0.369	-0.047

E. Lao PDR

Period	Sector	Total	Within	Static	Dynamic
	Total	1.61	1.642	-0.069	0.036
	Agriculture	-1.213	-1.267	0.039	0.015
		0	0	0	0
	IndustryMining	0	0	0	0
	Manufacturing	0	0	0	0
	EGS Construction	0	0	0	0
1971-80	· construction	0	0	0	0
		2.823	2.909	-0.108	0.021
	Service • WRT	0	0	0	0
	• TSC	0	0	0	0
	• FI	0	0	0	0
	• CSPS	2.823	2.909	-0.108	0.021
	Total	0.061	0.464	-1.456	1.053
	Agriculture	-0.657	-1.154	0.539	-0.042
	Industry • Mining • Manufacturing • EGS	0	0	0	0
		0	0	0	0
		0	0	0	0
		0	0	0	0
1981–90	• construction	0	0	0	0
		0.718	1.618	-1.995	1.094
	Service • WRT	1.711	1.399	-0.135	0.446
	• TSC	0	0	0	0
	• FI	-0.236	-0.476	-0.536	0.776
	• C3F3	-0.758	0.695	-1.324	-0.128
	Total	3.085	1.494	1.433	0.157
	Agriculture	0.208	0.547	-0.329	-0.011
		3.138	2.438	0.67	0.03
1991–2000	Industry Mining	0	0	0	0
	Manufacturing	1.125	0.752	0.378	-0.005
	EGS Construction	0.938	0.998	-0.037	-0.023
		1.075	0.688	0.328	0.058
		•••••••••••••••••••••••••••••••••••••••	······	•••••	••••••

Period	Sector	Total	Within	Static	Dynamic
		-0.261	-1.491	1.092	0.138
	• WRT	-0.649	-1.245	0.662	-0.065
1991–2000	• TSC	0	0	0	0
	FI CSPS	1.037	0.421	0.397	0.219
		-0.649	-0.667	0.033	-0.015
	Total	3.428	0.653	2.902	-0.128
	Agriculture	-0.797	-0.263	-0.531	-0.002
		1.402	-0.082	1.64	-0.156
	Industry • Mining	1.673	0.86	0.918	-0.104
	Manufacturing	0.18	-0.266	0.457	-0.011
	EGS Construction	-0.226	-0.146	-0.076	-0.004
2001–10		-0.226	-0.530	0.341	-0.037
	Service	2.822	0.999	1.794	0.03
		1.124	0.253	0.847	0.024
	• TSC	0.5	0.34	0.164	-0.004
	• FI • CSPS	0.179	-0.365	0.551	-0.007
		1.019	0.769	0.233	0.017
	Total	2.397	1.886	0.942	-0.432
	Agriculture	-0.649	-0.559	-0.088	-0.002
		2.226	2.498	-0.191	-0.081
	Industry • Mining	0.004	0.445	-0.391	-0.050
	Manufacturing	0.258	0.509	-0.227	-0.023
	EGS Construction	0.863	0.836	0.07	-0.044
2011–19		1.101	0.708	0.357	0.036
		0.82	-0.052	1.221	-0.349
	Service • WRT	0.458	1.081	-0.526	-0.097
	• TSC	0.132	0.209	-0.043	-0.034
	• FI • CSPS	0.247	-0.786	1.209	-0.177
		-0.018	-0.556	0.58	-0.041

F. Mongolia

Period	Sector	Total	Within	Static	Dynamic
	Total	5.862	4.686	1.369	-0.192
	Agriculture	-0.243	0.315	-0.543	-0.014
		3.23	2.293	1.118	-0.181
	IndustryMining	0.73	0.5	0.355	-0.125
	Manufacturing	1.536	1.202	0.41	-0.076
1071 00	EGS Construction	0	0	0	0
19/1-80	construction	0.964	0.591	0.353	0.02
		2.874	2.077	0.794	0.003
	ServiceWRT	0.973	0.984	0	-0.012
	• TSC	0.973	0.957	0	0.016
	• FI	0	0	0	0
	· CSFS	0.929	0.137	0.794	-0.002
	Total	1.821	0.977	1.15	-0.305
	Agriculture	0.674	0.904	-0.194	-0.036
	Industry Mining Manufacturing EGS Construction 	0.168	-0.535	0.869	-0.167
		0.477	0.237	0.256	-0.015
		-0.090	-0.098	0.034	-0.026
1001 00		0	0	0	0
1981-90	construction	-0.219	-0.673	0.579	-0.125
		0.98	0.608	0.475	-0.103
	ServiceWRT	-0.090	-0.139	0.056	-0.007
	• TSC	-0.090	-0.117	0.039	-0.012
	• FI	0.683	0.641	0.105	-0.063
		0.477	0.222	0.275	-0.021
	Total	0.822	1.976	-0.726	-0.429
	Agriculture	0.409	-0.039	0.474	-0.027
		0.258	1.336	-0.907	-0.171
1991–2000	IndustryMining	0.569	0.382	0.224	-0.036
	Manufacturing	0.204	0.456	-0.249	-0.002
	EGS Construction	0	0	0	0
	Construction	-0.516	0.499	-0.882	-0.133

Period	Sector	Total	Within	Static	Dynamic
1991–2000	Service	0.156	0.679	-0.293	-0.231
		0.204	0.211	0.025	-0.032
	• TSC	-0.720	-0.625	-0.120	0.024
	FI CSPS	0.204	0.458	-0.095	-0.158
		0.467	0.635	-0.103	-0.065
	Total	4.145	1.34	3.425	-0.620
	Agriculture	-0.226	0.021	-0.228	-0.020
		2.218	0.313	2.215	-0.310
	Industry • Mining	0.931	-0.645	1.89	-0.314
	Manufacturing	0.622	1.074	-0.481	0.029
2001–10	EGSConstruction	0.575	0.444	0.16	-0.030
	Construction	0.09	-0.560	0.646	0.004
	Service • WRT • TSC • FI • CSPS	2.153	1.005	1.438	-0.290
		0.545	0.328	0.257	-0.040
		0.721	0.618	0.151	-0.048
		0.619	-0.074	0.881	-0.189
		0.268	0.133	0.149	-0.014
	Total	6.682	5.35	2.511	-1.179
	Agriculture	0.736	1.127	-0.301	-0.090
		2.217	0.889	2.104	-0.776
	Industry • Mining	1.518	0.618	1.584	-0.685
	Manufacturing	0.731	0.463	0.242	0.026
2011 10	EGSConstruction	-0.016	-0.073	0.128	-0.071
2011-19		-0.016	-0.119	0.15	-0.047
		3.729	3.335	0.708	-0.313
	Service • WRT	1.302	1.398	0.136	-0.232
	• TSC	0.882	1.232	-0.235	-0.115
	• FI • CSPS	1.264	0.668	0.585	0.012
		0.281	0.037	0.222	0.022

G. Nepal

Period	Sector	Total	Within	Static	Dynamic
	Total	0.349	0.066	0.78	-0.497
	Agriculture	-0.311	-0.239	-0.073	0.002
		0.447	1.735	-0.981	-0.306
	Industry Mining 	0	0	0	0
	Manufacturing	0.587	1.091	-0.412	-0.091
	EGS Construction	0	0	0	0
1971-80	· construction	-0.140	0.644	-0.569	-0.215
		0.212	-1.430	1.833	-0.192
	Service • WRT	-0.410	-0.784	0.396	-0.022
	• TSC	0.469	0.793	-0.280	-0.044
	• Fl	0.28	-1.009	1.394	-0.105
	• CSP5	-0.127	-0.429	0.323	-0.021
	Total	3.537	-1.411	5.607	-0.659
	Agriculture	1.232	1.766	-0.514	-0.020
	Industry • Mining • Manufacturing • EGS • Construction	0.645	-1.296	2.349	-0.408
		0	0	0	0
		0.286	-0.264	0.594	-0.045
		0	0	0	0
1981–90		0.359	-1.033	1.755	-0.363
		1.661	-1.881	3.773	-0.231
	Service	0.707	-0.574	1.32	-0.039
	• TSC	-0.067	-0.728	0.812	-0.151
	• Fl	0.578	-0.389	0.995	-0.028
	• CSPS	0.442	-0.189	0.645	-0.013
	Total	1.839	-3.409	6.037	-0.789
	Agriculture	-0.041	0.827	-0.844	-0.024
		0.384	-2.059	2.889	-0.446
1991–2000	Industry		0	0	0
	Manufacturing	0.313	-0.802	1.268	-0.153
	• EGS	0	0	0	0
	Construction	0.071	-1.257	1.621	-0.293

Period	Sector	Total	Within	Static	Dynamic
1991–2000	Service	1.496	-2.178	3.992	-0.318
		0.516	-1.372	2.049	-0.161
	• TSC	0.152	-0.254	0.432	-0.026
	FI CSPS	0.277	-1.256	1.678	-0.145
		0.551	0.704	-0.167	0.014
	Total	2.669	2.887	-0.057	-0.161
	Agriculture	0.764	0.457	0.308	-0.001
		0.433	0.559	-0.111	-0.015
	Industry • Mining	0	0	0	0
	Manufacturing	-0.071	0.093	-0.131	-0.033
	EGS Construction	0.195	0.263	-0.081	0.014
2001–10	construction	0.308	0.203	0.101	0.004
	Service • WRT • TSC • FI • CSPS	1.472	1.87	-0.253	-0.145
		-0.178	0.107	-0.241	-0.044
		0.332	0.252	0.071	0.009
		0.536	0.094	0.46	-0.018
		0.782	1.417	-0.544	-0.091
	Total	3.402	2.087	1.308	0.007
	Agriculture	0.501	0.67	-0.165	-0.004
		0.511	0.332	0.177	0.002
	Industry • Mining	0.124	0.114	0.009	0.001
	Manufacturing	0.091	0.089	0.004	-0.001
2011 10	EGSConstruction	0.097	0.077	0.019	0.001
2011-19		0.198	0.051	0.146	0.001
		2.39	1.085	1.296	0.009
	Service • WRT	0.802	0.567	0.227	0.009
	• TSC	0.355	0.18	0.17	0.004
	• FI • CSPS	0.594	-0.171	0.772	-0.007
		0.638	0.509	0.127	0.003

H. Pakistan

Period	Sector	Total	Within	Static	Dynamic
	Total	1.483	1.342	0.496	-0.355
	Agriculture	-0.256	0.121	-0.388	0.011
		0.352	0.406	0.253	-0.306
	IndustryMining	0.024	0.093	0.166	-0.234
	Manufacturing	0.223	0.314	-0.061	-0.030
	EGS Construction	0.045	-0.013	0.099	-0.041
1971-80	construction	0.061	0.012	0.049	0
		1.387	0.816	0.631	-0.059
	• WRT	0.481	0.271	0.23	-0.020
	• TSC	0.288	0.315	-0.024	-0.003
	• Fl	0.162	0.249	-0.058	-0.029
	• C3F3	0.455	-0.019	0.483	-0.008
	Total	3.932	3.9	0.458	-0.426
	Agriculture	0.681	0.968	-0.243	-0.044
	Industry Mining Manufacturing EGS Construction 	0.922	1.107	0.009	-0.194
		0.137	0.198	0.06	-0.122
		0.582	0.742	-0.125	-0.034
1001 00		0.134	0.171	0	-0.037
1981-90		0.069	-0.004	0.074	-0.001
		2.328	1.825	0.691	-0.188
	Service WRT	1.05	0.795	0.27	-0.016
	• TSC	0.504	0.452	0.144	-0.092
	• FI • CSPS	0.297	0.328	0.006	-0.037
	CSTS	0.478	0.25	0.271	-0.043
	Total	2.833	3.373	0.286	-0.827
	Agriculture	0.946	0.998	0.004	-0.057
		0.456	1.101	0.003	-0.648
1991-2000	Industry Mining 	0.05	0.526	0.082	-0.557
	Manufacturing	0.259	0.36	-0.054	-0.047
	EGS Construction	0.127	0.163	-0.003	-0.034
	Construction	0.02	0.052	-0.023	-0.010

Period	Sector	Total	Within	Static	Dynamic
1991–2000	Service	1.431	1.274	0.279	-0.122
		0.409	0.293	0.146	-0.031
	• TSC	0.416	0.469	-0.016	-0.037
	• FI • CSPS	0.203	0.224	0.01	-0.031
		0.404	0.288	0.138	-0.023
	Total	0.584	0.175	0.696	-0.286
	Agriculture	-0.304	-0.043	-0.239	-0.022
		0.325	0.081	0.308	-0.064
	Industry • Mining	0.04	-0.036	0.1	-0.023
	Manufacturing	0.353	0.225	0.144	-0.016
2001-10	EGS Construction	-0.092	-0.101	0.032	-0.023
	construction	0.024	-0.006	0.032	-0.001
	Service • WRT • TSC • FI • CSPS	0.563	0.137	0.626	-0.200
		0.085	-0.273	0.402	-0.045
		0.066	0.02	0.072	-0.026
		0.159	-0.221	0.437	-0.056
		0.253	0.611	-0.285	-0.074
	Total	1.746	2.792	0.428	-1.474
	Agriculture	0.016	0.511	-0.479	-0.015
		0.222	-0.155	0.687	-0.310
	Industry • Mining	0.005	-0.151	0.264	-0.107
	Manufacturing	0.186	-0.109	0.303	-0.008
	EGS Construction	0.034	0.14	0.086	-0.192
2011-19		-0.003	-0.035	0.035	-0.003
		1.508	2.436	0.22	-1.149
	Service • WRT	0.308	0.194	0.112	0.002
	• TSC	0.218	-0.027	0.256	-0.010
	• FI • CSPS	0.152	1.74	-0.444	-1.144
		0.829	0.529	0.296	0.003

I. The Philippines

Period	Sector	Total	Within	Static	Dynamic
	Total	2.001	2.488	0.396	-0.884
	Agriculture	0.008	0.055	-0.023	-0.024
		1.472	1.841	-0.160	-0.209
	IndustryMining	0.027	0.006	0.053	-0.032
	Manufacturing	0.564	0.866	-0.204	-0.098
	EGS Construction	0.133	0.181	-0.027	-0.021
19/1-80	construction	0.749	0.789	0.019	-0.059
		0.521	0.593	0.579	-0.651
	• WRT	0.265	-0.451	1.204	-0.488
	• TSC	0.108	0.201	-0.084	-0.009
	• FI	0.02	0.599	-0.489	-0.089
	· CSFS	0.128	0.243	-0.051	-0.064
	Total	-0.122	-0.362	0.593	-0.353
	Agriculture	-0.160	0.107	-0.255	-0.011
	Industry • Mining • Manufacturing • EGS • Construction	-0.576	-0.342	-0.058	-0.177
		0.02	0.073	0.003	-0.056
		-0.251	0.063	-0.261	-0.053
1001 00		0.074	0.054	0.077	-0.056
1981-90		-0.420	-0.532	0.123	-0.011
		0.614	-0.127	0.905	-0.164
	• WRT	0.201	-0.232	0.472	-0.039
	• TSC	0.052	-0.011	0.075	-0.013
	• Fl	0.023	-0.052	0.184	-0.109
		0.338	0.167	0.174	-0.004
	Total	1.825	1.261	0.738	-0.174
	Agriculture	0.134	0.464	-0.308	-0.022
		0.473	0.407	0.169	-0.103
1991-2000	IndustryMining	-0.013	0.046	-0.036	-0.022
	Manufacturing	0.31	0.264	0.08	-0.034
	EGS Construction	0.13	0.144	0.021	-0.035
	Construction	0.046	-0.046	0.105	-0.013

Period	Sector	Total	Within	Static	Dynamic
1991–2000	Service	1.217	0.39	0.876	-0.049
		0.553	0.24	0.304	0.009
	• TSC	0.141	-0.014	0.157	-0.002
	• FI • CSPS	0.294	0.034	0.306	-0.046
		0.229	0.13	0.109	-0.009
	Total	2.108	1.749	0.468	-0.109
	Agriculture	0.123	0.235	-0.110	-0.002
		0.417	0.831	-0.349	-0.065
	Industry • Mining	0.061	0.004	0.065	-0.008
	Manufacturing	0.172	0.599	-0.403	-0.024
2001-10	EGS Construction	0.063	0.117	-0.020	-0.034
	construction	0.121	0.111	0.009	0.001
	Service	1.568	0.683	0.927	-0.042
		0.406	0.286	0.132	-0.011
	• TSC	0.285	0.255	0.031	-0.001
	• FI • CSPS	0.696	0.005	0.717	-0.027
		0.182	0.138	0.047	-0.003
	Total	3.984	3.144	1.058	-0.218
	Agriculture	-0.013	0.527	-0.516	-0.024
		1.18	1.084	0.163	-0.067
	Industry • Mining	-0.008	0.027	-0.024	-0.012
	Manufacturing	0.637	0.781	-0.128	-0.016
2011 10	EGSConstruction	0.102	0.22	-0.084	-0.033
2011-19		0.45	0.056	0.399	-0.006
		2.817	1.534	1.411	-0.127
	• WRT	0.812	0.735	0.095	-0.018
	• TSC	0.342	0.229	0.132	-0.019
	• FI • CSPS	1.209	0.404	0.872	-0.068
		0.454	0.165	0.312	-0.022

J. Sri Lanka

Period	Sector	Total	Within	Static	Dynamic
	Total	2.595	2.054	0.589	-0.048
	Agriculture	0.228	0.451	-0.218	-0.005
		0.568	-0.163	0.763	-0.033
	IndustryMining	0	0	0	0
	Manufacturing	0.694	0.292	0.394	0.008
	EGS Construction	0	0	0	0
1971-80	construction	-0.126	-0.455	0.369	-0.040
		1.799	1.766	0.043	-0.011
	ServiceWRT	0.739	0.711	0.026	0.002
	• TSC	0.119	0.31	-0.183	-0.007
	• FI	0.228	-0.130	0.359	-0.001
		0.712	0.875	-0.158	-0.005
	Total	2.65	2.401	0.413	-0.165
	Agriculture	0.149	0.228	-0.070	-0.009
	Industry • Mining • Manufacturing • EGS • Construction	0.829	0.807	0.089	-0.067
		0.171	0.127	0.035	0.009
		0.502	0.41	0.132	-0.040
1001.00		0	0	0	0
1981-90		0.157	0.271	-0.078	-0.036
		1.672	1.366	0.394	-0.088
	• WRT	0.399	0.507	-0.089	-0.019
	• TSC	0.242	0.311	-0.036	-0.033
	• FI	0.472	0.38	0.086	0.006
		0.558	0.167	0.432	-0.041
	Total	3.119	2.148	2.081	-1.110
	Agriculture	0.061	0.505	-0.390	-0.054
		1.389	1.037	0.844	-0.492
1991-2000	IndustryMining	-0.024	0.101	0.043	-0.168
	Manufacturing	1.032	0.68	0.493	-0.141
	EGS Construction	0.134	0.141	0.092	-0.100
	Construction	0.247	0.115	0.215	-0.083

Period	Sector	Total	Within	Static	Dynamic
1991–2000	Service	1.669	0.606	1.627	-0.564
		0.57	0.197	0.386	-0.013
	• TSC	0.285	0.131	0.169	-0.015
	FI CSPS	0.379	0.133	0.716	-0.470
		0.435	0.144	0.355	-0.065
	Total	4.279	4.028	1.203	-0.952
	Agriculture	0.199	0.387	-0.145	-0.042
		1.268	1.414	0.045	-0.191
	Industry • Mining	0.214	0.252	-0.005	-0.032
	Manufacturing	0.664	0.619	0.078	-0.033
	EGS Construction	0.067	0.204	-0.044	-0.093
2001–10	Construction	0.323	0.34	0.017	-0.033
	Service • WRT • TSC • Fl • CSPS	2.812	2.228	1.303	-0.719
		0.578	0.377	0.261	-0.059
		0.819	0.626	0.318	-0.124
		0.541	0.036	0.603	-0.098
		0.873	1.189	0.122	-0.438
	Total	3.809	3.267	0.854	-0.311
	Agriculture	0.161	0.435	-0.258	-0.016
		1.083	0.731	0.398	-0.045
	Industry • Mining	0.137	0.246	-0.085	-0.024
	Manufacturing	0.401	0.306	0.103	-0.009
	EGS Construction	0.035	-0.009	0.046	-0.003
2011–19		0.511	0.187	0.333	-0.009
		2.565	2.1	0.715	-0.251
	Service • WBT	0.481	0.375	0.113	-0.007
	• TSC	0.581	0.445	0.159	-0.023
	• FI • CSPS	0.865	0.942	0.098	-0.175
	251.5	0.638	0.34	0.344	-0.046

K. Vietnam

Period	Sector	Total	Within	Static	Dynamic
	Total	0.131	0.387	0.087	-0.343
	Agriculture	0.028	-0.026	0.071	-0.017
		0.12	0.183	0.022	-0.085
	IndustryMining	0.084	0.114	-0.009	-0.021
	Manufacturing	0.101	0.12	0.008	-0.027
	EGS Construction	-0.075	-0.083	0.017	-0.009
1971-80	construction	0.01	0.032	0.006	-0.028
		-0.017	0.229	-0.006	-0.240
	• WRT	0.124	0.179	0.009	-0.063
	• TSC	0.101	0.145	-0.022	-0.023
	• FI	-0.037	0.033	-0.007	-0.063
	· CSFS	-0.206	-0.127	0.013	-0.092
	Total	0.182	-0.267	0.543	-0.094
	Agriculture	-0.188	-0.372	0.204	-0.019
	Industry • Mining • Manufacturing • EGS • Construction	0.353	-0.039	0.424	-0.032
		0.585	-0.084	0.689	-0.020
		-0.138	0.068	-0.193	-0.012
1081 00		0.023	0.025	-0.011	0.009
1981-90		-0.117	-0.048	-0.060	-0.009
		0.016	0.144	-0.085	-0.042
	• WRT	0.022	-0.004	0.033	-0.008
	• TSC	-0.042	-0.028	-0.006	-0.008
	• FI • CSPS	0.178	0.025	0.172	-0.019
		-0.142	0.151	-0.284	-0.008
	Total	5.372	4.935	0.52	-0.083
	Agriculture	0.571	0.892	-0.308	-0.012
		2.614	2.937	-0.237	-0.085
1991–2000	IndustryMining	1.569	2.055	-0.402	-0.084
	Manufacturing	0.622	0.485	0.132	0.004
	EGS Construction	0.129	0.158	-0.024	-0.004
	Construction	0.293	0.238	0.057	-0.001

Period	Sector	Total	Within	Static	Dynamic
1991–2000	Service	2.187	1.107	1.066	0.014
		0.609	0.099	0.508	0.003
	• TSC	0.138	0.09	0.048	0
	FICSPS	0.881	0.492	0.381	0.008
		0.558	0.427	0.129	0.003
	Total	4.225	1.143	3.309	-0.227
	Agriculture	0.479	1.134	-0.623	-0.032
		1.705	0.328	1.402	-0.025
	Industry • Mining	0.112	-0.088	0.232	-0.032
	Manufacturing	0.884	0.37	0.5	0.014
2001 10	EGSConstruction	0.28	0.018	0.262	0
2001–10	construction	0.429	0.028	0.408	-0.007
	Service • WRT	2.041	-0.318	2.53	-0.170
		0.767	0.455	0.302	0.01
	• TSC	0.232	0.255	-0.021	-0.002
	• FI • CSPS	0.562	-1.111	1.846	-0.172
		0.48	0.083	0.403	-0.006
	Total	4.774	3.371	1.562	-0.159
	Agriculture	0.2	0.962	-0.718	-0.045
		1.99	1.392	0.653	-0.055
	Industry • Mining	-0.105	0.414	-0.486	-0.033
	Manufacturing	1.398	0.623	0.775	0
2011 10	EGSConstruction	0.375	0.235	0.152	-0.013
2011-19		0.322	0.12	0.212	-0.010
		2.584	1.016	1.627	-0.059
	• WRT	0.985	0.606	0.37	0.01
	• TSC	0.197	0.107	0.093	-0.004
	• FI • CSPS	0.495	-0.494	1.057	-0.068
		0.907	0.797	0.107	0.003

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