

4



The Role of Global Services Value Chains for Services-Led Development

Enrico Nano and Victor Stolzenburg

The emergence of global value chains (GVCs) has lowered the threshold for countries to participate in globalization. They offer a new path for development without having to establish complete production capabilities from upstream inputs to downstream final goods and after-sales services. Developing countries can plug into GVCs and specialize in specific economic activities in accordance with their comparative advantage to benefit from gains from trade and specialization.

This relationship between GVCs and development is often discussed in the context of manufacturing or agriculture, but the past few decades have witnessed an unprecedented shift of employment and output shares toward services. This structural change is characteristic of both developed and developing countries globally (World Bank and WTO 2020). As Figure 4.1 shows, services in developed countries employ about 75% of the workforce. In low- and middle-income countries, the share averages 45%, but many countries, including India, the Philippines, and the People's Republic of China (PRC), have much higher shares. Accordingly, services now account for more than half of global gross domestic product (GDP), a share that has been steadily rising since the early 1990s (Sachetti et al. 2019; WTO 2019). This trend is contributing to rapid growth in the trade in services, which more than doubled in value from 2005 and 2017 and grew 17% faster than the trade in goods (WTO 2019).

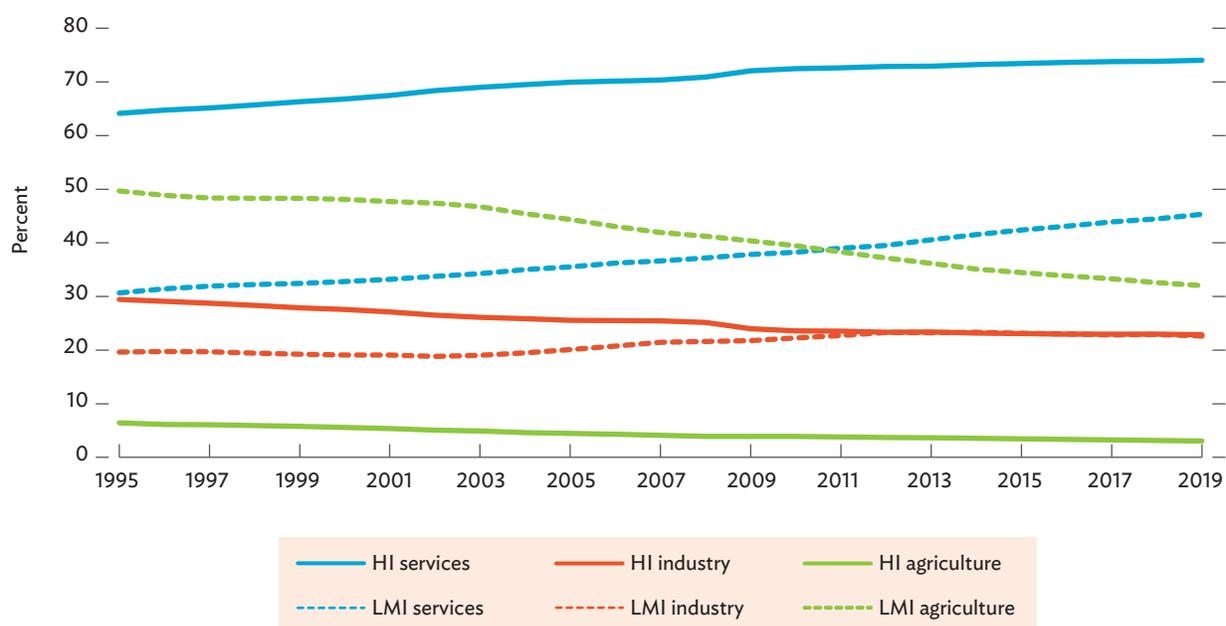
The expansion of services in employment, output, and trade shares is being driven in part by the growing number of services jobs created to support manufacturing; in other words, the servicification of manufacturing. Heuser and Mattoo (2017), in the *Global Value Chain Development Report 2017*, discussed how services are important inputs in almost all stages of a supply chain. In fact, the upstream position of many highly traded services,

with the exception of tourism, implies that services trade is mainly trade in intermediates and can therefore also be called trade in global services value chains. As Figure 4.2 shows, the share of exports of intermediates in total exports is about 62%; this is quite high for services sectors involved in GVCs, compared with the same indicator for manufacturing sectors.

Importantly, services not only contribute to manufacturing and agricultural value chains but they also, increasingly, form their own value chains, since the “production” process of certain services allows for fragmentation similar to that of goods. For example, the software production process can be separated into architecting, developing code, testing, implementation, marketing and distribution, maintenance, helpdesk, and training and education (Sharpe 2009). This enables countries to join services GVCs just as they joined goods GVCs. Two examples of this strategy are India for software services and the Philippines for business process outsourcing (BPO).

This chapter examines these services value chains to advance the discussion of services in GVCs started by Mattoo and Heuser (2017) in the *Global Value Chain Development Report 2017*. The following section presents case studies on services value chains in India and the Philippines to draw lessons for developing countries on the factors that enable integration into services value chains, as well as the benefits and disadvantages of these chains. The following two sections link the two case studies to the broader debate on services-led development and premature deindustrialization.

Figure 4.1: Employment Shares of Macro Sectors, 1995–2019



HI = high-income countries, LMI = low- to middle-income countries.

Sources: Authors' calculations based on International Labour Organization modelled estimates and World Bank, World Development Indicators Database. <https://databank.worldbank.org/source/world-development-indicators> (accessed 23 February 2021).

Figure 4.2: Share of Intermediate Exports to Total Exports, 2005–2015



GVC = global value chain.

Note: GVC services include telecommunications, information technology and other information services, financial and insurance activities, transportation and storage, and other business services.

Source: Authors' calculations based on Organisation for Economic Co-operation and Development Statistics on Trade in Value Added. https://www.oecd-ilibrary.org/trade/data/oecd-statistics-on-trade-in-value-added_36ad4f20-en (accessed 19 February 2021).

This allows for a more comprehensive assessment for policymakers, beyond what the two case studies can provide, and to look ahead to possible future developments. The chapter closes with conclusions and policy recommendations.

Joining Services Global Value Chains

While offshoring is often discussed in connection with manufacturing, it has also become an important part of the globalization of services. Seeking cost efficiency through offshoring, companies outsource their noncore business processes to specialized third-party service providers, which can then offshore their labor-intensive operations to developing countries with lower labor costs. Similarly, large multinational corporations (MNCs) directly offshore their labor-intensive services to cost-competitive locations by setting up “global in-house centers” (UNCTAD 2014). Two leading destinations for these strategies are India and the Philippines, whose GVC participation is to a large extent driven by services.¹

¹ This section is based on two background papers analyzing in detail the services GVCs of two countries: the software services industry in India (Huang, Jai, and Xing 2021) and BPO in the Philippines (Fermo and Xing 2021).

Background

India is deeply integrated into the value chains of the global software industry, providing services such as routine software programming and maintenance, as well as the information and communication technology (ICT) services of business process management to global customers. Between 1990 and 2010, India became a leading destination for MNCs to outsource their labor-intensive software and BPO services, and the rise of this industry has significantly contributed to India's economic growth.

To understand this development, it is important to note that software development processes can be fragmented just like the production process of cars or other goods. The main value-adding stages of the software services value chain can be divided into three phases: predevelopment, development, and postdevelopment. Predevelopment has two major value-adding activities: research and development (R&D) and analysis of the needs of users. Development includes conceptualization, design, coding, and testing. Postdevelopment consists of marketing, distribution, and after-sales services.

The high modularity of the software development process enabled the rise of software services value chains, through which many tasks can be outsourced to countries, such as India, where these activities can be carried out more effectively and cost-efficiently. The on-site offshore model has been particularly instrumental in the development of India's software services industry. In this model, higher-end tasks requiring frequent face-to-face client interaction are carried out on-site by information technology (IT) professionals dispatched by Indian firms. But less demanding tasks are done offshore by software engineers in offices in India. This model is able to arbitrage wage differences between software engineers across countries and enables round-the-clock production. As a result, it reduces the costs of IT services and delivery times. This has enabled India's software services industry to capture most of the global market for middle- to low-end coding services, while software architecture, conception, and design are typically still done by companies well established in these tasks, such as IBM Corp. and Accenture PLC, or by clients themselves.

The experience of the Philippines is similar to that of India. Innovations in ICT enabled firms to offshore routine or noncore office functions to developing countries, giving rise to BPO value chains. BPO companies offer 24-hour services that include call centers and voice services, the handling of queries of customers abroad, and higher value non-voice BPO functions. Voice services cover most call center operations, which involve either calling customers located abroad or receiving client calls. BPO in the Philippines tends to focus on direct customer care and consists of relatively routine functions. Higher value non-voice BPO functions include medical and legal transcription, finance and accounting, human resources activities, and high-end processes, such as animation, business and financial research, and data science analytics. As BPO evolved, functions extended into so-called (IT)-BPO to encompass, initially, IT-related outsourcing services and later on to IT-business process management that covers services going beyond outsourcing and more into offshore management.

The first offshore services company in the Philippines started in the early 1980s. The first wave of BPO investment was in the 1990s as MNCs started setting up offshore subsidiaries, including in the Philippines. The most rapid growth was due to foreign direct investment (FDI) inflows. Equity capital investments have expanded significantly since 2005, with the United States (US) being the largest source. This was made possible in large part by the surge in IT business parks and cyberparks to cater to the Philippines' expanding outsourcing business. The Philippines became a leading destination for BPO services in the 2000s and, since around 2010, is the acknowledged call center capital of the world.

Determinants of Integration: Comparative Advantage in Services Tasks

The determinants of India and the Philippines integrating into services GVCs are mostly linked to typical comparative advantage, but combined with supportive idiosyncratic factors. Both countries are abundantly endowed with relatively low-paid workforces that have the relevant skills. For instance, the minimum daily wage in Manila (₱537) is about the same as the effective hourly minimum wage in the US (\$11.80) in 2019. Estimates for India suggest the overall cost of software development is only half that in the US (NASSCOM 2013). The skills needed in software services and BPO are first and foremost proficiency in English, high literacy, and sufficient training in the use of digital technologies. India has the world's second largest English-speaking population and the second highest number of graduates in science, technology, engineering, and math (McCarthy 2017). The EF English Proficiency Index ranks the Philippines second among Asian countries in the top 100 of countries. In contrast, software services and BPO are largely independent of physical infrastructure beyond local IT parks and do not require large upfront capital investments, both factors for which India and the Philippines do not have a comparative advantage.

Government interventions have advanced the comparative advantage for software and BPO services. Policies to liberalize central services, such as telecommunications deregulation, in both countries in the 1990s were critical for facilitating services growth by fostering competition through increased entry into the domestic market. India has been a strong advocate for liberalizing the temporary movement of professionals in regional and multilateral negotiations. It has also given substantial support for physical, technology, and education infrastructure. Both India and the Philippines have invested heavily in export processing zones and IT parks, which provide the necessary environment for services value chains. There are now 55 special zones in India and the Philippines. Education reforms in the two countries have been partly driven by the need to ensure a steady supply of English-speaking workers with technical skills. India has not only increased the number of schools but also announced plans to set up 17 new institutes of technology (Jalote and Natarajan 2019). Public sector support for services investment via fiscal incentives is strong in both countries. The Philippines, for instance, grants a tax holiday of up to 8 years to foreign investors.²

² It is important to note that the empirical evidence on tax incentives tends to be mixed at best, as it often creates free-rider effects (Slattery and Zidar 2020).

Private sector engagement has been similarly important. In both countries, private firms have made substantial investments in training and skills development. Indian IT services firms have spent some \$1.6 billion on training in large campus-like training facilities. Public–private partnerships in the Philippines support 125 schools and regional, provincial, and specialized training centers to provide the necessary skills for BPO workers.

A relevant idiosyncratic factor for the success of the Indian model is the presence of Indian expatriates in IT sectors abroad, especially Silicon Valley. Many MNCs in India were set up by Indians working abroad before returning home (Bhatnagar 2006). The return migration of Indian IT professionals has led to important knowledge inflows and global business networks. The diaspora also acts as intermediary for substantial business opportunities by advocating for and helping to match foreign buyers with Indian suppliers.

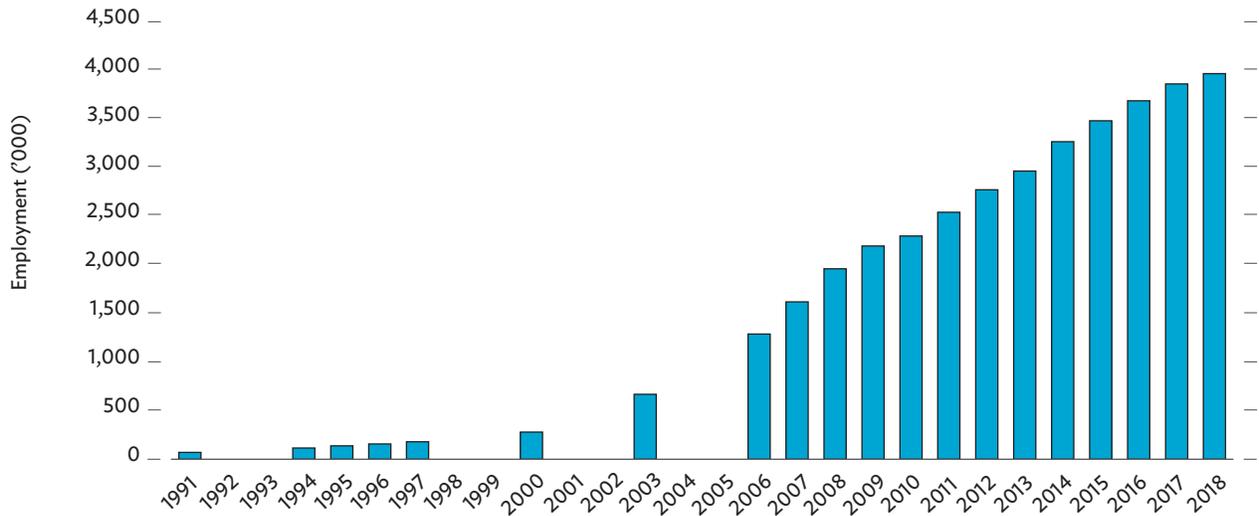
As a result of all these factors, the 2018 Tholons Services Globalization Country Index ranked India first and the Philippines second. In A. T. Kearney’s Global Services Location Index, the Philippines was among the top seven of 50 countries from 2014 to 2017 and named an “industry leader” in 2017.

Benefits and Challenges of Services Value Chains in India and the Philippines

Services value chains are a major contributor to economic growth and sources of foreign exchange for both countries. In 2018, India’s IT industry generated \$167 billion in revenue and \$125 billion in exports, with the ratio of IT revenue to GDP at 6.1%, up from 3.2% in 2002, and the ratio of IT exports to total exports at 39.1%, up from 20.0%. For employment, no other industry has generated as many well-paid jobs in India over the past decades. In 2018, the IT industry directly employed about 4 million people. Estimates indicate that indirectly it supports an additional 12 million jobs (Jalote and Natarajan 2019). The average growth rate of IT industry employment over the past 3 decades stands at an impressive 16%; it started out with just 72,000 direct-employment jobs in 1991 (Figure 4.3). The rising demand has led to steady wage increases in India’s IT industry. According to NASSCOM (2016), wages rose 8%–12% over the past decade, although most of this increase went to mid- and top-level employees.

The development of the Philippines’ BPO industry has been similarly impressive as that of software services in India. The industry had double-digit annual revenue growth from 2004 to 2016—and a minor slowdown since then. BPO revenue was an estimated \$26.1 billion in 2019, compared with \$1.3 billion in 2004. This revenue accounts for about 7% of GDP and is nearly equivalent to the Philippines’ annual foreign remittances inflow. In 2011, BPO exports were 67.5% of total services exports, up from 22.0% in 2004. BPO employment rose from 94,000 in 2005 to an estimated 1.3 million in 2019. In 2018, the aggregate compensation generated by the industry was \$9.8 billion, a 21-fold increase on 2004’s \$471.4 million. Average BPO wages are generally considerably higher than the national average.

Figure 4.3: Information Technology Services Employment in India, 1991–2018



Note: Data collected annually only since 2006.

Sources: A. Arora, V. S. Arunachalam, J. Asundi, and R. Fernandes 2001. The Indian Software Services Industry. *Research Policy*, 30 (8), pp. 1267–1287; S. Huang, A. Jai, and Y. Xing. 2021. Plugging into Global Value Chains of the Software Service Industry: The Experiences of India. Unpublished; National Association of Software and Service Companies.

The benefits beyond growth and employment are important for both countries. Their IT and BPO services exports have made a significant contribution to the participation of women in the workforce. More than 50% of BPO workers in the Philippines and 34% of IT workers in India are women—shares that are substantially higher than the national average at 46% for the Philippines and 21% for India. Importantly, about 25% of female employees hold managerial positions in India’s IT industry. The two industries have also contributed to skills upgrading and higher educational attainment, with the IT industry helping to push the number of engineering graduates to over 700,000 per year in India.

An important concern for both countries is that their participation in services GVCs involves largely routine and low value-added tasks. Estimates suggest 46% of the Philippines’ BPO IT workers are low-skilled (IBPAP 2016). India mostly specializes in routine software services and struggles to get into higher-end niches, such as generic software packages and software as a service.³ This is in sharp contrast to other major software-developing countries, such as Ireland and Israel, and due to most GVCs in which firms from developing countries participate, at least initially, being unipolar. Here, a dominant foreign lead firm is in a critically functional position. The lead firm centrally governs the GVC by shaping what is done, how it is done, and who controls access to knowledge, technology, and final markets globally.

³ Software as a service is a software licensing and delivery model in which software is licensed on a subscription basis and centrally hosted. As of 2020, Amazon Inc., Google LLC, and Microsoft Corp. were among the biggest software-as-a-service firms.

Firms in developing countries integrating in GVCs typically face both a technology gap (an inability to perform complex tasks) and a market gap (no direct access to end-user and end-market). So, they have little choice but to depend on lead firms to fill these gaps. This dependence imposes constraints and challenges to the growth of firms in developing countries trying to integrate into GVCs.

One ramification of the specialization in routine and repetitive tasks, coupled with workers being expected to work long hours and flexible shifts, is high worker attrition in both India and the Philippines because the most talented emigrate to final-demand markets. Staff turnover can reach 44% a year in call centers, and the repetitiveness and psychological burden of dealing under pressure with customers results in low productivity (Yu, Wang, and Jiao 2020).

Firms are responding to this by increasingly investing in artificial intelligence (AI), which is already capable of replacing routine and low-skill IT and BPO tasks. Evidence from the PRC shows that although call center revenue grew in 2018, the number of call center agents fell by 161,000, a drop of over 30% (Yu, Wang, and Jiao, 2020). Although using AI increases productivity and releases workers from the most routine and burdensome tasks, it also lowers employment and wage growth at the lower end of the employment pyramids of both industries—just as automation threatens low-skill employment in manufacturing. This pressure is likely to move up the skills ladder as AI becomes more refined and capable.

Prospects for Services Value Chains in India and the Philippines

Several reasons are behind a major share of services GVCs in India and the Philippines being stuck in routine and low value-added operations, as just discussed. Upgrading often requires a dynamic domestic market with intensive interactions between users and developers. The domestic markets of both countries do not yet satisfy this requirement even though these markets are growing. It is worth noting that India's IT exports are more than three times higher than its domestic IT revenue. Moreover, more advanced products demand a high level of R&D, marketing capabilities, and expenditure, which puts most small firms from developing countries at a disadvantage. For India's IT majors, the percentage spending of total revenue on R&D is about 1%. This is substantially less than at Google or Microsoft, which spend about 15%. Some 275 global software and computer services firms are in the top 2,500 global R&D spenders. Of these, 161 are from the US, 32 from the PRC, and only 5 from India (CTIER 2016).

Other structural barriers for the two countries include the high cost of capital, rising wages, and concerns over the sustainability of the on-site offshore model. This model, as a nonpatentable process innovation, is being increasingly copied throughout the world by competitors that can offer even lower wages. Furthermore, the nature of services trade is changing, which puts data regulation high on corporate agendas. Restrictive data regulation policies from local storage requirements to transfer limitations could be a

drag on productivity in this environment and lower FDI. Other current risks to services value chains in India and the Philippines are discussed in Box 4.1 and Chapter 5.

Box 4.1: Risks to Global Services Value Chains in India and the Philippines

Beyond the structural factors that threaten the participation of India and the Philippines in global services value chains are current risks from the COVID-19 pandemic and policy shifts.

India has suffered acutely from the pandemic. Data from Johns Hopkins University show the country had over 30,000,000 COVID-19 cases as of July 2021. This has caused severe economic disruptions that have been aggravated by lockdowns and overseas travel bans.

Spending on information technology services in India fell by 4.0% in 2020, although it bounced back and is expected to rise by 2.3% in fiscal year 2021 (ending 31 March 2021) (NASSCOM 2021). But the risk beyond the immediate effect of the COVID-19 crisis is that it might cause a reevaluation by lead firms of the perceived resilience of offshore destinations, which could harm the economic prospects of India and the Philippines.

The other main risk is increasing policy uncertainty. The software services model continues to depend on the temporary movement of people, but both the COVID-19 pandemic and policy shifts in key final-demand markets have rendered this business model less reliable. For instance, the granting of H-1B visas in the United States has become more restrictive in recent years. More generally, geopolitical developments, including the trade conflict between the United States and the People's Republic of China, may result in firms postponing foreign direct investment due to the increased policy uncertainty.

The Economic Policy Uncertainty Index shows that global economic policy uncertainty has more than tripled since 2010, and studies have shown the effect of this can be substantial (Handley and Limao 2015; Pierce and Schott 2016).

References

- Handley, K., and N. Limao. 2015. Trade and Investment under Policy Uncertainty: Theory and Firm Evidence. *American Economic Journal: Economic Policy*. 7 (4). pp. 189–222.
- NASSCOM (National Association of Software and Service Companies). 2021. *Technology Sector in India 2021—New World: The Future Is Virtual*. Delhi.
- Pierce, J. R., and P. K. Schott. 2016. The Surprisingly Swift Decline of US Manufacturing Employment. *American Economic Review*. 106 (7). pp. 1632–1662.

India and the Philippines need to upgrade and move into higher value-added operations in the chain to sustain their success in global services value chains. Here, both countries have made some progress. In the 2000s, Indian companies HCL Technologies Ltd., Infosys Ltd., Tata Consultancy Services Ltd., and Wipro Ltd. (to name a few) entered the market and gained market share from established MNCs. They offer a range of services, including higher value-added tasks, such as handling large and complex projects involving end-to-end solutions on IT infrastructure management and IT consultancy. At the same time, MNCs started moving their R&D centers to India—1,250 of them to date, which employ 400,000 software engineers. In the 2010s, this triggered a rise of Indian “unicorns,” predominantly consumer-led IT platform start-ups largely focused on the Indian market. These firms, initially replicas of US companies, have pioneered unique innovations for the Indian market.⁴ By the end of 2019, 18 of these IT start-ups each had a market capitalization exceeding \$1 billion.

⁴ For instance, Flipkart Online Services Pvt. Ltd. is an equivalent of Amazon and Ola Electric Mobility Pvt. Ltd. is a competitor of Uber Technologies Inc.

The BPO and IT industries of both countries try to support this trend jointly with the public sector. An example of this is the 17 institutes of technology planned in India to ensure a supply of workers with the skills for higher value-added tasks. The Philippines is supporting science and technology education, and English proficiency. The programs for this intend to raise the skills of 1 million workers over 5 years by offering training grants for near-hires, upskilling vouchers, scholarships, student grants, and tertiary education subsidies for individuals. The programs also include train-the-trainer programs, massive open online courses for teachers, and teaching opportunities for industry veterans. The governments of both countries are investing heavily in communication infrastructure by setting up high bandwidth networks in most cities and large towns. Importantly, government procurement has been used to support domestic IT demand that allows firms to develop broader expertise. In India, examples include the Ministry of Corporate Affairs' system for corporate tax filing and the income tax management system, and the passport and rail reservation system developed, maintained, and managed by domestic IT companies.

Lessons from the Case Studies

Three important lessons emerge from the case studies. First, becoming part of GVCs has led to sustained economic benefits for India and the Philippines in income, employment, and social inclusion. Second, human capital is a key factor for comparative advantage in services GVCs—and much more so than in manufacturing. Without a trained or trainable population, starting with knowledge of English, a country is unlikely to be competitive with other outsourcing destinations. And third, technological trends, including AI and cloud computing, can severely reduce the labor intensity of services GVCs, which especially affect the less skilled. To stay competitive and move up the GVC, investments must continually be made in upskilling and reskilling the workforce to tackle the challenges from rapid technological change. This needs to be combined with the faster development of domestic services markets and larger domestic R&D investment. Strong local business networks and economic interactions are crucial to upgrade along the value chain.

Growth, Specialization, and Barriers to Trade

Although the case studies of India and the Philippines are instructive on the benefits and implications of joining services value chains, they capture only very specific services in the IT and BPO industry, and are driven in part by idiosyncratic factors. To derive more general lessons, this section connects the findings of the case studies to a broader debate on services-led development. Because data on services GVCs remains limited, this focuses on services trade more generally. And since about two-thirds of this is trade in intermediates, the lessons from studies on services trade can be instructive for services GVCs.

Services create most jobs globally, and they do so earlier in the economic development process. This has been called premature deindustrialization (Rodrik 2016; Ghani and O’Connell 2016). A debate is ongoing on whether services-led development can replace industrialization for economic development, especially in the context of export-led growth relevant for global services value chains. Helble and Shepherd (2019) show how structural transformation—moving employment and value creation from agriculture to manufacturing to services—is driven by both demand and supply factors. For demand, as countries get richer, they first see increased demand for manufactured goods and then for services, such as those for health and recreation. For supply, a major concern with manufacturing is that it has become increasingly mechanized and less labor-intensive, mostly because of technological progress. So, the sector is not able to absorb the large amounts of labor available in developing countries. Many services are harder to automate and have become progressively more tradable. For these reasons, services could be the main driver of future growth and employment.

Dani Rodrik takes a more nuanced view than this on the role of services and GVCs for economic development (Rodrik 2016, 2018). He recognizes that GVCs ease the entry of firms in developing countries into global markets. He highlights, however, the scarce evidence on the employment effects of GVC participation and the unequal diffusion of the benefits of export activity throughout an economy. It is along these lines that Rodrik (2016) describes premature deindustrialization as being detrimental for development, and argues that trade and globalization are the likely cause. He argues that deindustrialization in developed countries leads to lower prices of manufactured goods that spill over to developing countries. As a result, developing economies “import” prematurely deindustrialization from advanced ones without having enjoyed the same rapid productivity growth and opportunity for convergence to high-income levels that manufacturing can offer.

The premature-industrialization critique has its detractors (among them, Nayyar, Cruz, and Zhu 2018). Ravindran and Babu (2021) argue that premature industrialization may only lead to an increase in income inequality if workers who lose their jobs move to informal and low-productivity market services. But if employment shifts to business market services or nonmarket services premature deindustrialization need not worsen inequality. Moreover, endogenous growth theory stipulates that R&D, a service, is *the* engine of growth (Romer 1994). This relates to the tendency for growth in high-skill services to raise innovation, which is the ultimate source of growth. One of the main criticisms of services is that they are nontraded, although this view is rapidly changing. Rodrik (2016) also argues that services do not generate spillovers. But evidence of substantial economy-wide spillovers of certain services sectors is growing, as discussed later in this section. Rodrik (2016) suggests that these spillovers are not a source of large numbers of “good jobs,” which is true for some services but not all, and might point to improving working conditions in certain low-skill services. Regardless of the theoretical approach, the diversity of sectors within the services aggregate is a key issue to be considered in all analyses (Jorgenson and Timmer 2011).

Other concerns over services-led development were first raised in the cost–disease hypothesis that suggests structural change may be responsible for a slowdown in productivity growth Baumol (1967). Recent research, however, argues that productivity growth in services suffers from mismeasurement, and that the observed difference in the productivity growth of contracting goods and expanding services might also be explained by a negative elasticity of worker efficacy for employment shares. If this is the case, goods and services having similar productivity growth rates is a plausible alternative characterization of recent growth patterns (Young 2014). Research also suggests that even if the hypothesis applies, there are services sectors with high productivity growth. The sufficient degree of substitutability between high- and low-productivity services sectors means that major declines in aggregate productivity growth rates are unlikely in the future (Duernecker, Herrendorf, and Valentinyi 2017; Sen 2020). Because productivity growth is particularly high in many traded services, including finance, transportation, and telecommunication, services value chains are essential for sustaining this positive trend in productivity growth.

Baldwin and Forslid (2020) argue that services-led development relying on globalization, digitization, and other technological advances will naturally become the main development path for low- and middle-income countries. Here, the main argument is based on developing countries being typically well-endowed with low-cost labor. But if manufacturing becomes increasingly capital-intensive, the comparative advantage of developing countries cannot be fully exploited. However, this can be done with services (production and exports) due to the large workforces of developing countries and the prominent diffusion of ICT firms without the need for expensive upfront capital investment. A new development model, boosted by declining labor-cost shares in manufacturing due to automation and the smaller cost of trading services because of digitalization, would then allow developing countries to increase their participation in services GVCs.

This has the important benefit that services are typically less polluting than manufacturing so that a services-led development path would be greener (Ghani and O’Connell 2016). Besides lower pollution, services GVCs can contribute to achieving environmentally-related Sustainable Development Goals by fostering GVCs in clean energy, as well as environmental protection and remediation. Services GVCs are also a key contributor to gender-equality Sustainable Development Goals, since their employment shares are more equal across genders, as discussed in the section on labor markets and inequality.

Nayyar and Cruz (2018) also recognize that manufacturing is no longer the main source of productivity growth, since many characteristics relevant for development, such as scale, technology diffusion, and greater competition, are now shared by several services. They point out a different critical issue: human capital (as highlighted in this chapter’s case studies). Highly-traded services are typically skills-intensive, and the importance of skills rises with productivity (Buera and Kaboski 2012). In populations characterized by low educational attainment, high-skill services may not be able to absorb all the excess

labor coming from the shrinkage in agriculture and manufacturing. The unmet demand for human capital may therefore prevent the international trade in services from being the next driving force for growth and job creation in developing countries unless the tradability of low-skill services increases (Hallward-Driemeier and Nayyar 2018).

This mirrors arguments by Baldwin and Forslid (2020), who similarly suggest that labor is the key factor of production for most services, but caution that knowledge transfers in services tend to be harder and slower than technology transfers in manufacturing. It is through the long-lasting accumulation of human capital that workforces can develop the skills, knowledge, and experience necessary for a growth-push based on services. While constraints in the manufacturing-led model mostly relate to capital, competencies and ultimately time are constraints in the services-led model. This chapter has already highlighted how India and the Philippines, considered the poster children of services-led development, have been able to improve the education of their workforces by liberalizing services sectors, among other policies. This liberalization increased household earnings and returns to education that kicked off a human capital–accumulation process that increased the supply of skilled labor. This in turn attracted private sector investment, including foreign investment, that increased the demand for educated workers, which initiated a positive feedback loop (Nano et al. 2021).

Recent empirical studies show that national GDP growth is strongly correlated with growth in services, a relationship that has become stronger and greater than that of manufacturing and agriculture growth. Loungani et al. (2017), in a cross-country analysis on 192 countries from 1970 and 2014, find that per capita GDP growth has a 0.60 correlation coefficient with movements in services value added, compared with a 0.24 coefficient with movements in manufacturing value added. Per capita GDP growth from 2010 to 2014 is also more strongly associated with services exports than with manufacturing, agriculture, and mining exports. This strong evidence in favor of a services-led growth model replacing the older manufacturing paradigm raises the question of what can be done from a policy perspective to boost this source of growth.

The literature based on computable general equilibrium models points to welfare gains from the liberalization of services; these range from 2% to 7%. A World Trade Organization study of 148 countries from 2000 to 2014 estimated larger gains in GDP per capita for developing and least-developed countries around a mean of 6.3% (WTO 2019). Opening up services also seems to yield larger gains than opening up merchandise trade. Chadha et al. (2000) compare the effects of an equivalent reduction by one-third in the trade barriers of goods and services trade. Using data from five developed and 15 developing countries, they find positive welfare gains for both groups, but larger ones for developing (2.5%) than developed countries (2.0%).

Aggregate growth originating from services GVCs is directly dependent on the trade costs of services, which are almost twice as large as those in merchandise trade and mostly originate from policy barriers (WTO 2019). Francois and Hoekman (2010) find that liberalizing services can ignite positive growth dynamics, both aggregate and micro. They identify productivity gains and inward FDI as the main channels, activated by increased domestic efficiency and competitiveness. Similarly, Shepherd (2019), using a structural gravity model, shows the impact on manufacturing exports and output of services liberalization is larger than a reduction in tariffs. The results from this are important for gauging the spillover effects of services liberalization on other economic sectors. Because services are crucial inputs for firms in manufacturing and other industries, reducing trade restrictions on services trade can deliver important benefits for the rest of the economy as well.

On similar lines, Beverelli, Fiorini, and Hoekman (2017) focus on the impact that discriminatory barriers to trade in services has on manufacturing productivity. Using a large sample of developed and developing countries, they show that relaxing restrictions on the trade in services positively affects the productivity of manufacturing firms that make large use of services in their production processes. It also has a positive mediating effect on institutions in importing countries. Arnold et al. (2016) and Arnold, Javorcik, and Mattoo (2011) corroborate these findings by focusing on two very different case studies: India and the Czech Republic. By using firms' panel data, they analyze the effect of different dimensions of services reforms, from delicensing to privatization and foreign ownership, on manufacturers that rely on services as intermediate inputs. They find that services liberalization boosts the productivity of downstream manufacturing firms, particularly foreign-owned ones.

Winkler (2019), focusing on developing countries, studies productivity spillovers from services to manufacturing firms. This analysis is based on the World Bank's Enterprise Surveys of 105 low- and middle-income countries from which a large firm-level cross-section database is constructed (24,000 services and 38,000 manufacturing firms). The author finds evidence of positive spillovers between the two sectors, in particular from services firms with high technological intensity and productivity. The size of the spillover tends to increase with the services intensity of manufacturing firms and in general with their absorptive capacity, size, exporting behavior, foreign ownership, and national income level. As a result, Winkler (2019) suggests that services liberalization is a sound policy to boost the magnitude of productivity spillovers from services to manufacturing firms. Evidence also shows that manufacturing firms that more intensively use services are more resilient to external shocks, such as import competition (Bamieh et al. 2020).

Technological change in itself has brought and continues to deliver great benefits to developing countries, including the quality and accessibility of services through digital means. For example, Industry 4.0 technologies are enabling new business models and opening new markets for innovative firms and entrepreneurs in developing

countries (Chapter 6). Digital-intensive services, which have experienced large productivity increases in recent years, could become a primary driver of economic growth in developing countries by enabling significant productivity improvements in manufacturing and services. Industries that are heavy users of ICT services are associated with greater value-added contributions to the overall economy. Because of this, restrictive digital regulations, particularly on data and the internet, have the potential to inhibit productivity growth (van der Marel 2019).

Labor Markets and Inequality

Services in most developing countries tend to perform better than agriculture and manufacturing in labor market outcomes and total productivity. This, coupled with above-average earnings, has attracted many people to move from rural to urban areas and has advanced economic growth in many low-income countries (Diao, McMillan, and Rodrik 2019). Labor demand in manufacturing industries, however, has been stagnant or even declining in both advanced and developing economies (Loungani et al. 2017). An important question here is how services GVCs affect employment, earnings, and their distribution across different socioeconomic groups. The answer is not straightforward. Recent theoretical research points to strong but ambiguous effects that services trade can have on labor market outcomes when there are labor market frictions.⁵

A reason for this ambiguity is that services are comprised of very diverse subsectors. For instance, most of the subsectors discussed in the previous sections, such as software development and BPO, are highly traded while other services are more dependent on local demand. In finance, business services, IT, and telecommunications, it is easier to boost productivity, particularly through technological innovation, to reach the frontier set by developed countries. Although these services have considerable potential to increase growth through trade, they also require a highly skilled workforce and therefore have a lower potential to absorb large amounts of low-skilled workers. And vice versa: retail and personal services (and similar subsectors) are less traded, characterized by a high level of informality, and difficult to innovate with productivity-enhancing technologies. These services rely on more low-skilled and unskilled labor, but they also pay lower wages. That said, the employment effect of the expansion of high-tech services, which are typically capital-intensive, is minor when compared with their multiplier effect. Moretti (2010) estimates that for each new ICT job about five complementary, additional local jobs are generated. The rest of the section on labor markets and inequality examines in greater detail the evidence on the labor market effects of services trade.

⁵ See WTO (2019) for a review of the literature.

Employment

Services trade is an important source of employment in many developing countries. WTO (2019) finds that exports of cross-border services support some 10% of all jobs in Costa Rica, South Africa, and some other countries. As noted in the section on joining services value chains, estimates suggest ICT in India supports up to 16 million workers directly and indirectly and has generated more jobs than any other sector over the past 20 years. Even so, the empirical evidence on the impact of services trade on labor market outcomes is inconclusive. Particularly in developed countries, opposite forces seem to be at play, leading to mixed results—and this can be seen in Germany, Ireland, Italy, and the US, among other countries. Automation and offshoring practices are lowering demand for domestic labor in manufacturing and services, particularly if the tasks performed at home and abroad are substitutes (Harrison and McMillan 2011). But higher productivity and lower input costs due to GVCs increase demand for domestic labor. As a result, the aggregate impacts of trade in services on employment are reported to be small and imprecise (Görg and Hanley 2005; Eppinger 2017; Liu and Treffer 2019).

The case for developing countries is quite different. Because low- and middle-income countries are usually offshore locations rather than offshoring economies, the negative substitution effect of services offshoring is less prevalent (WTO 2019). But the opposite phenomenon—reshoring—is a potential force working against the beneficial effects of offshoring for developing countries. There are several reasons why firms decide to repatriate production from host countries. Real wages have grown strongly in classic offshoring locations, decreasing their cost advantages (Bacchetta et al. 2021). Relocating production may also be advantageous when combined with automation, which can lower labor demand in both developed and developing countries by competing with low-cost labor (Acemoglu and Restrepo 2020). Indeed, several services are at risk of reshoring decisions, including telecommunications (e.g., call centers), financial services (e.g., accounting), and medical services (WTO 2017).

The evidence in favor of reshoring is scant and even more so for services. It is largely anecdotal and limited to individual industries and locations (de Backer et al. 2016; Veugelers et al. 2017). This could be even more the case for services value chains in which established relationships and sunk-cost investment ensure a high degree of stickiness (Antràs 2021; Jakubik and Stolzenburg 2020). By contrast, the empirical evidence on the effects of offshoring in developing countries not only points to greater employment volatility but also to better working conditions. Bergin, Feenstra, and Hanson (2011) show that US firms use offshoring, particularly services imports, to adjust to demand fluctuations instead of permanently replacing domestic functions. These shocks transmit across borders to low-wage countries, such as Mexico, which experience employment swings that are twice as large as those in high-wage countries. This can help explain the high attrition rates of offshore sectors discussed in the section on joining global value chains. Offshoring firms, however, also bring benefits to the workforces of host countries. Messenger and Ghosheh (2010) find that while some BPO

firms in India have an annual staff turnover of 100%, BPO workers there have higher wages and nonwage benefits, shorter working hours, and better employment conditions.

The evidence on the overall effect of services trade on employment in developing countries is still quite scarce and mostly related to case studies in specific sectors and countries. Faber and Gaubert (2019), studying tourism in Mexico, find large positive effects on employment and earnings in tourist destinations compared with nontourist areas. Specifically, they find a 2.5% increase in local employment for a 10% increase in tourism sales. These findings are partly due to spillover effects on local manufacturing, but they do not consider general equilibrium effects in relation to the negative impact on less-touristic municipalities. Thus, the aggregate effects on employment and wages could be much smaller. In another study on Mexico, Atkin, Faber, and Gonzalez-Navarro (2018) focus on the entry of Walmart Inc. into the country. They analyze the role of imports through FDI and do not find a significant aggregate impact on employment, again due to the general equilibrium effects on local stores. But they do find higher real wages due to lower prices.

Earnings and Income Inequality

Because trade in services is associated with higher growth and GDP per capita, this often also translates into higher average earnings, as highlighted by Messenger and Ghosheh (2010), Atkin, Faber, and Gonzalez-Navarro (2018), and Faber and Gaubert (2019). Fiorini and Hoekman (2019), using an econometric approach, explain how liberalizing trade in services by increasing incomes can help achieve many of the Sustainable Development Goals. The main channel for this works through improving access to services by eliminating barriers to services trade and investment, as well as to the domestic services industry, to increase competitiveness and performance, thereby raising average earnings and so helping to achieve the Sustainable Development Goals.

Increasing aggregate earnings does not imply their equal distribution and, indeed, doing so may actually increase income inequality. Concerns are growing that services trade may lead to two potential layers of inequality. First, services jobs in both developed and developing countries, are typically more skills intensive than jobs in manufacturing and agriculture, particularly those in GVCs. This results in earnings growth disproportionately accruing to highly skilled workers and discriminating against those with low educational attainment, who are also the most vulnerable to technological change in the labor market. Second, the concentration of services in urban areas may widen the urban–rural divide. Still, services trade is also expected to help close wage and gender gaps at the workplace given the high share of women employed in services (WTO 2019). Evidence from Nano et al. (2021) from India shows that liberalizing telecommunications, finance, and insurance can help close gender gaps in education, as discussed in the following section on inclusive jobs.

Wage polarization is progressively characterizing labor markets in many developed and developing countries (WTO 2017). With most low-skilled labor being pushed into services jobs, evidence is consistently showing that earnings growth takes place at the tail of distribution—that is, at the low and high end of services jobs—with the middle part of distribution becoming poorer in real terms (Autor, Dorn, and Hanson 2013; World Bank 2016). But it is also argued that the GVCs of services industries offer opportunities for both job creation and labor reallocation to tackle this growing polarization (Loungani et al. 2017). Evidence also shows that the polarization of labor markets, which is largely due to automation and routinization, is lower in developing countries. Based on a sample of 85 countries since 1990, Das and Hilgenstock (2018) show that lower-income countries are significantly less exposed to routinization than the richer ones.

Cross-country empirical evidence shows a negative correlation between changes in income inequality and changes in services exports. This may imply that a services-based growth model is more inclusive than the standard goods-based one (Loungani et al. 2017). These authors propose two potential explanations for this stylized fact. The first is linked to the labor market reallocation mechanism, which implies that mainly low- and middle-income workers benefit from upward labor mobility. The second is the gender patterns in labor market outcomes. If the employment of women is higher in countries with a deeper integration in services GVCs, these countries will also tend to show lower gender gaps in earnings, thereby exerting downward pressure on overall income inequality.

Inclusive Jobs

A related issue is how services value chains contribute to more inclusive labor markets. Although a services-led economy provides important sources of inclusive growth, it also leads to new challenges (Ngai and Petrongolo 2017). One of them is that services are more likely to be characterized by temporary employment than manufacturing (WTO 2017). Khatiwada (2019) explores how Asia's developing economies can provide access to decent employment through a services-led growth model. The path identified relies on the earlier discussion of productivity in this chapter. Here, the workforce shifts from low- to high-productivity sectors. Khatiwada (2019) identifies two main challenges to this approach. The first is the low level of infrastructure investment in developing countries: to push services productivity, countries need to expand their infrastructure. The second is human capital accumulation. To develop a skilled workforce, large investments in training and upskilling are needed, as is reducing unemployment and informal employment.

This corroborates the evidence on India and the Philippines that shows trade in services, being skills intensive, is beneficial, especially for more educated workers (Mehta and Hasan 2012; Fermo and Xing 2021). A positive side effect of this is that services trade raises the incentive for workers in developing countries to get more education. Evidence from India suggests that opening up telecommunications, finance, and insurance, among

other sectors, as well as services exports from BPO, increased educational attainment (Nano et al. 2021; Jensen 2012; Shastry 2012). Nano et al. (2021) find that India's services liberalization explains about 5% of the country's rising educational attainment and close to 10% of the narrowing gender education gap. Shastry (2012) shows that as a result of increased educational attainment, the rise in India's skills premium was less pronounced. These patterns are also typical of a growing young population. Trade in services can be essential for satisfying the demand for education and digital services of young people. Countries characterized by a large base in the age pyramid are more accustomed to using digital technologies, thereby facilitating imports of education services. This, in turn, can narrow gender-employment gaps as long as women are overrepresented in education services (WTO 2019).

In line with this and as already highlighted in this chapter, Lan and Shepherd (2019) show how services can be vital for achieving gender equality in Asia's developing economies. Using country data, they argue that the speed at which structural change for women workers has taken place in most regions in Asia is explained by the high demand for women in services and their comparative disadvantage in manufacturing. This resonates with Pitt, Rosenzweig, and Hassan (2012) and Cortes, Jaimovich, and Siu (2018), who argue that services rely on cognitive and social skills in which women tend to have a comparative advantage relative to men, as opposed to the physical strength needed in agriculture or manufacturing. Lan and Shepherd (2019) then use a dataset of firms to study the role of management led by women in the success of firms. They find that these firms are more prevalent in services than in manufacturing, and services firms with women in senior management have higher productivity.

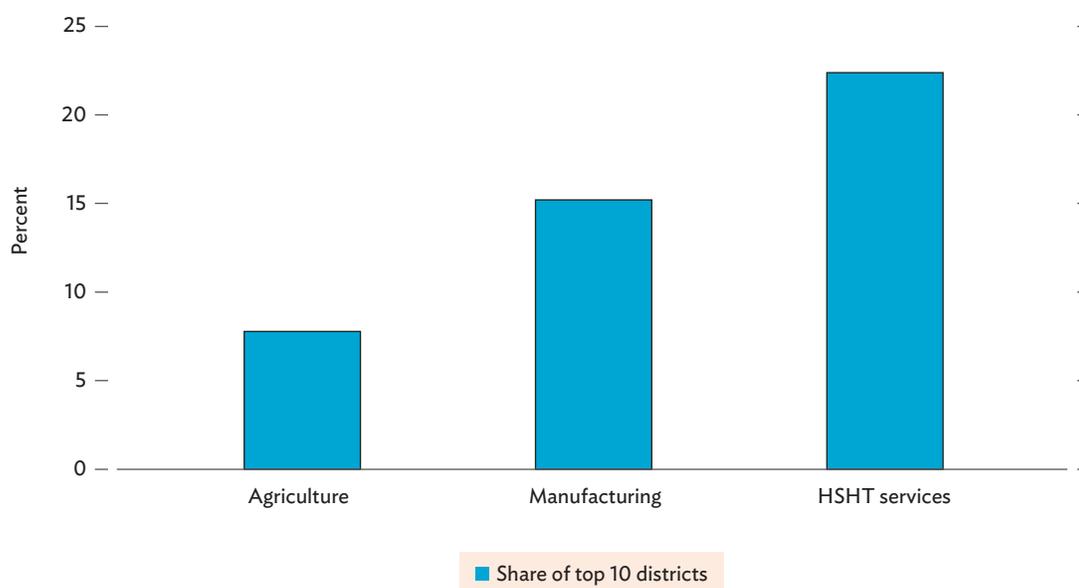
Despite 11% growth in the proportion of women in high-skill services jobs globally since 1991, it is still very low in developing countries, at an average of 3% of these positions (World Bank and WTO 2020). In most developing countries, women in the workforce also tend to be concentrated in the least-traded services sectors, such as health, education, and social work, with wholesale and retail trade being the exceptions (WTO 2019). This pattern can limit the gains accruing to women from trade and in particular from the general servicification of economies. For instance, women working in GVCs are 10% more likely to hold formal jobs than women who do not work in GVC-integrated sectors. In fact, firms participating in GVCs and foreign-owned firms tend to have higher shares of women workers (World Bank and WTO 2020). These concerns, however, could subside as more services become more intensively traded.

Structural differences in labor markets also relate to firm size. Micro, small, and medium-sized enterprises (MSMEs) operating in services have both advantages and disadvantages compared with manufacturing MSMEs. While services MSMEs are less internationalized than manufacturing MSMEs, they are about 2 years ahead of manufacturing MSMEs when they start exporting. One reason for this that services MSMEs are more ICT-intensive, so that getting access to international markets and starting to export seems to be easier for them. Many services are also increasingly

tradable across borders due to lower trade costs, and this can benefit particularly services MSMEs in developing countries, which have historically lacked market access (WTO 2019). Evidence from data on MSMEs from more than 100 countries shows that services MSMEs are less likely than manufacturing ones to suffer from barriers to trade. This is particularly so for access to finance, which tends to be more limited in smaller firms, since services MSMEs typically have lower fixed costs than manufacturing MSMEs and are less dependent on external finance (Lejarraga et al. 2014).

Inequality among regions within a country is a concern for services-led development, particularly for services value chains. Highly traded services sectors tend to be more clustered than manufacturing or agriculture. Agglomeration forces related to the interaction of skills-sharing are particularly important for these services (Diodato, Neffke, and O'Clery 2018). This is aggravated in the case of services value chains by export activity being already disproportionately concentrated in larger cities compared with overall economic activity (Bakker et al. 2021). In line with this, Topalova (2007) and WTO (2019) report that most workers in Indian cities are employed in the services sector. Figure 4.4 shows that high-skill and highly traded services sectors in India are significantly more concentrated than agriculture and manufacturing. The 10 districts with the highest employment in high-skill and highly-traded services, out of approximately 400 districts, account for almost a quarter of sector employment. The corresponding share for agriculture is 7.8%, only about a third, and 15.2% for manufacturing, only about two-thirds.

Figure 4.4: Spatial Employment Concentration Across Sectors in India, 2011



HSHT = high-skill and highly-traded.

Note: HSHT services include banking, insurance, information technology and computer services, professional services, and telecommunications.

Source: Authors' calculation based on data from the National Sample Survey Organization of India for 2011.

Evidence from developed countries tends to be even stronger. Employment in highly-traded services in the US is mostly located along coastal areas with much higher population density than inland areas (Gervais and Jensen 2019). As a result, development led by services value chains could widen the urban–rural divide. The counterargument to this is of course that by attracting workers to cities, services trade can lower inequality linked to urban–rural gaps (Young 2013).

Trade in Services and the Labor Market in the Future

While the empirical evidence does not show large net effects of services GVCs on employment and earnings, recent research indicates a positive outlook for workers in developing countries in the coming decades. Because of the expansion of digital technologies and fast-speed internet across the globe, the tradability of services will continue to increase as structural barriers to physical distance fall. Innovation in translation and robotics, among other areas, could make trade possible in areas that have long required physical presence and face-to-face interactions.

Baldwin and Forslid (2020) argue that this allows for telemigration, whereby the cross-border supply of services from emerging and advanced economies is enabled by falling services trade costs. Countering the disruptive role of automation, telemigration could offer large opportunities to developing countries by allowing trade in services in sectors that can absorb low-skill employment, but are less susceptible to automation. For instance, trade in health and education services has some of the strongest growth rates across all sectors (WTO 2020). Telerobotics—that is, a remotely controlled robot—could even facilitate trade of personal services, such as care, cleaning, and protective services, by combining the advantages of automation with uniquely human skills related to dexterity and empathy. In other words, factors that are likely to be immune to full automation in the foreseeable future.

Important limitations for telemigration are still preventing its full potential from being unleashed. These include policy barriers, such as different national jurisdictions, the need for occupational licenses being only available to domestic suppliers, cultural barriers, lack of trust in the quality of foreign suppliers, and the still limited global spread of some key technologies (WTO 2019). For instance, a platform for the remote supply of services such as Upwork Inc. is affected by both contractual difficulties and technological limitations. Many of these constraints have limited the share of the cross-border delivery of services in total trade and, consequently, also the impact they can have on aggregate labor market outcomes. Tackling these barriers, especially in sectors that are less susceptible to automation, could be a significant opportunity for future services-led development.

The COVID-19 pandemic will likely accelerate the use of broad-based telemigration. Almost all countries have implemented lockdowns, encouraging employees to work from home and employers to facilitate this swift transition. Benefitting from the

technological advancements of the past few decades, such as videoconferencing and real-time translation technology, and the diffusion of high-speed internet networks, firms have adapted processes and invested in equipment to support working from home. Evidence suggests that both workers and managers consider this a success, including from a productivity perspective (OECD 2021). In the future, teleworking might become increasingly prevalent. If it does, policy barriers will be the main barrier to telemigration.

Conclusions and Policy Recommendations

This chapter combines insights from two case studies on services GVCs in India and the Philippines with a broader review of the literature on services trade to shed light on the factors driving integration into services value chains and their effects on development. The main finding is that human capital is the most important factor for integrating developing countries into services value chains. Most highly-traded services are relatively skill-intensive and require proficiency in English. This explains why India and the Philippines have had such success in exporting services.

A conclusion that can be drawn from the development impact is that the global growth of services shows that services-led development is likely to become the main growth strategy for developing countries. While technological progress from robotization to additive manufacturing continues to reduce the demand for labor in agriculture and manufacturing, many services relying on creative or social skills remain labor-intensive. A point to highlight is that global services value chains are central for developing countries to capitalize on this ongoing structural transformation. These value chains provide access to markets in developed countries where demand has increasingly shifted toward services. In addition, high cross-border trade costs for services that require face-to-face contact are gradually reduced by advances in information technology allowing for virtual presences. Many highly-traded services sectors are also increasingly innovative and benefit from high productivity growth easing concerns related to Baumol's cost disease, as discussed in the section on growth, specialization, and barriers to trade.

The chapter, in its analysis on what global services value chains imply for labor markets and the potential of services-led development as an employment creator, finds that little research has been done on the employment effects in developing countries. But from what there is, the evidence does not show significant aggregate employment gains. The case studies on India and the Philippines underscore concerns that automation and AI can threaten low-skill labor in certain services. Even so, future trends, such as falling trade costs for services, have the potential to unlock major employment gains. And services value chains are likely to be more inclusive than manufacturing and agriculture value chains. Services are subject to lower barriers for MSMEs and employ a higher share of women. Importantly, services value chains are also often greener than agricultural or manufacturing GVCs, which allows developing countries to participate in trade without the high costs for the environment that the industrialization of advanced

and emerging economies caused. That said, services value chains could potentially increase skill divides and regional inequality.

Four key policy recommendations can be drawn from this chapter's findings. First, as already highlighted by Heuser and Mattoo (2017) in the *Global Value Chain Development Report 2017*, services sectors are still subject to high and persistent trade barriers. These are often rooted in regulations and therefore less visible and concrete than tariffs on goods. Tackling these barriers is paramount for both developed and developing countries to facilitate services-led development. Second, human capital becomes even more important in economies driven by services value chains. While the high demand for skills for these value chains leads in itself to higher educational attainment by raising disposable incomes and returns to education, policy can accelerate this. The cost of schooling, accessibility of education, and information asymmetries are the main obstacles to increasing educational attainment, particularly in rural areas of developing countries. Already low-cost policies for providing better information on job opportunities have shown to be effective in lowering these barriers. Rolling out these policies on a larger scale, while also investing in costlier programs, such as increasing the number of schools and investing in infrastructure for accessibility, are necessary to fully capitalize on services-led development. Third, by focusing these programs on rural areas, policymakers can ensure that the impact on regional inequality is dampened and that the globalization of services is inclusive. And fourth, the development of domestic markets for services and higher R&D investments are necessary to be able to move up services value chains. Countries have different tools to support these factors, including government procurement and R&D incentives.

It is important to note that the services sector is highly heterogenous. Hence, conclusions taken from case studies or econometric work based on services subsectors have limited external validity on the impact of services trade in other subsectors. While software and BPO services are high-skilled, tourism, hospitality, and personal services tend to be low skilled. These services also differ in their susceptibility to automation, their exposure to digital progresses, and many other factors. This chapter's findings are therefore only applicable to the subsectors which the cited research examines. Nevertheless, some factors, such as the importance of human relative to physical capital, and higher inclusiveness and sustainability, apply to almost all services, such that some conclusions are broadly applicable.

The interaction between digital progress and services leads increasingly to a transformation where traditional boundaries between services become less clear. Hence, traditional associations within a services sector related to skills- and technology-intensity might become misleading when, for instance, employment in the retail trade is driven by high-tech firms, such as Amazon.

The global trend toward services is unlikely to stop. Given this, policymakers should focus on maximizing the benefits from this trend rather than focusing on whether premature deindustrialization is beneficial or not. This is not to say that the discussion on premature industrialization has no value, because it provides important insights on which issues policymakers need to tackle to make services-led development as inclusive and sustainable as possible.

References

- Acemoglu, D., and P. Restrepo. 2020. Robots and Jobs: Evidence from US Labor Markets. *Journal of Political Economy*. 128 (6). pp. 2188–2244.
- Antràs, P. 2021. De-Globalisation? Global Value Chains in the Post-COVID-19 Age. *NBER Working Paper*. No. 28115. Cambridge, MA: National Bureau of Economic Research.
- Arnold, J. M., B. S. Javorcik, M. Lipscomb, and A. Mattoo. 2016. Services Reform and Manufacturing Performance: Evidence from India. *Economic Journal*. 126 (590). pp. 1–39.
- Arnold, J. M., B. S. Javorcik, and A. Mattoo. 2011. Does Services Liberalization Benefit Manufacturing Firms? Evidence from the Czech Republic. *Journal of International Economics*. 85 (1). pp. 136–146.
- Arora, A., V. S. Arunachalam, J. Asundi, and R. Fernandes. 2001. The Indian Software Services Industry. *Research Policy*. 30 (8). pp. 1267–1287.
- Atkin, D., B. Faber, and M. Gonzalez-Navarro. 2018. Retail Globalization and Household Welfare: Evidence from Mexico. *Journal of Political Economy*. 126 (1). pp. 1–73.
- Autor, D. H., D. Dorn, and G. H. Hanson. 2013. The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review*. 103 (6). pp. 2121–2168.
- Bacchetta, M., E. Bekkers, R. Piermartini, S. Rubinova, V. Stolzenburg, and A. Xu. 2021. COVID-19 and Global Value Chains: A Discussion of Arguments on Value Chain Organization and the Role of the WTO. *WTO Staff Working Papers*. No. ERSD-2021-3. Geneva: World Trade Organization.
- Bakker, J., A. Garcia-Marin, A. Potlogea, N. Voigtländer, and Y. Yang. 2021. Cities, Heterogeneous Firms, and Trade. Unpublished.
- Baldwin, R. 2013. Global Supply Chains: Why They Emerged, Why They Matter, and Where They Are Going. In D. K. Elms and P. Low, *Global Value Chains in a Changing World*. Geneva: Fung Global Institute, Nanyang Technological University, and World Trade Organization.
- Baldwin, R., and R. Forslid. 2020. Globotics and Development: When Manufacturing Is Jobless and Services Are Tradable. *CEPR Discussion Papers*. No. 14293. London: Centre for Economic Policy Research.
- Bamieh, O., M. Fiorini, B. Hoekman, and A. Jakubik. 2020. Services Input Intensity and US Manufacturing Employment Responses to the China Shock. *Review of Industrial Organization*. 57 (2). pp. 333–349.
- Baumol, W. 1967. Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis. *American Economic Review*. 57 (3). pp. 415–426.
- Bergin, P. R., R. C. Feenstra, and G. H. Hanson. 2011. Volatility Due to Offshoring: Theory and Evidence. *Journal of International Economics*. 85 (2). pp. 163–173.
- Beverelli, C., M. Fiorini, and B. Hoekman. 2017. Services Trade Policy and Manufacturing Productivity: The Role of Institutions. *Journal of International Economics*. 104 (C). pp. 166–182.

- Bhatnagar, S. 2006. India's Software Industry. In V. Chandra, ed. *Technology, Adaptation, and Exports: How Some Developing Countries Got It Right*. Washington, DC: World Bank.
- Buera, F. J., and J. B. Kaboski. 2012. The Rise of the Service Economy. *American Economic Review*. 102 (6). pp. 2540–2569.
- Chadha, R., D. K. Brown, A. V. Deardorff, and R. M. Stern. 2000. Computational Analysis of the Impact on India of the Uruguay Round and the Forthcoming WTO Trade Negotiations. *Working Paper*. No. 312. Ann Arbor, MI: Gerald R. Ford School of Public Policy, William Davidson Institute.
- Cortes, G. M., N. Jaimovich, and H. E. Siu. 2018. The “End of Men” and Rise of Women in the High-Skilled Labor Market. *NBER Working Paper Series*. No. W24274. Cambridge, MA: National Bureau of Economic Research.
- CTIER (Centre for Technology, Innovation and Economic Research). 2016. Indian IT Industry: Future Competitiveness Demands Increased R&D Spending. Pune.
- Das, M. M., and B. Hilgenstock. 2018. The Exposure to Routinization: Labor Market Implications for Developed and Developing Economies. Washington, DC: International Monetary Fund.
- de Backer, K., C. Menon, I. Desnoyers-James, and L. Moussiégt. 2016. *Reshoring: Myth or Reality? OECD Science, Technology and Industry Policy Papers*. No 27. Paris: Organisation for Economic Co-operation and Development.
- Diao, X., M. McMillan, and D. Rodrik. 2019. The Recent Growth Boom in Developing Economies: A Structural-Change Perspective. In *The Palgrave Handbook of Development Economics*. London: Palgrave Macmillan.
- Diodato, D., F. Neffke, F. and N. O'Clery. 2018. Why Do Industries Coagglomerate? How Marshallian Externalities Differ by Industry and Have Evolved over Time. *Journal of Urban Economics*. 106. pp. 1–26.
- Duernecker, G., B. Herrendorf, and A. Valentinyi. 2017. Structural Change within the Service Sector and the Future of Baumol's Disease. *CEPR Discussion Paper*. No. 12467. London: Centre for Economic Policy Research.
- Eppinger, P. S. 2019. Service Offshoring and Firm Employment. *Journal of International Economics*. 117 (C). pp. 209–228.
- Faber, B., and C. Gaubert. 2019. Tourism and Economic Development: Evidence from Mexico's Coastline. *American Economic Review*. 109 (6). pp. 2245–2293.
- Fermo, L., and Y. Xing. 2021. Plugging into Global Value Chains of Service Industry: The Experiences of Philippines. Unpublished.
- Fiorini, M., and B. Hoekman. 2019. Restrictiveness of Services Trade Policy and the Sustainable Development Goals. In M. Helble and B. Shepherd, eds. *Leveraging Services for Development: Prospects and Policies*. Tokyo: Asian Development Bank Institute.
- Francois, J., and B. Hoekman. 2010. Services Trade and Policy. *Journal of Economic Literature*. 48 (3). pp. 642–692.
- Gervais, A., and J. B. Jensen. 2019. The Tradability of Services: Geographic Concentration and Trade Costs. *Journal of International Economics*. 118. pp. 331–350.

- Ghani, E., and S. D. O'Connell. 2016. Can Services Be a Growth Escalator in Low-Income Countries? *Revue d'économie du développement*. 24 (2). pp. 143–173.
- Görg, H., and A. Hanley. 2005. Labor Demand Effects of International Outsourcing: Evidence from Plant-Level Data. *International Review of Economics & Finance*. 14 (3). pp. 365–376.
- Hallward-Driemeier, M., and G. Nayyar. 2017. *Trouble in the Making? The Future of Manufacturing-Led Development*. Washington, DC: World Bank.
- Handley, K., and N. Limao. 2015. Trade and Investment under Policy Uncertainty: Theory and Firm Evidence. *American Economic Journal: Economic Policy*. 7 (4). pp. 189–222.
- Harrison, A., and M. McMillan. 2011. Offshoring Jobs? Multinationals and US Manufacturing Employment. *Review of Economics and Statistics*. 93 (3). pp. 857–875.
- Helble, M., and B. Shepherd, eds. 2019. *Leveraging Services for Development: Prospects and Policies*. Tokyo: Asian Development Bank Institute.
- Heuser, C., and A. Mattoo. 2017. Services Trade and Global Value Chains. In World Bank, Institute of Developing Economies – Japan External Trade Organization, Organisation for Economic Co-operation and Development, University of International Business and Economics, and World Trade Organization *Global Value Chain Development Report 2017: Measuring and Analyzing the Impact of GVCs on Economic Development*. Washington, DC.
- Huang, S., A. Jai, and Y. Xing. 2021. Plugging into Global Value Chains of the Software Service Industry: The Experiences of India. Unpublished.
- IBPAP (IT & Business Process Association Philippines). 2016. *Accelerate PH Future-Ready Roadmap 2022*. Manila.
- Jakubik, A., and V. Stolzenburg. 2020. Footloose Global Value Chains: How Trade Costs Make a Difference. *Review of Industrial Organization*. 57 (2). pp. 245–261.
- Jalote, P., and P. Natarajan. 2019. The Growth and Evolution of India's Software Industry. *Communications of the ACM*. 62 (11). pp.64–69
- Jensen, R. 2012. Do Labor Market Opportunities Affect Young Women's Work and Family Decisions? Experimental Evidence from India. *Quarterly Journal of Economics*. 127 (2). pp. 753–792.
- Jorgenson, D. W., and M. P. Timmer. Structural Change in Advanced Nations: A New Set of Stylised Facts. *Scandinavian Journal of Economics*. 113 (1). 1–29.
- Lan, J., and B. Shepherd. 2019. Women and the Services Sector. In M. Helble and B. Shepherd, eds. *Leveraging Services for Development: Prospects and Policies*. Tokyo: Asian Development Bank Institute.
- Lejárraga, I., H. Lopez, H. Oberhofer, S. Stone, and B. Shepherd. 2014. *Small and Medium-Sized Enterprises in Global Markets: A Differential Approach for Services?* Paris: Organisation for Economic Co-operation and Development.
- Liu, R., and D. Treffer. 2019. A Sorted Tale of Globalization: White Collar Jobs and the Rise of Service Offshoring. *Journal of International Economics*. 118 (C). pp. 105–122.
- Loungani, P., S. Mishra, C. Papageorgiou, and K. Wang. 2017. World Trade in Services; Evidence from A New Dataset. *IMF Working Paper*. No. 17/77. Washington, DC: International Monetary Fund.

- McCarthy, N. 2017. The Countries with the Most STEM Graduates. *Forbes*. 2 Feb. <https://www.forbes.com/sites/niallmccarthy/2017/02/02/the-countries-with-the-most-stem-graduates-infographic>.
- Mehta, A., and R. Hasan. 2012. The Effects of Trade and Services Liberalization on Wage Inequality in India. *International Review of Economics & Finance*. 23 (C). pp. 75–90.
- Messenger, J., and N. Ghosheh, eds. 2010. *Offshoring and Working Conditions in Remote Work*. Springer.
- Moretti, E. 2010. Local Multipliers. *American Economic Review*. 100 (2). pp. 373–377.
- Nano, E., G. Nayyar, S. Rubinova, and V. Stolzenburg. 2021. *Services Liberalization and Educational Attainment: Evidence from India*. *WTO Staff Working Paper*. No. ERSD-2021-10. Geneva: World Trade Organization.
- NASSCOM (National Association of Software and Service Companies). 2013. *The IT-BPO Sector in India: Strategic Review 2013*. Delhi.
- . 2016. *HR in the Digital Age: Annual HR Survey 2015*. Delhi.
- . 2021. *Technology Sector in India 2021—New World: The Future Is Virtual*. Delhi.
- Nayyar, G., and M. Cruz. 2018. *Developing Countries and Services in the New Industrial Paradigm*. Washington, DC: World Bank.
- Nayyar, G., M. Cruz, and L. Zhu. 2018. Does Premature Deindustrialization Matter? The Role of Manufacturing versus Services in Development. *World Bank Policy Research Working Paper*. No. 8596. Washington, DC: World Bank.
- Ngai, L. R., and B. Petrongolo. 2017. Gender Gaps and the Rise of the Service Economy. *American Economic Journal: Macroeconomics*. 9 (4). pp. 1–44.
- OECD (Organisation for Economic Co-operation and Development). 2021. *The Role of Telework for Productivity and Well-Being during and Post-COVID-19*. Paris.
- Pierce, J. R., and P. K. Schott. 2016. The Surprisingly Swift Decline of US Manufacturing Employment. *American Economic Review*. 106 (7). pp. 1632–1662.
- Pitt, M. M., M. R. Rosenzweig, and M. N. Hassan. 2012. Human Capital Investment and the Gender Division of Labor in a Brawn-Based Economy. *American Economic Review*. 102 (7). pp. 3531–3560.
- Ravindran, R., and S. M. Babu. 2021. Premature Deindustrialization and Income Inequality in Middle-Income Countries. *WIDER Working Paper*. No. 2021/8. Helsinki: United Nations University World Institute for Development Economics Research.
- Rodrik, D. 2016. Premature Deindustrialization. *Journal of Economic Growth*. 21 (1). pp. 1–33.
- . 2018. *New Technologies, Global Value Chains, and Developing Economies*. *NBER Working Papers Series*. No. 25164. Cambridge, MA: National Bureau of Economic Research Working Paper.
- Romer, P. M. 1994. The Origins of Endogenous Growth. *Journal of Economic Perspectives*. 8 (1). pp. 3–22.
- Sachetti, F. C., A. Hunt, C. Currie, F. Filgueira, G. D. Langou, M. Beneke de Sanfeliu, S. Gammage, R. Hayashi, and M. Thomas. 2019. *A Gendered Perspective on Changing Demographics: Implications for Labor, Financial and Digital Equity*. Paper prepared for Think 20 Japan. Tokyo.

- Sen, A. 2020. *Structural Change within the Services Sector, Baumol's Cost Disease, and Cross-Country Productivity Differences*. MPRA Paper. No. 99614, Munich: University Library of Munich.
- Sharpe, M. 2009. *Playing to Win in the New Software Market-Software 2.0: Winning for Europe*. Report of an Industry Expert Group on European Software Strategy. Brussels: Industry Expert Group on European Software Strategy.
- Shastry, G. K. 2012. Human Capital Response to Globalization Education and Information Technology in India. *Journal of Human Resources*. 47 (2). pp. 287–330.
- Shepherd, B. 2019. Services Policies and Manufacturing Exports. In M. Helble and B. Shepherd, eds. *Leveraging Services for Development: Prospects and Policies*. Tokyo: Asian Development Bank Institute.
- Slattery, C., and O. Zidar. 2020. Evaluating State and Local Business Incentives. *Journal of Economic Perspectives*. 34 (2). pp. 90–118.
- Topalova, P. 2007. Trade Liberalization, Poverty, and Inequality: Evidence from Indian Districts. In A. Harrison, ed. *Globalization and Poverty*. Chicago: University of Chicago Press.
- UNCTAD (United Nations Conference on Trade and Development). 2014. *Information Economy Report 2012: The Software Industry and Developing Countries*. Geneva.
- van der Marel, E. 2019. Manufacturing and Services Productivity: The Role of New Technologies and Policy. In M. Helble and B. Shepherd, eds. *Leveraging Services for Development: Prospects and Policies*. Tokyo: Asian Development Bank Institute.
- Veugelers, R., U. Batsaikhan, F. Biondi, A. Bravo-Biosca, J. Feliu, D. Marin, R. Kalcik et al. 2017. *Remaking Europe: The New Manufacturing as an Engine for Growth*. Brussels: Bruegel Blueprint Series.
- World Bank. 2016. *World Development Report 2016: Digital Dividends*. Washington, DC.
- World Bank and WTO (World Trade Organization). 2020. *Women and Trade: The Role of Trade in Promoting Gender Equality*. Washington, DC.
- WTO (World Trade Organization). 2017. *World Trade Report 2017—Trade, Technology, and Jobs*. Geneva.
- . 2019. *World Trade Report 2019: The Future of Services Trade*. Geneva.
- Young, A. 2013. Inequality, the Urban-Rural Gap, and Migration. *Quarterly Journal of Economics* 128 (4). pp. 1727–1785.
- . 2014. Structural Transformation, the Mismeasurement of Productivity Growth, and the Cost Disease of Services. *American Economic Review* 104 (11). pp. 3635–3667.
- Yu, J., L. Wang, and K. Jiao. 2020. *AI and Restructuring of Call Center Industry—Implications to Global Value Chain of Services*. Unpublished.