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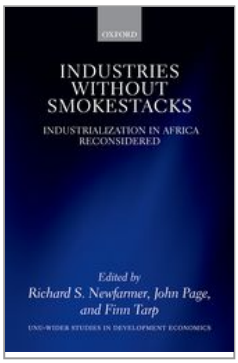

Industries without Smokestacks: Industrialization in Africa Reconsidered
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Abstract and Keywords

An early stylized fact of development economics is that low-income countries have large differences in output per worker across sectors, and the movement of workers from low- to high-productivity sectors—structural transformation—is a key driver of growth. Historically, manufacturing has been the key driver of structural transformation. It can employ large numbers of unskilled workers, is capable of productivity gains and produces tradeable products allowing economies of scale and specialization. But manufacturing growth in Africa has lagged behind other regions, leading some observers to question Africa’s ability to catch up. This view overlooks such emerging industries as ICT, tourism, food processing, horticulture, and new services exports, which share many characteristics with manufacturing. These “industries without smokestacks” are beginning to propel growth in Africa much as traditional manufacturing did in other, fast growing regions.

Keywords: Africa, structural transformation, manufacturing, growth worker output, industries without smokestacks

1. Introduction

Structural transformation in Africa has become a hot topic. Over the last five years, the African Development Bank and the UN Economic Commission for Africa have expressed concerns about the pattern and pace of structural change in the region. The African Union (2015), in its *Agenda 2063: The Africa We Want*, has called for the economic transformation of the continent, and the Africa Center for Economic Transformation has published its first *Africa Transformation Report* (ACET, 2014). The reason for this rising concern is clear. Structural change—the movement of workers from lower to higher productivity employment—has contributed far less to growth in Africa than in other fast-growing developing regions (McMillan, Rodrik, and Verduzco-Gallo 2014; de Vries, Timmer, and de Vries 2013).

Historically, industry, particularly manufacturing, is the sector on which economies have relied early in the process of structural transformation. Africa's experience with industrialization, however, has been disappointing. In 2014, the average share of manufacturing in GDP in sub-Saharan Africa (SSA) was about 10 per cent, unchanged from the 1970s. Not surprisingly, Africa's slow pace of industrialization has caused observers to question the durability of its growth prospects (Rodrik 2014).

At the same time, changes in transport costs and information and communications technology are shifting the boundaries of industry. When today's system of economic statistics was first drawn up there was little confusion over **(p.2)** what industry was: mining, manufacturing, utilities, and construction. Of these, manufacturing—'smokestack industry'—was regarded as the key driver of structural transformation. Today, a wide range of services and agro-industrial products, including horticultural products, has emerged. These activities have many features in common with manufacturing.[1] They are tradable and have high value added per worker. Like manufacturing, they benefit from technological change and productivity growth. Some exhibit scale and agglomeration economies (Ebling and Janz 1999; Ghani and Kharas 2010). We call them 'industries without smokestacks'.

In 2015, the Brookings Institution and UNU-WIDER launched a joint research project entitled *Industries without Smokestacks: Implications for Africa's Industrialization*. The objective of the project was to help African policy makers develop a better understanding of industries without smokestacks and their potential to contribute to growth enhancing structural change. This book presents the results of that research. It is structured in three main parts. Part I presents seven essays that survey core aspects of tradable services and agro-industrial value chains at the global level. Part II consists of nine country-level studies from Africa. Part III examines the opportunities for and constraints on more rapid growth of industries without smokestacks offered by Africa's regional communities. This introductory chapter reviews common themes, and a concluding chapter explores the implications of the studies in this volume for public policy at the national, regional, and global level.

2. The Problem of Structural Transformation in Africa

One of the earliest 'stylized facts' of development economics is that low-income countries have large differences in output per worker across sectors. Structural transformation—the shift of labour from lower productivity to higher productivity 'modern' sectors—is, therefore, often a key driver of growth (Lewis 1954; Chenery 1986). When strong within-sector productivity growth combines with rapid movement of labour into higher productivity sectors—the pattern of structural transformation seen in East Asia over the last fifty years—very rapid growth of output per worker is the outcome (McMillian and Rodrik 2012).

Because it is a relatively labour-intensive, high productivity sector, industry is historically where workers have first moved in the course of structural transformation (Chenery 1986). Industry is also a powerful engine of within-sector productivity growth. There is evidence that modern manufacturing **(p.3)** industries—unlike agriculture or traditional services—converge to global best practice productivity levels 'unconditionally', regardless of geographical disadvantages, poor institutions, or bad policies (Rodrik 2013). Between 1950 and 2006, about half of the catch-up by developing countries to advanced economy productivity levels was due to rising productivity within industry combined with structural transformation out of agriculture (Duarte and Restuccia 2010).

With this pattern of structural transformation, economy-wide growth depends crucially on the pace of industrialization and its capacity to absorb labour. The contribution that structural-change can make to sustained growth is necessarily self-limiting. The low-income elasticity of demand for agricultural products makes a movement of labour out of agriculture inevitable during the process of development. The labour that is released has to be absorbed in other activities. If productivity is not growing in the other sectors, economy-wide growth ultimately will stall. Historically, where manufacturing has stagnated, and structural transformation has mainly involved reallocation of workers into lower productivity sectors, aggregate per capita income growth has lagged (Duarte and Restuccia 2010).

Because it has the greatest differences across sectors in output per worker, Africa is the developing region with the most to gain from structural transformation. However, despite two decades of solid economic growth, this potential for structural transformation has not been fully realized. In fact, from 1990 through 1999, structural transformation in Africa was 'growth reducing.' Africa's higher productivity sectors, including manufacturing, failed to generate enough jobs to absorb a rapidly growing labour force, and the share of workers employed in high productivity sectors declined, reducing aggregate growth of output per worker (McMillan, Rodrik, and Verduzco-Gallo 2014; de Vries et al. 2013). Labour in Africa began to move from agriculture into more productive employment after 2000, but 80 per cent of workers have moved into retail trade and distribution (de Vries et al. 2013), not into industry.

Mia Ellis, Margaret McMillan and Jed Silver examine the case of structural transformation in Tanzania in detail in Chapter 15. They find that that close to 80 per cent of Tanzania's growth in labour productivity over the period 2002–12 is attributable to structural change. However, the structural change that took place was primarily due to growth in employment in small manufacturing firms and retail, wholesale, and food and beverages services in the informal economy. Services productivity in Tanzania is relatively high at 3.5 times that of agriculture, while average labour productivity in manufacturing is more than seven times that of the agricultural sector. Services productivity in Rwanda was even higher—manufacturing labour productivity was five times agriculture but services were more than ten times agriculture, according to Ggombe and Newfarmer's unweighted calculation in Chapter 16.

(p.4) This structural shift from agriculture to services differs from the development experience of other regions. In a recent paper, Rodrik, Diao, and McMillan (2017) find that growth-enhancing structural change in Ethiopia, Malawi, Senegal, and Tanzania has been accompanied by negative labour productivity growth in non-agricultural sectors of the economy. Ellis, McMillan, and Silver find that within-sector productivity growth was negative in six out of ten modern sectors of the Tanzanian economy in 2002–12. Rodrik et al. suggest that in contrast to East Asia, where both structural change and within-sector labour productivity growth contributed strongly to overall growth, structural change in African countries may be driven mainly from the demand side by external transfers or increased agricultural incomes. As incomes rise, demand increases for a range of 'urban products,' including simple manufactures and services. Under these circumstances, labour productivity in the modern sector may decline, as less productive firms are drawn into production for the domestic market. In Chapter 16, Ggombe and Newfarmer find that productivity in four of eight non-agricultural activities in Rwanda declined somewhat between 2005–14, as the urban labour force grew.

Another difference that distinguishes Africa from Asia's pattern of structural transformation concerns underlying demographics. Between 2000–16, for example, the labour force grew by 0.8 per cent in East Asia and 1.6 per cent in South Asia—while in sub-Saharan Africa (SSA) it grew far more rapidly at 2.9 per cent annually. The median age in Africa is 18, seven years younger than in South Asia (Fox et al. 2017). Because jobs created in off-farm activities were insufficient to absorb these rates of labour force growth, labour had no choice but to stay on the land or seek informal employment. Expanding population pressure on the land weighs heavily on labour productivity in agriculture, and even modestly higher wages off farm are likely to be sufficient to entice young workers to move.

One symptom of this phenomenon has been 'premature urbanization'. Demographics have accelerated rural-urban migration such that Africa is likely to reach 50 per cent urbanization rates at half the per capita income levels that Latin America did, and one-third the levels of East Asia. Since many of these new workers lack skills and jobs, their productivity in the urban economy is likely to be quite low. Many low-income migrants are earning a living in household enterprises and SMEs, a trend that is likely to continue (Fox et al. 2017). Clearly, a major challenge for African governments is to promote the growth of higher value-added activities capable of absorbing the large numbers of unskilled and moderately skilled workers leaving agriculture.

The export-led, mass manufacturing model used with great success in Asia over the past fifty years represents one potential path for Africa toward structural transformation and job growth. However, changes in manufacturing technology and in the global market for manufactured goods may pose new **(p.5)** challenges. The first wave of industrializers such as Britain and Germany had more than 30 per cent of their labour force in manufacturing before industry as a share of GDP began to fall. On average, countries across all income levels now have a lower manufacturing share than before, and they reach their peak employment and value-added shares at a lower income than in previous decades (Rodrik 2016; Ghani and O'Connell 2014). Hallward-Dreimeier and Nayyar (2017) show this phenomena was even greater for employment shares (Figure 1.1). These trends allow more limited space for employment-creating industrialization. At the same time, changes in the global economy may create an opportunity for a different path of structural transformation.

3. A Different Path: Global Trends, Opportunities and Constraints

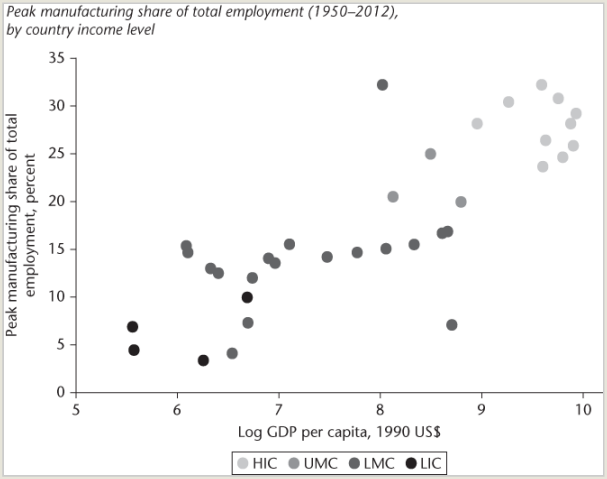

Figure 1.1. Has Africa's manufacturing peaked too soon?

As Africa enters its next phase of development, it confronts a global economy substantially different from previous ‘late industrializers’. On the one hand, the exceptionally buoyant trade environment of the 1990s has given way to a slower growth environment for world trade in the new century. World trade **(p.6)** growth had ranged between 1.5 and 3.0 times world income growth for nearly two decades prior to 2000. Since the turn of the century, there have been several years when world trade has grown at about the same pace as world income (see Hoekman 2015). On the other hand, many of the forces that have contributed to this slowdown in world trade have created new opportunities for Africa. Particularly since 2000, technological change has accelerated, lowering the cost of communication and, no less important, creating new forms of communication such as internet platforms and smart phones. By lowering the costs of cross-border financial transactions, it has opened the way for digital commerce. Technological change has also lowered the cost of shipping via sea and air, as well as passenger air travel. The essays in Part I of this volume suggest that four global trends present new opportunities for Africa: a revolution in trade in services, the marked change toward ‘servicification’ of manufacturing production, the rise in global value chains, and major developments in technology markets may permit Africa to leapfrog to transformative technologies. In each of these four areas, major progress in technology and rapid reductions in costs are creating new opportunities for Africa; consider each in turn.

3.1. A Global Services Revolution

Economists have traditionally viewed services as the quintessential ‘non-traded’ activity. This meant that trade in services depended on the physical movement of service providers or customers to the location in which the service was to be given. As Bernard Hoekman argues in Chapter 8, the need for such movement has been declining as the result of changes in technology that allow many services to be digitized and provided across borders through ICT networks.

Since the 1980s, global trade in services has grown faster than merchandize trade. Service exports from developing countries have almost tripled in the last ten years, growing by 11 per cent annually (World Bank 2010). Modern service exports (computer and information services, financial services, business services and communication) are also growing much faster than traditional service exports such as travel, tourism and transport.

While sub-Saharan Africa trails other developing regions in the growth of services exports, they have nevertheless grown at about 10 per cent per year between 1998–2015. This is more than six times faster than merchandise exports. Exports of services are about 11 per cent of the total exports of the average SSA country, so the potential for expansion exists, although levels vary widely across countries.[2] Importantly, services trade is particularly relevant **(p. 7)** for Africa's many land locked countries where, unlike in goods trade, transportation costs do not significantly raise export costs.

Modern services are a critical input into downstream industries—and as such a potential driver of productivity gains in other sectors. For example, telecommunications are vital to the operations of manufacturers, service providers, and primary products suppliers. Most large businesses, even in the poorest countries of Africa, now have websites. These form an essential window onto the firm's goods and/or services for the outside world, and as such are vital for sales. Financial services are crucial to business efficiency across all aspects of the economy. These services and a multiplicity of others—ranging from retail, real estate, and business services to engineering, architectural, consultant, accounting, computer and ICT and legal services to name a few—are essential inputs into all other sectors of the economy.

The impact of services on manufacturing productivity is considerable. At average level of services use, a 10 per cent increase in services productivity is associated with an increase in manufacturing productivity of 0.32 per cent in Burundi, 0.41 in Kenya, 0.34 in Rwanda, 0.67 in Tanzania and 0.55 in Uganda (Hoekman and Shepherd 2015).

3.2. The 'Servicification' of Manufacturing

Bernard Hoekman describes in Chapter 8 the trend toward 'servicification' of global manufacturing. He argues that much of manufacturing is undergoing a process of servicification, involving a focus on the provision (sale) of the services that are generated by products as opposed to simply the fabrication and sale of tangible goods. Distinguishing between manufacturing and services sectors is rapidly becoming less meaningful. For example, back office operations and accounting, which were previously integrated components of manufacturing enterprises can now be spun off and subcontracted. At the same time, services sector firms have become larger, providing a range of specialized services; e.g., engineering design work, legal services, and accounting.

These changes in the boundaries of manufacturing are in part responsible for the 'premature deindustrialization' described above.[3] Historically, the relationship between manufacturing and per capita income has had an **(p.8)** 'inverted U' shape as shown in Figure 1.2. In the early stages of development, growth in income is associated with very rapid increases of the share of manufacturing in total employment. As incomes and real wages rise and skills develop, the relative importance of manufacturing peaks; countries moving toward upper middle-income levels diversify into more skill-intensive activities, including services.

As a result of servicification interacting with technological advances in production, this historic relation has changed. The average share of manufacturing in national output—for all countries at all levels of national income—has fallen steadily over the last four decades (Figure 1.2). Where in the 1980s, average shares of manufacturing in GDP peaked at nearly 20 per cent of GDP, in today's world the average peak is about 14 per cent.

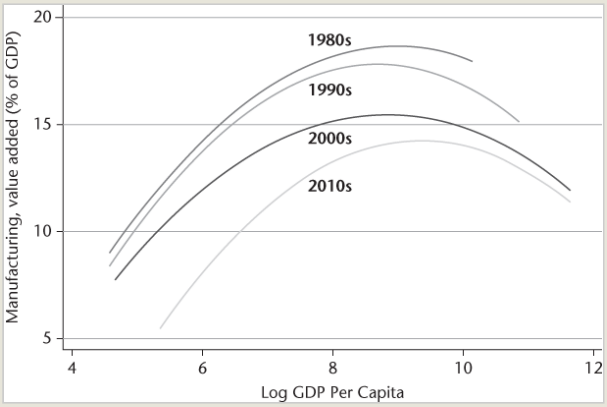

Figure 1.2. Manufacturing as a share of GDP on average declines over four decades

Source: Authors' calculation from WDI (April 2017).

3.3. The Rise of Global Value Chains

Services out-sourcing is only one part of the story. Another part is off-shoring and the emergence of global value chains (GVCs). In many manufacturing and service activities, a production process can be decomposed into a series of steps or tasks (Grossman and Rossi-Hansberg 2006). Sharp declines in transport and communication costs have enabled companies to relocate selected tasks to low-wage countries around the world. One indication of this fragmentation of production is the rising proportion of world trade in intermediate inputs. Trade in intermediates, according to Miroudot et al. (2009), amounted **(p.9)** to 56 per cent of goods trade and 73 per cent of services trade in OECD countries in the period from 1995 to 2005.[4]

While this trend may be maturing—and in that sense has contributed to the slower world trade growth relative to income after 2000[5]—it has also given rise to productivity gains. Based on a panel estimation covering thirteen sectors in forty countries over fifteen years, Mattoo et al. (2017), found that participation in global value chains is a significant driver of labour productivity. An increase by 10 per cent in the level of global value chain participation increased average productivity by close to 1.7 per cent.

The essays in Part II show the extent to which value chains are already taking root in Africa. Tourism and horticulture are prime examples. In Chapter 4 Jack Dailey and Gary Gereffi describe the structure of Africa's tourism value chain. Ethiopia, Ghana and Senegal all actively participate in global horticultural value chains. In manufacturing, even though tariffs and other border barriers remain substantially higher than in 'factory Asia', the great majority of firms that export are also substantial importers (Spray 2017; Spray and Wolf this volume; von Euxkull 2016).

Baldwin (2011) has argued that the increasing role of GVCs in world trade is a double-edged sword for developing regions like Africa. On the one hand, it has created an avenue through which countries can industrialize at a much earlier stage of development, as lead firms choose to off-shore fragments of the production value chain to countries where labour is cheaper or where other locational advantages confer a competitive cost advantage on the whole GVC.[6] Participation in GVCs may also allow suppliers in developing countries to meet standards and regulations that allow access to rich country markets; it may permit imports under privileged tariff treatment for intra-firm trade; or it may facilitate use of network technology that would not otherwise be available. However, the second consequence is that in a world of GVC-dominated trade in which production is allocated to the location with lowest cost, countries that try to industrialize through import-substitution policies behind high tariff walls are unlikely to ever reduce their costs to the point of being competitive on global markets.

The rise of global value chains has contributed to the reduction in the role of manufacturing. Baldwin, et al. (2014) argue that the 'smile curve' across production stages has substantially deepened over time (Figure 1.3). Out-sourcing **(p.10)** and off-shoring of production to low-wage countries has meant that the value added share in manufacturing has declined relative to services-based tasks such as design work, R&D, and marketing, often associated with lead firms.

GVCs are also important outside manufacturing. The transport of fresh fruit, vegetables, and flowers over long distances became possible with the development of ‘cold chains’ linking production and consumption points. Lead firms that coordinate vertical supply chains dominate the industry.[7] Daly and Gereffi highlight in Chapter 4 the importance of lead firms that connect customers and service providers, including both global and national enterprises, in Africa’s tourism value chain.

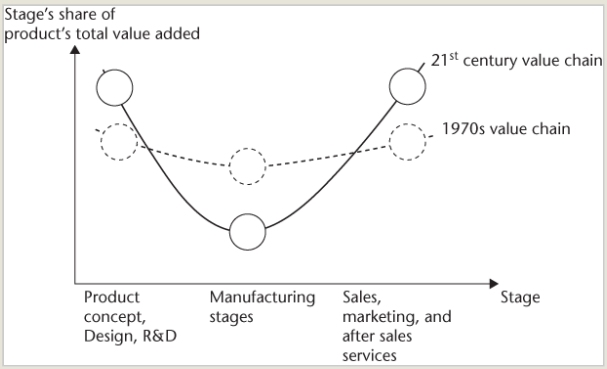

Figure 1.3. The changing relationship between manufacturing and services

3.4. Disruptive New Technologies

The fourth and final change in the global environment referred to above is that the pace of technological innovation and diffusion is accelerating—creating vast opportunities to leap-frog and in some cases capture first mover advantages. Sally Murray in Chapter 2 points to clusters of technology that offer a range of new and unprecedented applications in Africa. She argues that some have the potential for *overcoming distance* through e-commerce, mobile money, business process outsourcing (BPO), and lowering transport costs (for example drones). Others are critical to *increasing labour productivity*—access to distance education and ICT, as well as new technologies (GMO crops). Some, particularly solar power, have the potential to *reduce energy costs.* The bottom **(p.11)** line is that Africa has abundant opportunities to adapt newly created technologies to its own situation (mobile money and drone transport), develop and expand technologies that make intensive use of Africa’s resource endowments (solar power), and use these to create new and unforeseen sources of competitive advantage. In some cases, these new technologies will allow Africa to leap-frog technologies in the high-income countries, most likely in network industries where the high fixed cost of investments constrains adoption of latest technologies in richer economies.

4. Africa’s Emerging Industries without Smokestacks

In Africa, three major sectors have benefited from the global changes described above: agro-industrial and horticultural value chains; tourism; and business and trade services (including information- and communications-based (ICT) services and transport and logistics). These activities are among the most rapidly growing sectors of the global economy and are increasingly important across a wide range of countries in Africa.

4.1. Agro-Industry and Horticulture

Emiko Fukase and Will Martin point out in Chapter 5 that one of the stylized facts of structural transformation is that while the share of the agricultural sector in an economy typically declines with economic growth, the share of agro-processing in GDP tends to increase. Consumption shifts from starchy staple foods to foods such as vegetables, fruits, meats, and food products that make use of more services. They also note that lower transport and communication costs have created new opportunities for developing countries. Once efficient logistics are in place, countries with suitable agro-ecological conditions can potentially produce high-value products, such as cut flowers and fresh vegetables, which formerly needed to be produced near their point of consumption.

Between 1988 and 2014, world agricultural exports expanded from US$83.4 billion to US$1,532 billion. Bulk agricultural products accounted for a small and declining share of world agricultural exports—decreasing from 25 per cent in 1988 to 17 per cent in 2014. By contrast, processed and semi-processed agricultural products accounted for almost three-quarters of global agricultural exports in 2015, and horticultural exports accounted for around 12 per cent of global agricultural exports in 2014.[8]

(p.12) Fukase and Martin find quite distinct differences between African and global patterns of agricultural trade. Bulk agricultural exports dominate. The share of processed and semi-processed agricultural products in Africa’s agricultural exports rose, but only to 35 per cent by 2014. The share of horticultural exports on the other hand more than doubled, from around 10 per cent in 1988–9 to 22 per cent in 2014. Fukase and Martin suggest that the relatively low share of agricultural processing in African economies reflects their relatively low incomes. In addition, they argue, Africa faces tariff escalation within many value chains in its export markets.

Ethiopia has achieved extraordinary success in flower exports making the country a global player in the sector. In Chapter 9, Mulu Gebreeyesus finds that over the period 2002–8 the number of flower farms grew about sixteen-fold. Ethiopia’s 2015–16 cut flower exports reached about US$225 million making the country the second largest cut-flower exporter in Africa. The successful discovery of the flower industry in Ethiopia was a result of private entrepreneurs’ experimentation, supported by active government efforts to identify and remove bottlenecks to the sector’s growth. Despite Ethiopia’s well-documented success in cut flowers, exports of fruits and vegetables have remained marginal. Gebreeyesus argues that the lack of export dynamism in other horticultural products is attributable to several factors—among them the standards to enter developed country markets are more stringent in the fruits and vegetables sector than in the flower sector, and flower exports are better suited to air transportation.

Horticultural exports from Senegal were modest up to 2003, but starting in 2004, exports to Europe have grown rapidly, averaging increases of 20 per cent per year. In Chapter 13, Philip English argues that one of the keys to the early expansion of the sector was the availability of high-speed ships to bring goods to northern European markets. The sector was able to shift from air to maritime transport, significantly improving its competitiveness. Integrated multinational companies handle production, processing and exporting—selling either to wholesalers or directly to supermarkets.

Export of processed horticultural products (mainly fruits and beverages) has become increasingly significant in Ghana. Export earnings from the agro-processing industry increased from US$181.1 million in 2004 to about US$902.5 million in 2011. In Chapter 10, Nkechie Owoo and Monica Lambon-Quayefio give a detailed description of the fruit and juice processing value chain. Export production depends on four large fruit processing companies that employ capital intensive imported technology for fruit juice processing and run large commercial farms.

Haroon Bhorat and others show in Chapter 14 that over the period 2000–14 horticulture exports outperformed aggregate export growth in South Africa. They show that the relatively rapid growth in horticulture products was driven **(p.13)** by the intensification of existing export relationships and low exit rates from export markets, relative to other agriculture products. They suggest that this rapid and persistent growth is partly due to the rapid growth of South African FDI in the retail sector across Africa.

4.2. Tourism

Daly and Gereffi in Chapter 4 argue that tourism is an important driver of economic growth around the world. In 2014, the tourism industry provided an estimated 277 million jobs and accounted for about 9.8 per cent of global GDP. In part, the development impact of tourism receives too little attention because it is hard to measure. Ellis, McMillan, and Silver make the point in Chapter 15 that the tourism sector is made up of several different industries including but not limited to accommodation, food and beverage, transportation, and culture, sports, and recreational services. Thus, while it is possible to track tourist arrivals, estimates of their direct and indirect effect on output and employment are necessarily imprecise. The country studies suggest that they can be substantial.

In 2014, 9.5 million tourists visited South Africa, by far the most in SSA. Tourism constitutes around 3 per cent of GDP and has been growing at the same rate as the economy as a whole. Bhorat and others estimate that the number of jobs dependent on tourism was approximately 680,000 in 2014. They further find that about 36 per cent of jobs in the food and beverage industry in South Africa are directly related to tourism, and that four industries—road passenger transport, food and beverage, retail and trade and accommodation for visitors—are responsible for 83 per cent of tourism-related jobs. Bhorat and his colleagues argue that tourism is an important source of shared growth in South Africa. Many of these jobs are low-skilled, located in towns where there is little other economic activity, and have a higher-than-average representation of women and youth.

Ellis, McMillan, and Silver estimate that in Tanzania tourism generates over US$1 billion in direct annual foreign exchange revenues and contributes directly and indirectly approximately 14 per cent of GDP. Its share of employment was about 3.2 per cent in 2012, larger than both transport and business services. They find that during 2002–12 the sector grew at roughly the same rate as GDP and employment, and productivity increased by approximately 50 per cent.

Tourism is Rwanda’s largest single export activity, accounting for about 23 per cent of total exports in 2016. Overall tourism receipts have grown by 22 per cent per annum over the last ten years. However, they appear to have levelled off since 2012. In Chapter 16, Gigombe and Newfarmer suggest that the main driver of tourism, gorilla trekking, is reaching full capacity and the **(p.14)** country needs to develop additional attractions to keep the sector growing. Recently, government priorities have focused on meetings and conferences with an aim of making Rwanda a conference tourism hub within the EAC and African region.

Gebreeyesus finds that Ethiopia’s number of international tourist arrivals tripled during 2005–13 from 227,000 to 681,000. International tourist and travel receipts also tripled over the same period. In 2015, the travel and tourism sector contributed about 11.3 per cent of GDP and 9.8 per cent of employment. Antonio Cruz and Fausto Mafambissa find in Chapter 12 that tourism in Mozambique has been growing at an annual average rate of 9.1 per cent, which is higher than GDP growth. English documents the rise and decline of the tourism sector in Senegal. In the 1980s, Senegal was second only to Kenya in SSA in terms of tourist arrivals. However, by 2010, it was no longer among the top ten destinations. In 2015 tourism receipts accounted for about 11 per cent of total exports. The share of international tourism in GDP was about 4 per cent in 2000 and declined toward 3 per cent in 2015.

The country studies paint a portrait of an industry with substantial potential, and one that has not yet achieved its full promise. Despite a plethora of published tourism strategies, the country studies suggest that most governments are failing to implement them effectively. Perhaps the most dramatic case is Senegal where English argues that scepticism about the development impact of tourism by its long-time president Abdoulaye Wade resulted in neglect of the sector, including a failure to collect basic statistics. In 2009, Ethiopia's government launched a tourism development policy; most of the initiatives included in the policy document are still in the process of implementation. In Tanzania the government has attempted to pursue a 'high-value low-density' (HVLD) tourism policy, designed to make Tanzania a 'high-end' tourist destination that caters to a very wealthy clientele. However, the quality of tourism services in Tanzania is currently too low to make this policy feasible.

4.3. Business and Trade Services

Developing countries are closing the connectivity gap—defined in terms of the extent of internet access and speed—with more advanced economies at a remarkable rate. There have been pronounced gains among developing and emerging economies, mostly centred on mobile telephones. In Europe in 2010 total fixed and mobile broadband subscriptions were 54.1 per 100 inhabitants. This rose to 107.8 in 2015. In Africa, the gains were far more pronounced, from 2.0 to 17.9 per 100, with the Europe/Africa ratio decreasing from 27:1 to 6:1 in five years.

(p.15) These technologies will enable a far larger number of countries to enter service export markets, moving beyond the traditional outsourcing model. In Chapter 3, Claudio Frishtak writes that 'there is an ongoing revolution in the ICT space with implications for the way we live, interact, consume, produce and manage firms, cities and other jurisdictions'. Frishtak suggests that second-generation ICTs are changing the competitive landscape in ways that lower entry barriers, and new technologies will dramatically facilitate the production and export of services, without resort to software engineers, computer scientists and highly skilled professionals.

The poster child for ICT-based services in Africa is Kenya. In Chapter 11, Dianah Ngui Muchai and Peter Kimuyu provide a detailed picture of Kenya's most successful IT-based industry, mobile money transfer—a financial product that allows users to make financial transactions via the mobile phone. Kenya has the highest share of adults with a mobile money account (58 per cent of the population) in East Africa. Kenya's wide availability of mobile devices offered a distribution technology for mobile financial services, in particular mobile banking and mobile money transfers. Most large banks have made substantial investments in mobile phone banking capabilities. Mobile network carriers, credit card processors, and online personal finance services firms were among the non-bank investors. In 2012, a carrier, Safaricom, teamed up with the Commercial Bank of Africa (CBA) to launch *M-Shwari*, a mobile service that offers micro savings accounts and credit. Many small companies rely on mobile money for nearly all transactions or provide a service that is a derivative of the platform itself.

Kenya was also an early entrant into the Business Process Outsourcing (BPO) market. BPO is the contracting of a specific business task to a third-party service provider. The most common examples of BPO are call centres, human resources, accounting and payroll outsourcing. Following the entry of a pioneer firm, KenCall in 2005, other firms have jumped into the market. Currently there are fifty BPO firms operating in Kenya providing various services such as data processing, digitization, transcription and call centres. Nairobi's BPO call centres are small-scale, with from ten to a few hundred agents. A growing number of firms are offering high end services such as software development, programming, research and development and finance and accounting services. While KenCall has an international clientele, the bulk of firms, are serving the domestic and EAC regional markets.

Rwanda has set the goal of being the ICT hub of the East African Community, under the multi-phase National ICT Strategy and Plan (NICI). ICT has expanded rapidly in recent years, attracting 47 per cent of foreign direct investments between 2008 and 2011. It contributed 3 per cent of GDP in 2014. Gigombe and Newfarmer argue in Chapter 16 that, like many other African countries, Rwanda has leapfrogged from twentieth century fixed-line **(p.16)** technology directly into twenty-first century mobile technology. Mobile phone subscriptions rose to 70 per cent of the population in 2014. Mobile money was introduced in 2010, and between 2011 and 2014, mobile payments subscriptions increased from 639,673 to 6,480,449. The government is a major consumer of ICT services. The Rwanda Development Board (RDB) has worked closely with technology solutions companies to promote the digitization of 100 services, including applications for birth certificates, registration and school examination fee payments. One of the main digitization initiatives was the establishment of electronic and mobile declaration of tax returns in 2011. Mobile payment of taxes was introduced in 2015.

Senegal was one of the earliest entrants into outsourcing in SSA. Call centres were the main focus; companies were able to attract better qualified employees than in France at one-tenth the cost. In 2000, there were thirty-five companies exporting IT-enabled services. By 2016, there were only nine call centres and they were finding it increasingly difficult to compete outside Senegal. Because solutions developed for Senegal are well-suited to other African contexts, export of software appears to be doing better. English argues that the decline of the IT-enabled services industry in Senegal is closely related to the high cost of access. The principal investor in the fiber optic cables was Sonatel, the former parastatal privatized in 1997. Although Sonatel reduced prices significantly in the early 2000s, it has been able to maintain a monopoly on external connectivity, and the number of Internet service providers has fallen from nine to two. Internet access speeds are below the average for SSA and much slower than in Rwanda or Kenya.

Virtually all goods trade passes through a combination of air, sea, and land transport routes. Even services like tourism rely on reliable air and sea connections. Historically, the small market countries of Africa were caught in a vicious trap of low trading volumes, monopoly transport services, high uncertainty in the logistics chain and high transport costs. As a result of these conditions—and ‘thick borders’ associated with barriers (Brenton and Izak 2014)—transport costs overland in Africa are substantially higher than in other parts of the world. For example, costs per ton transported along the Northern Corridor from Mobassa to Kampala average US$8 cents per ton/kilometer, as compared to average costs in Brazil of US$3.5 cents per ton/kilometer (Raballand 2016). Schlumberger and Weiskopf (2014) estimate that transport costs are in general 30–50 per cent higher in Africa than other developing countries. This has particularly affected the landlocked countries of Africa—where typically costs (measured in days) are twice those for coastal cities—adversely (see Arvis et al. 2010).

Reductions in transport costs, due to regional initiatives and increased investments, have begun to break this cycle. In East Africa, port dwell, transit and border processing times are 40–60 per cent less than a decade ago. **(p.17)** Dwell times in Mobassa port have fallen from 13 to 5.8 days—while the number of containers has roughly doubled. Transit times through Kenya have fallen from four days to two days. Police roadblocks in Tanzania have been reduced from 35 to eight. At the border crossing at Malaba, average delays have fallen from 24 hours to four hours. As Raballand and others note in Chapter 7, with lower trade logistics costs, a manufacturer can change the source of inputs or the destination of exports or relocate production, reconfiguring their entire supply chain to suit production opportunities or respond to shifts in relative prices.

Air transport in some high unit value products, such as cut flowers, can offer an alternative to overland transport. As with trucking, Africa suffers high transportation costs because of low volumes, monopoly routes, and the presence of high-cost state-sponsored carriers. In Chapter 6, Heinrich Bofinger notes that the region has about 100 million seats for both international and domestic travel; Brazil, by comparison, has about the same number solely for its domestic capacity. Similarly, the three airports serving metropolitan Washington DC in the US handle annually almost the same capacity as all of Africa. Lack of competition on most routes impedes the consolidation of the market. The use of high landing fees at airports—often designed to finance airport maintenance and expansion—drives up costs further.

This is changing. Several aggressive new airlines—notably Ethiopian and Emirates—are promoting Fifth Freedom market access and creating new competition with attendant price effects—at least in the larger markets. Ethiopian Airlines, Emirates, and to a far lesser extent, Turkish Airlines have grown at double-digit rates over the last decade (2007–15). Other smaller airlines—Qatar, TAAG, Air Austral, Royal Air Maroc, and Rwandair—have also registered double digit growth from a lower base. Rwandair, for example, has just negotiated new routes to the US (New York) and Europe (London and Brussels). This expansion has occurred at the expense of lost market share of the majors—British Airways, South Africa Airways. Air France, and Kenya Airways.

5. The Pivotal Role of Regional Trade

In Africa, where fifteen out of forty-seven countries are land-locked, trading with neighbours is vital. Two factors accentuate the importance of facilitating regional trade: the high cost of transportation and the ‘thick borders’ associated with high border barriers that impede trade to a far greater degree than in other developing regions (see Brenton and Izak 2014). Transport costs, for example, add roughly 50 per cent on average of goods shipment into Kigali to the landed cost of products in the Mobassa port. Tariffs and non-tariff barriers are generally higher in Africa than elsewhere, undermining the **(p.18)** competitiveness of local producers that require imported inputs into export production. In fact, in both Uganda and Rwanda, exporters purchase three times more imports than non-trading companies, and account for most imports in both countries. As Chapter 18 by Stephen Karingi, Octavia Pesce, and Lily Sommner on trade in the East African Community vividly shows, to the extent that regional agreements lower the cost of transport and lower intra-regional border barriers, they increase the competitiveness of Africa’s industry.

Another reason that regional trade is important is its peculiar role in structural transformation, particularly in the development of manufacturing. Regional agreements can provide opportunities to develop local manufactures based on locational advantages. Superior knowledge of local tastes and consumption patterns allows firms to tailor differentiated products to the local market, often using local inputs. Similarly, transport costs act as effective protection for production located in inland areas. No wonder products as diverse as beer, rebars, and cement are traded intra-regionally. Hallward-Dreimeier and Nayyar illustrated this dramatically by comparing the structure of exports to the world market to those traded in the intra-regional market. They find that the share of manufactured exports in total export sold to neighbouring countries was substantially higher their share of total exports sold to the global market.

Karingi, Pesce, and Sommer show the effects of regional agreements in influencing this pattern. They find, for example, that while manufactures constitute only 11 per cent of EAC total exports, they make up 42 per cent of intra-regional exports. There are two likely channels at work that underpin this process. The first is the emergence of intra-regional value chains, sometimes connected with final sales in the global market. Daly et al. (2016) explore the emergence of intra-regional value chains in the EAC in agro-processing, dairy, and tourism. A second channel may over time become even more important: intra-regional competition, particularly in differentiated consumer goods, may drive specialization and productivity gains in manufacturing at the same time it permits diversification in consumption patterns. Taking advantage of this channel of growth requires reducing border frictions and fostering competition that allows the emergence of ever larger and more competitive enterprises.

Jaime de Melo, Mariem Nouar, and Jean-Marc Solleder in Chapter 19 undertake a comparative analysis and show that Africa has not come close to tapping the full potential of 'deep integration'. They highlight the importance of culture, trust, and institutions—typically ignored in analyses of regional agreements—in determining their success in expanding trade. They calculate an 'average distance ratio', and show that for nearly all of the regional economic communities, trade costs have fallen faster in the regional agreements than **(p. 19)** vis-à-vis the rest of the world for agricultural products, while about half of Africa's regional communities show progress for manufactures. Their cross-country regressions confirm that the membership in regional agreements (preferential trade agreements) indeed does have a positive effect on the export of manufactures and services. Furthermore, regional groupings tend to foster an increase in new products. Overall, these findings would augur well for the role of regional agreements in fostering 'industries without smokestacks'. However, results to date have been disappointing because of the lack of enforcement of deep integration provisions and aspirations for more complete trade liberalization. They also highlight the substantial underperformance of African regional agreements in comparison with Asian and Latin American agreements, a topic that we revisit in the final chapter of this volume.

6. Industries without Smokestacks: A Different Path for Structural Transformation?

6.1. New and Different Trends for Africa's Exports

As the studies in this volume make abundantly clear, the story of the increasing importance of industries without smokestacks unfolds mainly at the country level, as each country takes advantage of its particular opportunities. But are the trends evident in some countries becoming important for the continent as whole? Though data are limited and often spotty, we were able to construct a picture of changes in export portfolios measured in current dollars for 33 of 51 SSA countries over the period 2002–15.[9] Since mineral exports, including petroleum and mining exports, grew rapidly during the period—and these tend to dominate export performance, particularly for the large exporters (e.g., South Africa and Nigeria)—we have backed out mineral exports from the calculations. In addition, we use unweighted averages to **(p.20)** focus on changes in the non-mineral export basket of countries irrespective of size. This exploratory exercise surfaces some noteworthy trends for the region as a whole:

- Comparing unweighted averages across countries, industries without smokestacks (IWSS) sectors grew more rapidly than non-mineral exports on average and were thus becoming more important as a share of export portfolios. This is evident in the shift upwards of the curve in Figure 1.4. A point to note is that these curves reflect averages and there is considerable variation around in both years.

• Changes were most dramatic for small and medium sized exporting countries, such Lesotho (LSO), Sierra Leone (SLE), and Burkina Faso (BFA) (Figure 1.5). Several large exporters, even those predominantly exporting minerals, also registered large gains in the share of IWSS activities as a share of their non-mineral export baskets—including Nigeria (NGA), Angola (AGO), and Zimbabwe (ZWE). The changes were notable if less pronounced in several mid-sized exporters, such as Senegal (SEN), Ethiopia (ETH), and Kenya (KEN).
• All in all, the IWSS sectors performed better than other non-mineral exports in more than half of the 33 countries in 2002–15, and performed the same or better in nearly two-thirds (Figure 1.5).
• Industries without smokestacks grew more rapidly for the average African country as evidenced in the unweighted change in export baskets. **(p.21)** IWSS activities rose from 51 per cent of the average non-mineral portfolio to more than 58 per cent over the 2002–15 period (Table 1.1). While agro-processing rose slightly, horticulture held about constant, services exports, particularly tourism and transport, were the dominant driving force within the IWSS sectors. This was at the expense of declines in agriculture and other (non-IWSS) services. Manufacturing held about constant. Within manufacturing, textile tended to fall as a share of the nonmineral total while other manufacturing tended to increase.

Table 1.1. Industries without smokestacks are a growing segment of exports

	2002	2015
Average Share of Non-Mineral Exports		
Average Export Share IWSS	51%	58%
Share IWSS Agro-Processing	22%	24%
Share IWSS Horticulture	3%	3%
Share IWSS Services	26%	30%
Average Export Share NonIWSS	49%	42%
Share Other Agriculture	10%	7%
Share Other Manufacturing	33%	33%
Share Other Services	6%	3%

***Source*: Steenbergen (2018) a/Average unweighted share of 33 countries, excluding oil and minerals.**

(p.22) While the more interesting developments are occurring at the country level as shown in chapters that follow, the role of agro-processing, horticulture, ICT, tourism, transport, and other services is becoming more important in many countries across the continent—not just in a few middle-income countries but even in the small countries and large mineral exporting countries.

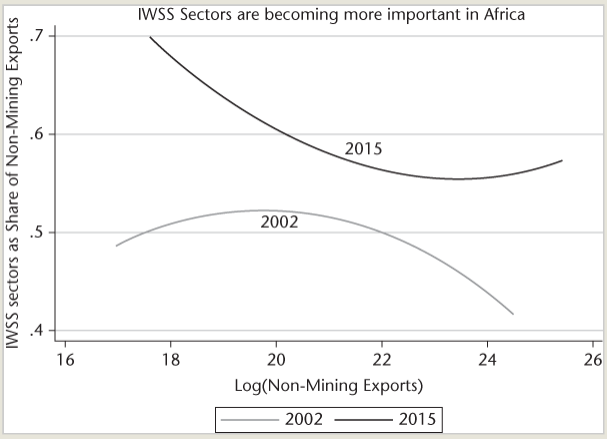

Figure 1.4. IWSS sectors become more important in African non-mineral exports

6.2. Implications for Productivity Growth

Resource endowments, the rapid growth of industries without smokestacks and the possibility of 'premature deindustrialization' have important implications for the changing structure of Africa's economies. It is highly likely that, due to differences in endowments and trade opportunities, African countries will see a higher share of extractive industries, agro-industry, and tradable services in the course of their structural transformation than was present in Asia's newly industrializing economies.

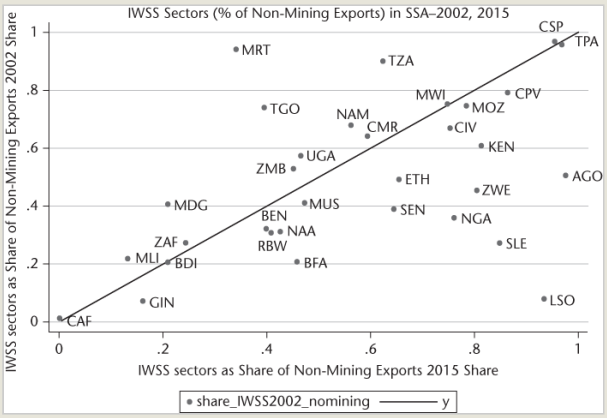

Figure 1.5. The IWSS exports outstripped other non-mineral exports in most of SSA

The question, then, is to the extent to which these industries without smokestacks can play the role in structural transformation historically played by manufacturing. The answer depends on the characteristics of both existing manufacturing and of the new activities. In cases where the manufacturing sector exhibits little employment or productivity growth while services or agro-industrial productivity and employment are growing, these sectors can lead growth enhancing structural change.

Hoekman dispels the notion that services growth implies lower productivity growth: ‘Services lend themselves just as much to productivity growth as do manufactured goods production … Within services resource allocation shifts are a driver of productivity growth in the same way as in goods-producing sectors.’ A growing body of literature supports the view that where the service sector has the dynamic characteristics attributed to manufacturing in the past—strong linkages, productivity increases, and technological innovations—it can act as an engine of growth.[10] Several modern service sectors—such as ICT services, financial services, transport, and logistics—have broadened the definition of the leading sector and contributed to structural transformation in a number of countries, taking up the role held by manufacturing in the past (Timmer and De Vries 2009; Lavopa and Szirmai 2014; Lavopa 2015b).

There is some evidence that in Africa services are taking up the role as the primary source of within-sector productivity growth. An ODI team calculated the contribution of services to annual labour productivity growth for some twenty-five African countries over the period 1991–2013. They found that in 15 countries, services accounted for more than 50 per cent of labour **(p.23)** productivity growth. In countries as diverse as Botswana, Rwanda, Cape Verde, and Zambia, productivity growth in services accounted for more than 80 per cent of annual labour productivity growth (Balchin et al. 2016: 14). The Rwandan case, elaborated by Ggombe and Newfarmer, highlights the contribution of structural change from agriculture to services to the country’s 8 per cent growth over the last two decades. Ellis, McMillan, and Silver find that labour productivity increased modestly in informal manufacturing and services firms in Tanzania.

In Chapter 17, John Spray and Sebastian Wolf use transaction-level data from the value-added tax (VAT), Pay-As-You-Earn (PAYE) and Customs declarations submitted to tax authorities to study the population of formal enterprises in Uganda and Rwanda between 2010 and 2014–15. They find that service industries make up most of the top 30 industries in terms of labour productivity in both countries: 17 out of the top 30 industries in Uganda, and 21 out of the top 30 in Rwanda. In Uganda marine aquaculture, post-harvest crop activities, and marine fishing rank among the highest productivity sectors in the economy and in Rwanda one agri-business ranks among the top 30.

Spray and Wolf find that on average firms are larger in industries with high labour productivity, suggesting that scale is important not only in the manufacturing sector, but also in industries such as agri-business and services. They also find that find that, like manufacturing, services are distinct in their interconnectivity to the rest of the economy. Service sectors make up six of the top ten most interconnected sectors of the economy in Uganda and five in Rwanda, suggesting that services are vital to knitting the economy together. They further show that productivity growth in these sectors is strongly associated with the performance of the economy as a whole.

7. Conclusions

Taken together, the studies in this volume suggest that a broader definition of the higher productivity 'modern sector' is needed in thinking about structural transformation in Africa. Modern, tradable services, such as ICT-based services, tourism, and transport and logistics, have the potential for strong within-sector productivity change and contribute to raising productivity in other sectors of the economy. Agro-industrial production and horticulture offer the potential for productivity growth and exports. Some of these industries have the capacity to absorb large shares of Africa's growing urban labour force. In short, it is possible that industries without smokestacks offer the potential for a new—or at least complementary—path towards structural transformation.

(p.24) That said, it is important not to overlook manufacturing, which has in recent years been growing at more than 7 per cent per year in several countries including Ethiopia, Mozambique, Nigeria, Rwanda, Tanzania, and Uganda. In some of these economies smokestack industry may emerge to lead a more traditional pattern of structural transformation. Even in these cases, services will have an important role in raising the productivity of manufacturing, and agro-industry and horticulture can also support the transformation processes discussed here.

One of the main messages of this book is that the successful African economy of the twenty-first century is unlikely to look like the successful East Asian economy of the twentieth. It will be more diverse and draw on a broader range of high productivity economic activities for sustained growth. Nonetheless, significant policy challenges stand between today's opportunities and our optimistic vision for tomorrow. These are the subject of the concluding chapter.

References

Bibliography references:

ACET (2014). *Africa Transformation Report 2014: Growth with Depth*. Accra: Africa Center for Economic Transformation.

African Union (2015). *Agenda 2063: The Africa We Want.* Addis Ababa: African Union.

Arvis, J., G. Raballand, and J. Marteau (2010). *The Costs of Being Land Locked: Logistics Costs and Supply Chain Reliability.* Washington DC: World Bank.

Balchin, N., B. Hoekman, H. Martin, M. Mendez-Parra, P. Papadavid, D. Primack, and D. W. te Velde (2016). *Trade in Services and Economic Transformation* London: ODI SET Report.

Baldwin, R. (2011). 'Trade and industrialisation after globalisation's 2nd unbundling: How building and joining a supply chain are different and why it matters', NBER Working Paper No. 17716, December 2011.

Baldwin, R., T. Ito, and H. Sato (2014). 'Portrait of a Factory: Production Network in Asia and its Implication for Growth—The "Smile Curve"'. Joint Research Program Series No. 159, Institute of Developing Economies, Japan External Trade Organization (IDE-JETRO), Chiba.

Baumol, W. J. (1985). 'Productivity Policy and the Service Sector'. In R. P. Inman (ed.), *Managing the Service Economy: Prospects and Problems*. Cambridge: Cambridge University Press.

Bhagwati, J. N. (1984). 'Splintering and Disembodiment of Services and Developing Nations', *World Economy,* 7(2): 133–44.

Brenton, P., and G. Isik (2012). *De-Fragmenting Africa: Deepening Regional Trade Integration in Goods and Services* Washington: World Bank.

Chenery, H. (1986). 'Growth and Transformation'. In H. Chenery, S. Robinson, and M. Syrquin (eds), *Industrialization and Growth: A Comparative Study.* Oxford: Oxford University Press.

(p.25) de Vries, G. J., M. P. Timmer, and K. de Vries (2013). 'Structural Transformation in Africa: Static Gains, Dynamic Losses'. *GGDC Research Memorandum 136*, University of Groningen.

Daly, J., A. Abdulsamad, and G. Gereffi (2016). *Regional Value Chains in East Africa: Summary Report.* London: International Growth Centre.

Duarte, M., and D. Restuccia (2010). 'The Role of the Structural Transformation in Aggregate Productivity'. *Quarterly Journal of Economics,* 125(1): 129–73.

Ebling, G., and N. Janz (1999). *Export and Innovation Activities in the German Service Sector Empirical Evidence at the Firm Level.* Mannheim: Centre for European Economic Research.

English, P., P. McSharry, and K. Ggombe (2016). ‘Raising Exports and Attracting FDI in Rwanda’. IGC Policy Note 38402. London: International Growth Centre.

Fox, L., T. Alun, and C. Haines (2017). ‘Structural Transformation in Employment and Productivity: What Can Africa Hope for?’ Africa Department, IMF. Washington DC: IMF.

Ghani, E., and H. Kharas (2010). ‘The Service Revolution in South Asia: An Overview’. In E. Ghani (ed.), *The Service Revolution in South Asia.* Oxford: Oxford University Press.

Ghani, E., and S. D. O’Connell (2014). ‘Can Service be a Growth Escalator in Low-income Countries?’. Policy Research Working Paper 6971. Washington DC: World Bank.

Grossman, G. M., and E. Rossi-Hansberg (2006). ‘Trading Tasks: A Simple Theory of Offshoring’, NBER Working Paper No. 12721 Cambridge: NBER.

Hallward-Dreimeier, M., and G. Nayyar (2017). *Trouble in the Making: The Future of Manufacturing*. Washington DC: World Bank.

Hoekman, B. (ed.) (2015). *The Global Trade Slowdown: A New Normal.* A VoxEU.org eBook London: CEPR.

Humphrey, J., and O. Memedovic (2006). ‘Global Value Chain in the Agri-food Sector’. Vienna: UNIDO.

Lavopa, A. (2015a). ‘Structural Transformation and Economic Development: Can Development Traps be Avoided?’. Ph.D. thesis. Maastricht: Maastricht University.

Lavopa, A. (2015b). ‘Technology-Driven Structural Change and Inclusiveness: The Role of Manufacturing. Inclusive and Sustainable Development’. Working Paper Series 14/2015. Vienna: United Nations Industrial Development Organization.

Lavopa, A., and A. Szirmai (2014). ‘Structural Modernization and Development Traps: An Empirical Approach’. UNU-MERIT Working Paper 2014/76. Maastricht: United Nations University Maastricht Economic and Social Research Institute on Innovation and Technology.

Lewis, W. A. (1954). ‘Economic Development with Unlimited Supplies of Labour’. The Manchester School, 22(2) 139–91.

Mattoo, A., C. Neagu, and M. Ruta (2017). ‘Does Vertical Specialization Increase Productivity?’ Mimeo April. Washington DC: World Bank.

McMillan, M., and D. Rodrik (2012). *Globalization, Structural Change and Productivity Growth*. Washington DC: IFPRI.

McMillan, M., D. Rodrik, and I. Verduzco-Gallo (2014). 'Globalization, Structural Change, and Productivity Growth, with an Update on Africa'. *World Development* 63(1): 11–32.

(p.26) Miroudot, S., R. Lanz, and A. Ragoussis (2009). Trade in intermediate goods and services, OECD Trade Policy Working Papers, No. 93. Paris: OECD.

Puga, D., and A. J. Venables (1996). 'The Spread of Industry: Spatial Agglomeration in Economic Development', *Journal of the Japanese and International Economies*, Vol. 10, No. 4.

Raballand, G. (2016). 'Transport Issues in East Africa'. Presentation to World Bank. Mimeo.

Rodrik, D. (2013). 'Unconditional Convergence in Manufacturing'. *The Quarterly Journal of Economics,* 128 (1): 165–204.

Rodrik, D. (2014). 'An African Growth Miracle?'. NBER Working Paper 20188. Cambridge MA: National Bureau of Economic Research.

Rodrik, D. (2016). 'Premature Deindustrialization'. *Journal of Economic Growth,* 21(1): 1–33.

Rodrik D., X. Diao, and M. McMillan (2017). 'The Recent Growth Boom in Developing Economies: A Structural-Change Perspective'. Available at: *http://j.mp/2ip24it* (accessed in April 2017).

Schlumberger, C., and N. Weisskopf (2014). *Ready for Takeoff?: The Potential for Low-Cost Carriers in Developing Countries*. Washington:World Bank.

Spray, J. (2017). 'Trade Costs and Industrial Policy in Uganda and Rwanda'. Presentation to conferences in Kampala and Kigali, respectively, 23–8 March 2017. Mimeo.

Steenbergen, V. (2018). 'Beyond Manufacturing: New Trends in African Industrialization?'. International Growth Centre. Mimeo.

Szirmai, A. (2012). 'Industrialisation as an Engine of Growth in Developing Countries, 1950–2005'. *Structural Change and Economic Dynamics*, 23(4): 406–20.

Szirmai, A., and B. Verspagen (2015). 'Manufacturing and Economic Growth in Developing Countries 1950–2005' *Structural Change and Economic Dynamics*, 34: 46–59.

Timmer M. P., and G. J. de Vries (2009). ‘Structural Change and Growth Accelerations in Asia and Latin America: A New Sectoral Dataset’. *Cliometrica*, 3(2): 165–90.

Tregenna, F. (2015). ‘Deindustrialisation, Structural Change and Sustainable Economic Growth: Inclusive and Sustainable Industrial Development’. Working Paper 02/2015. Vienna: UNIDO.

World Bank (2010). *Africa’s Trade in Services and Economic Partnership Agreements.* Washington DC: World Bank.

Notes:

([1]) See, for example, Baumol (1985) and Bhagwati (1984).

([2]) Excluding South Africa from the average.

([3]) Dani Rodrik (2016) coined the term ‘premature deindustrialization’. It should be recognized that even though the share of manufacturing in GDP may be falling (and pre-maturely), the sector may be growing. Hallward-Dreimeier and Nayyar (2017) point out that for all developing countries with data, some three-quarters had falling shares of manufacturing in GDP in 1994–2014, but only 12 countries had contractions of the manufacturing sector. Most of these experienced war or severe social conflict (e.g. Syria). The only African country among the 12 was Zimbabwe; see Hallward-Dreimeier and Nayyar (2017: 55–7).

([4]) To arrive at these numbers, they looked at disaggregated trade statistics for major products and crossed these findings with findings from input-output tables. They found that intermediate goods trade is growing at about the same pace as all trade, so the trend did not affect the final composition of OECD merchandise trade. Services exhibit a different pattern, as services intermediates were indeed a faster growth segment of the market. These shares are considerably larger than those found in other studies, arguably because of their more comprehensive methodology.

([5]) See Hoekman (2015).

([6]) See Puga and Venables (1996).

([7]) See Humphrey and Memedovic (2006).

([8]) See Chapter 5 in this volume.

([9]) Working with the authors, Victor Steenbergen (2018) put together a detailed global data set relying on COMTRADE (https://comtrade.un.org/data/) for merchandise exports at the two-digit-level, and the WTO (https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm) for an EBOPS-classification of services exports across all 51 SSA countries. Thirty-three countries had sufficiently disaggregated data over the period to construct a comprehensive panel for 2002, 2007, 2012, and 2015 at the two-digit level. (In a few cases where 2015 data were missing, he used 2014 or 2016 numbers.) He classified each HS-level and each service sector as an 'IWSS sector' according to whether they (a) were tradable; (b) had a relatively high value added per worker; (c) benefit from technological change and productivity growth; and (d) had some promise of scale and/or agglomeration economies. IWSS sectors included HS03–08; 11–24 (food processing and horticulture); and services sectors S205–245 (travel, transportation and communication); S253–268 (financial services computer informational services, and business services). Omitted were traditional products including agriculture, manufacturing, textiles, footwear, metal fabrication, and machinery as well as construction services, recreational services, and government services.

([10]) See for example Lavopa (2015a), Szirmai (2012a), Szirmai and Verspagen (2015), and Tregenna (2015).