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Citation (APA)
Gollin, D., McMillan, M., Mensah, E., Ndubuisi, G. O., & Owusu, S. (2026). Taking Stock of Africa's Economic Transformation: Rethinking Sources of Productivity Growth. *World Bank Research Observer*, *41*(2), 269-308. https://doi.org/10.1093/wbro/lkag001

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Taking Stock of Africa's Economic Transformation: Rethinking Sources of Productivity Growth

Douglas Gollin, Margaret McMillan, Emmanuel Mensah, Gideon Ndubuisi, and Solomon Owusu

This paper draws on newly available data to examine the sources of labor productivity growth in Africa and to identify key emerging patterns. We show that while recent structural change in Africa has been growth-enhancing, overall labor productivity growth remains modest. Manufacturing—traditionally a cornerstone of structural transformation—has played a limited role since the 1990s. Instead, services, especially wholesale and retail trade, have been the main drivers. These trends are evident not only in value added and employment data but also in trade patterns, where services increasingly contribute to export growth. We argue that Africa's modest productivity growth reflects deeper structural constraints, including limited physical and social infrastructure. The former category includes electricity access and roads; but we also argue that productivity growth is constrained by extreme poverty, poor health, and inadequate education. Against this backdrop, we argue for an African-led development strategy that recognizes both traditional and overlooked sources of productivity growth while addressing foundational barriers to transformation.

JEL Codes: O11, O14, O55, J21
Keywords: structural change, within-productivity growth, Africa, economic growth, economic development.

1. Introduction

Despite ongoing global challenges, Africa's economic performance has shown signs of resilience**.** While overall GDP growth declined from 4.8 percent in 2021 to an estimated 4.1 percent in 2022—reflecting the lingering effects of the pandemic and multiple conflicts—these aggregates mask significant heterogeneity across countries.[1] In 2023, at least 15 African economies recorded growth above 5 percent, and further gains are projected. These

The World Bank Research Observer
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trends are supported by a rebound in infrastructure investment, tourism, and some reallocation of economic activity across sectors. Nevertheless, in many countries, rapid population growth has limited progress in living standards (Macroeconomic Performance and Outlook (MEP), AfDB 2024).

For the most part, this growth has not been accompanied by industrialization, at least not yet (Gollin, Jedwab, Vollrath 2016; McMillan and Zeufack 2022). Instead, the growth-enhancing structural changes that occurred in Africa over the last two decades were largely a result of an expansion of employment in the service sectors. Comparatively little expansion has taken place in the modern manufacturing sector, where Africa's large pool of relatively unskilled labor is a poor match for technologies that are increasingly skill-intensive and technologically sophisticated (Stiglitz 2018, McMillan and Zeufack 2022, Rodrik and Sandhu 2024). While formal manufacturing productivity is high in Africa, its capacity to absorb labor remains limited.

Policymakers in Africa retain a strong sense that industrialization will be part of future development strategies. The COVID-19 pandemic highlighted the critical importance of fostering the African pharmaceutical industry (McMillan and Zeufack 2022), and the global food price spikes of recent years have similarly served as a wake-up call for African countries dependent on imports of processed food. Moreover, the local processing of previously exported raw commodities—a capital-intensive activity—is being actively promoted by the African Union (https://au.int/en/agenda 2063)). However, current patterns of structural change suggest that there may be benefits if governments focus on inclusive development strategies that encompass a broader set of sectors. Ideally, these sectors will offer jobs for relatively unskilled labor; at the same time, policies can promote training to prepare youth for future skilled employment.

To understand the transformations taking place in Africa today, we begin by taking stock of Africa's transformation progress with the most complete and up-to-date data available: the GGDC/UNU-WIDER Economic Transformation Database (ETD) (Kruse et al. 2023). The ETD provides consistent sectoral employment and value-added data for 51 countries, covering 12 sectors and including seven service subsectors. The ETD improves upon its predecessor (the GGDC 10-sector Database) in two ways. First, it expands the sample size from 11 to 21 African countries, thereby representing all levels of income and covering two-thirds of Africa's GDP. Second, and most importantly, it accounts for recent statistical revisions in Africa.[2]

We supplement the ETD with data from the World Development Indicators (WDI) and the International Labour Organization (ILO) and explore how geography, income, and resource endowments shape the national growth paths of 48 African countries. We also incorporate trade data on sectoral value added and employment (Mensah and de Vries 2024), showing that services—not just goods—are contributing to export growth and foreign exchange earnings.

Across all our data sources, the picture that emerges shows that Africa's growth appears to be driven by structural transformation away from agriculture and into services. Broadly

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speaking, the main force for growth has been the movement of labor away from the lowest productivity sector (agriculture, which is also the largest sector in terms of employment) and toward higher-productivity sectors (primarily non-tradable services).

Next, we consider the implications of these findings for strategies aimed at increasing productivity growth in Africa. We review the role that export-oriented industrialization has played historically, but we also outline the reasons it might be unwise for African governments to rely on industrialization as the centerpiece of a development strategy. We then consider the feasibility of a services-led development strategy. To this end, we review recent work that is optimistic about the role that services can play in driving transformational growth (Nayyar et al. 2021; Fan et al. 2023). We also highlight recent work that considers the broader, non-sector specific set of transformations discussed by Gollin and Kaboski (2024). In their work, Gollin and Kaboski suggest that structural transformation may occur along many dimensions, including within-sector transformations likely to raise productivity. For instance, shifts from informal to formal firms or from household enterprises to more organized modes of production may lead to productivity increases. Similarly, shifts between home production and market production can lead to changes in the sectoral composition of activity. This literature allows a more nuanced understanding of the growth process and recognizes a wider set of potential policy levers.

Inspired by this new perspective on structural transformation, we turn to consider policy implications. We distinguish between structural constraints that limit productivity growth and policy distortions that misalign incentives. While poor policies—such as an overvalued exchange rate or trade restrictions—can hamper the development of economies, structural constraints define the feasible frontier of change. Without addressing foundational deficits in education, infrastructure, and health, well-designed policies are unlikely to generate sustained or broad-based transformation.

Our contribution is threefold. First, we provide the most accurate and comprehensive disaggregated evidence of structural change in Africa, emphasizing the centrality of services. Second, we situate these findings in a broader discussion about constraints and distortions, highlighting the importance of poverty, infrastructure, skills, and health. Third, we connect these insights to a plausible vision of development for Africa—one that moves beyond manufacturing-centric models and instead focuses on enabling productivity growth wherever it emerges.

The remainder of the paper is structured as follows. Section 2 examines structural transformation across African countries from 1990 to 2019. Section 3 considers the implications of these patterns for development strategies, questioning the wisdom of relying solely on industrialization and exploring the potential of a services-led model along with non-sector specific transformations. Section 4 reminds us of the structural barriers to transformation in Africa and their importance for productivity growth. Section 5 concludes and outlines policy implications.

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2. Patterns of Structural Transformation in Africa

2.1. The Role of Structural Change in Africa's Recent Growth

Can Africa's growth turnaround in the 2000s and 2010s be accounted for by structural change? A frequent finding in the structural change literature is that developing countries display large gaps in labor productivity across sectors. These gaps have two implications. First, they may reflect allocative inefficiencies in the economy (McMillan et al. 2014; Gollin et al. 2014; Mensah, Owusu, and Foster-McGregor 2023). Second, in the sense of Lewis (1954), they suggest scope for growth through the reallocation of labor from less productive to more productive sectors (McMillan et al. 2014). At the same time, some have argued that such gaps may partly reflect sorting—if more talented workers are disproportionately employed in high-productivity sectors, the observed differentials may overstate the potential gains from reallocation (Lagakos and Waugh 2013; Young 2013). In practice, both forces are likely at work, and the extent to which structural change contributes to growth is ultimately an empirical question.

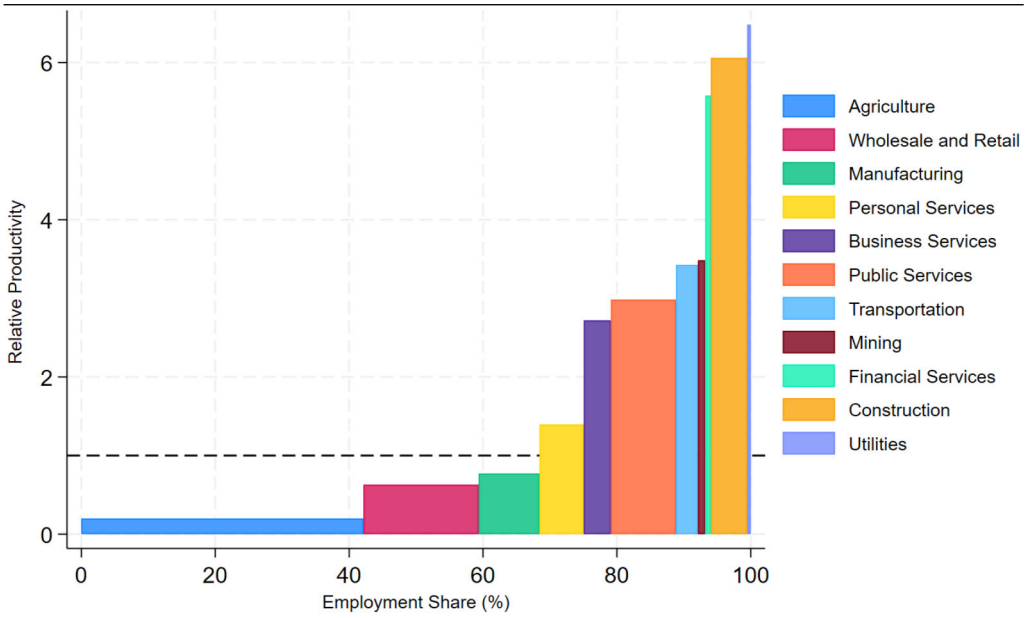
Figure 1 depicts the relative labor productivity of eleven sectors in Africa on the vertical axis and the employment share of each sector on the horizontal axis.[3] Relative productivity is calculated as the ratio of each sector's labor productivity to the average labor productivity of the economy. To account for the fact that relative prices vary substantially across tradable and non-tradable sectors, we convert value added in the local currency into 2017 purchasing power parity (PPP) using the sector-specific value-added PPPs from the Productivity Level Database (see Inklaar et al. 2024) before calculating each sector's labor productivity and the economy's average labor productivity. The horizontal dashed black line represents the productivity level of the economy. The figure highlights significant labor productivity gaps between sectors. Such productivity gaps are not peculiar to Africa. For example, fig. A.1 in the appendix, which is drawn using a similar approach, shows similar productivity gaps for developing Asian countries.

According to these calculations, productivity in the agriculture sector, which employs 42 percent of the workforce in Africa, is 80 percent lower than the economy-wide productivity level. Similarly, the wholesale and retail trade sector along with the manufacturing sector—which together account for 26 percent of total employment—are 37 percent and 23 percent, respectively, lower in productivity than the economy's average. Conversely, construction, utilities, and financial services, which together employ approximately 6 percent of the workforce, are approximately 6-times more productive than the average productivity of the economy. Between these two extremes lie business services, personal services, public services, transportation, and mining, all of which have productivity levels above the economy-wide average.

Agriculture, manufacturing, and wholesale and retail together employ 68 percent of the total workforce but are the least productive sectors in Africa (relative productivity below

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Figure 1. Relative Sectoral Productivity and Employment Shares in Select African Countries, 2018



Source: Authors' illustration using sectoral value-added and employment data from the ETD (Kruse et al. 2023) and sector-specific value-added PPPs from the Productivity Level Database (Inklaar et al. 2024).

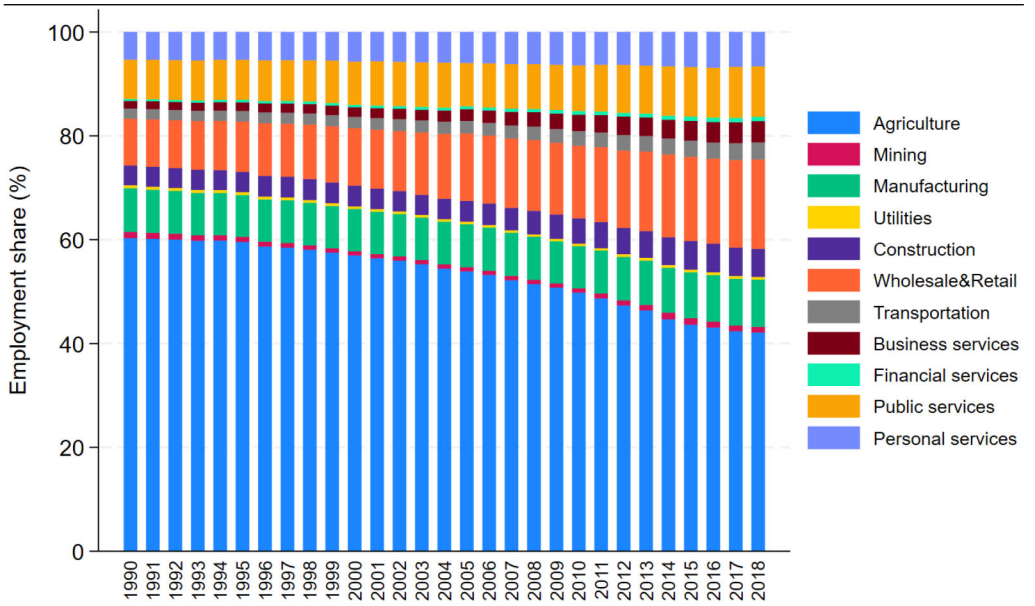
Note: The figure shows the unweighted average for 19 African countries in the Economic Transformation Database (ETD): Botswana, Cameroon, Ethiopia, Egypt, Ghana, Kenya, Malawi, Mauritius, Mozambique, Morocco, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia. The relative productivity is the ratio of each sector's productivity (in 2017 Purchasing Power Parities (PPPs)) to the average productivity of the economy (in 2017 PPPs).

1). Indeed, only one-third of the workforce is employed in sectors with productivity above the economy-wide average. This suggests that there may be some scope for gains in aggregate productivity from the reallocation of labor across sectors. Admittedly, not all the highest-productivity sectors have the potential to absorb additional labor, but even modest movements out of the lowest-productivity sectors seem likely to generate some growth.

For example, while sectors like mining, business services, and financial services are more productive than manufacturing, their absorption capacity for low-skilled workers is significantly lower than that of manufacturing. Figure 2 shows that the employment share of agriculture decreased from 60 percent in 1990 to 42 percent in 2018.[4] Over 8 percent of these workers transitioned to wholesale and retail, with an additional 0.6 percent moving to manufacturing. This suggests that about half of the workers moving out of agriculture transitioned to sectors with a productivity level below that of the aggregate economy. The employment share of the manufacturing sector, traditionally associated with structural change due to its high capacity for absorbing low-skilled workers, increased by only 0.6 percentage points, rising from 8.4 percent in 1990 to 9 percent in 2018. A positive development is that tradable and relatively productive services, such as transport services, business ser-

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Figure 2. Sectoral Employment Share in Select African Countries, 1990–2018



Source: Authors' illustration using the ETD (Kruse et al. 2023).

Note: The figure shows the unweighted averages of 21 African countries in the Economic Transformation Database (ETD): Botswana, Burkina Faso, Cameroon, Ethiopia, Egypt, Ghana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Morocco, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia.

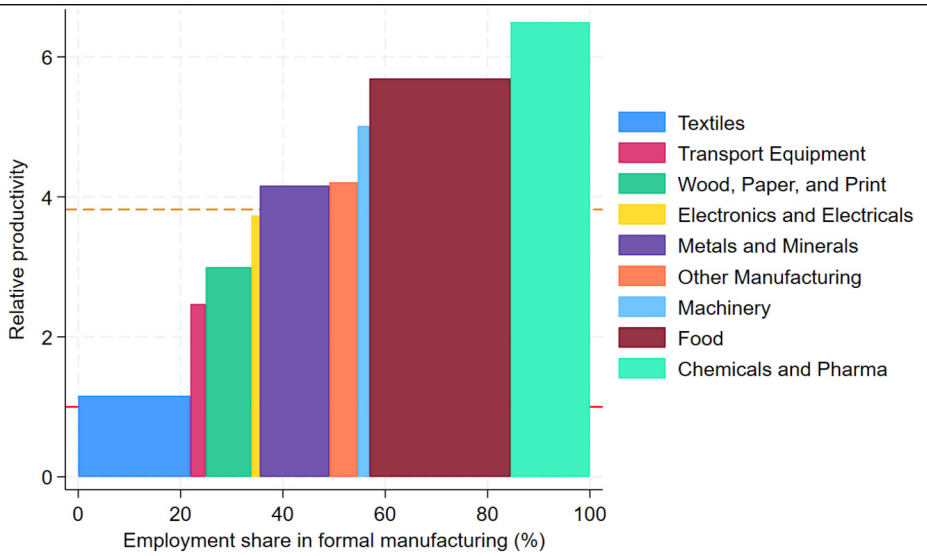
vices, and financial services, together account for 4.4 percent of the workers who moved out of agriculture. The remaining 5.6 percent are accounted for by construction, personal services, and public services.

Not only did the manufacturing sector absorb fewer workers in recent years, but its relative productivity level is far below that of tradable services such as business services and financial services (fig. 1). Moreover, the manufacturing sector in Africa is characterized by a growing number of small and informal firms that experience employment growth but little or negative productivity growth (Kruse et al. 2023; Diao et al. 2025). Furthermore, the manufacturing sector is heterogeneous in terms of productivity and employment absorption capacity. For example, the apparel and footwear sectors are relatively labor-intensive but have low productivity, while the chemical and pharmaceutical sectors are capital- and technology-intensive and exhibit higher productivity.

Figure 3 reports the relative productivity level of (formal) manufacturing industries and their share of employment. The figure shows that all manufacturing industries have productivity levels above the average of the economy, ranging from 1.15-times higher in textiles to 6.5-times higher in the chemicals and pharmaceutical industries. On average, the formal manufacturing sector is 3.8-times (shown by the dark orange dash line) more productive than the aggregate economy, and it is significantly more productive than the aggregate man-

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Figure 3. Productivity Differences in Select African Countries' Manufacturing Industries



Source: Authors' illustration using the Economic Transformation Database and its 2-digit manufacturing database (see Kruse et al. 2023).

Note: African countries covered in the 2-digit manufacturing database include Botswana, Cameroon, Ethiopia, Egypt, Ghana, Kenya, Malawi, Mauritius, Morocco, Namibia, Nigeria, Senegal, South Africa, Tanzania, Tunisia, Uganda. The figure shows the unweighted average of these 17 countries. The relative productivity is the ratio of each sector's productivity to the average productivity of the economy.

ufacturing sector (inclusive of small and informal manufacturing), which has a productivity level of 0.77, or 23 percent lower than that of the economy.

Extensive research has identified key factors that have contributed to the historical significance of manufacturing in the economic development of today's high- and middle-income countries. These factors include the manufacturing sector's high potential for productivity due to technological advancements, increasing returns to scale, and the ability to trade its products (Kaldor 1968; Haraguchi et al. 2017). Additionally, manufacturing has demonstrated substantial linkage effects with other segments of the economy (Hirschman 1958), has absorbed large numbers of low-skilled workers (Rodrik 2016), and has tended to converge toward the productivity levels of advanced economies due to the transferability of production-related knowledge (Rodrik 2013).

However, it is important to recognize that this characterization oversimplifies the evolving nature of sectoral activities over time. For example, the rapid technological advancements witnessed over recent decades have significantly altered employment absorption within large manufacturing firms, particularly for low-skilled workers (Baldwin and Forslid 2023; Diao et al. 2025). Conversely, many non-manufacturing sectors have undergone significant transformations. In Africa, Newfarmer et al. (2018) highlight the emergence of

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non-manufacturing "industries without smokestacks," which increasingly exhibit the set of characteristics traditionally associated with manufacturing. These sectors include agro-industrial and horticultural value chains, as well as trade and business services, particularly in information and communication. The tourism sector also falls in this category. Such shifts in fundamental sectoral characteristics may diminish the traditional distinction between manufacturing and service sectors, thus elevating the role of the latter in modern structural change. Even within sectors such as wholesale and retail trade or retail food services, the evidence is clear that—in rich countries, at least—there is the potential for rapid productivity growth through economies of scale and scope. Businesses like McDonald's, Walmart, and Amazon show the potential for firms in the service sector to grow through the standardization of products, economies of scale, and complex organizational structures. It would surely be a mistake to imagine that productivity growth in services is limited to a small set of high-value sectors.

A second characteristic of Africa's structural change in recent decades, as observed in the graphs above, is the reallocation of economic activities from one low-productivity sector (agriculture) to other relatively low-productivity sectors, such as informal retail trade. Nearly half of the workforce leaving agriculture is entering these activities. These sectors are well suited to the workers leaving agriculture—skills requirements are not very different, and capital requirements are small.

In summary, Africa's recent structural transformation is increasingly being driven by services, encompassing not only the high-productivity tradable services, but also wholesale and retail trade. Formal manufacturing has played a lesser role, despite exhibiting superior productivity compared to non-tradable services.

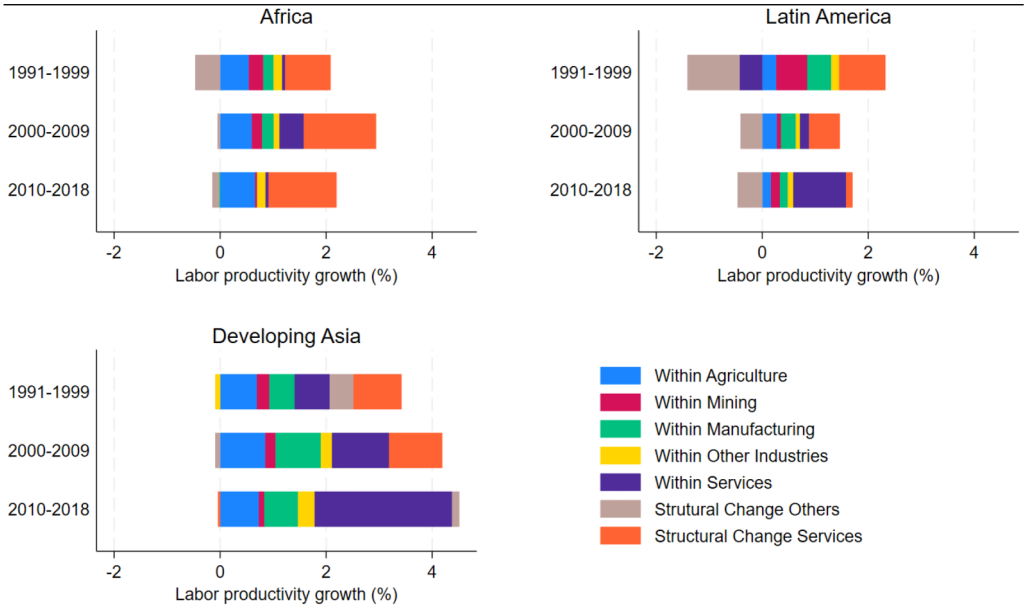
2.2. Quantifying the Role of Structural Transformation in Africa's Economic Growth

The reallocation of labor from agriculture to services has resulted in growth-enhancing structural change in Africa, but the extent of this growth has been limited. Much of the reallocation has been to subsectors of services where productivity is higher than in agriculture but still below the economy's average (e.g., wholesale and retail). There has been some movement into service subsectors with productivity levels above the economy's average (e.g., business services, financial services, personal services, public services, and transport services), but this has been limited. Partly as a result, productivity growth has been modest.

Figure 4 shows the decomposition of labor productivity in Africa and other developing regions following McMillan and Rodrik's (2011) methodology.[5] Labor productivity in Africa grew at a rate of 1.5 percent per annum in the 1990s, approximately 3 percent in the 2000s, and 2 percent in the 2010s. This growth primarily came from productivity growth within agriculture and from the expansion of the service sector. Approximately half of the labor productivity growth in the 2000s and 2010s can be attributed to the shift in employment from agriculture to services. Structural change due to the reallocation of labor into non-service activities is either negligible or growth-reducing in Africa.

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Figure 4. Structural Change in Africa and Other Developing Regions, 1991–2018



Source: Authors' elaboration using the ETD (Kruse et al. 2023).

Note: Figure 4 shows the unweighted average of 21 African countries in the Economic Transformation Database (ETD): Botswana, Burkina Faso, Cameroon, Ethiopia, Egypt, Ghana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Morocco, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia; the unweighted average of 14 developing Asian countries: Bangladesh, Cambodia, China, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; and the unweighted average of 9 Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru.

Productivity growth within non-agricultural sectors played a limited role, particularly in the 2010s. This finding is consistent with the argument that when labor and other resources shift from less productive sectors (such as agriculture in the case of Africa) to more productive activities (mostly services in the case of Africa), the economy grows even in the absence of within-sector productivity growth (McMillan et al. 2014). However, the structural change effect is self-extinguishing if non-agricultural sectors do not experience rapid productivity growth (Diao et al. 2019). If the current pattern of less dynamic productivity growth within non-agricultural sectors continues, overall labor productivity growth will eventually stall in Africa. Policies aimed at boosting productivity within sectors are imperative for driving and maintaining Africa's transformation.

Figure 4 also provides insight into Africa's structural change experiences compared to those of other developing regions. Africa's structural change from services appears to be relatively stronger than that of developing Asia and Latin America, especially in the 2000s and 2010s. However, developing Asia demonstrates stronger labor productivity growth due to robust within-sector productivity growth. Surprisingly, structural change in developing

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Asia has been limited in the past decade. Even more concerning, structural change from movement into non-service sectors has been growth-reducing in Latin America across all decades (partly as a result of trade liberalization and the rationalization of the manufacturing sector; see McMillan and Rodrik 2011). The negative structural change from non-service sectors more than offset the positive but increasingly weaker structural change from service activities, leading to an overall growth-reducing structural change in Latin America. In developing Asia and Latin America, the 'within' component dominates the contribution to annual labor productivity growth. In Africa, the contribution from structural change (mainly from services) dominates, contributing about 56 percent to total annual labor productivity growth in the 2010s. This is not surprising, in that countries in Africa have—on average—the highest shares of employment in agriculture. However, growth could be accelerated in Africa by enhancing within-sector productivity growth.

2.3. *Patterns of Structural Change by Income Group, Resource Group, and Sub-Region of Africa*

The illustrations thus far have relied on the ETD data, which cover only 21 out of the 54 countries in Africa. The ETD countries represent more than three quarters of Africa's population and GDP (Kruse et al. 2023). However, to provide a more comprehensive analysis, this section incorporates sectoral value-added data from the WDI and sectoral employment data from the ILO, which cover 48 African countries. A limitation of the sectoral value-added data from the WDI is that they are aggregated into only three broad sectors: agriculture, industry, and services. Unlike the ETD, the WDI cannot distinguish between manufacturing, mining, and other industries. Nonetheless, the data cover diverse groups of countries by income, resources, and sub-regions. Using these data, we explore how factors such as income level, geographic location, and resource endowments contribute to distinct patterns of structural transformation and economic growth across the continent.

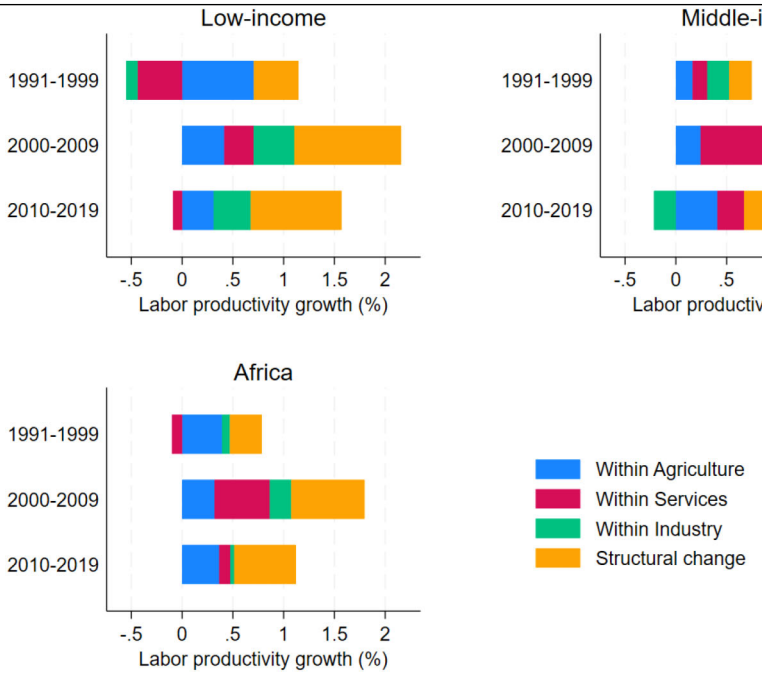
2.3.1. *Patterns by Income Group*

Figure 5 illustrates productivity differences in low- and middle-income countries (LMICs) in Africa in the 1990s, 2000s, and 2010s. The figure shows that as the sample size increased from 21 (ETD) to 48 (WDI-ILO), productivity growth decreased. Since the ETD primarily covers relatively wealthier and predominantly politically stable English-speaking African countries, the above finding may imply weaker productivity growth in the French-speaking and fragile nations that are included in the expanded sample. This observation is supported by the fact that when using the WDI-ILO data and restricting it to the subset of countries in the ETD sample, the results obtained are almost identical to the original ETD results (see fig. 6).

Speculatively, several factors may explain why productivity growth in French-speaking African countries is relatively low compared to that in English-speaking African coun-

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Figure 5. Aggregate Labor Productivity Growth: Contribution from Within and Structural Change, Income Groups, 1991–2019



Source: Authors' calculation using employment and value-added data from the International Labour Organization (ILO) and the World Development Indicators (WDI), respectively.

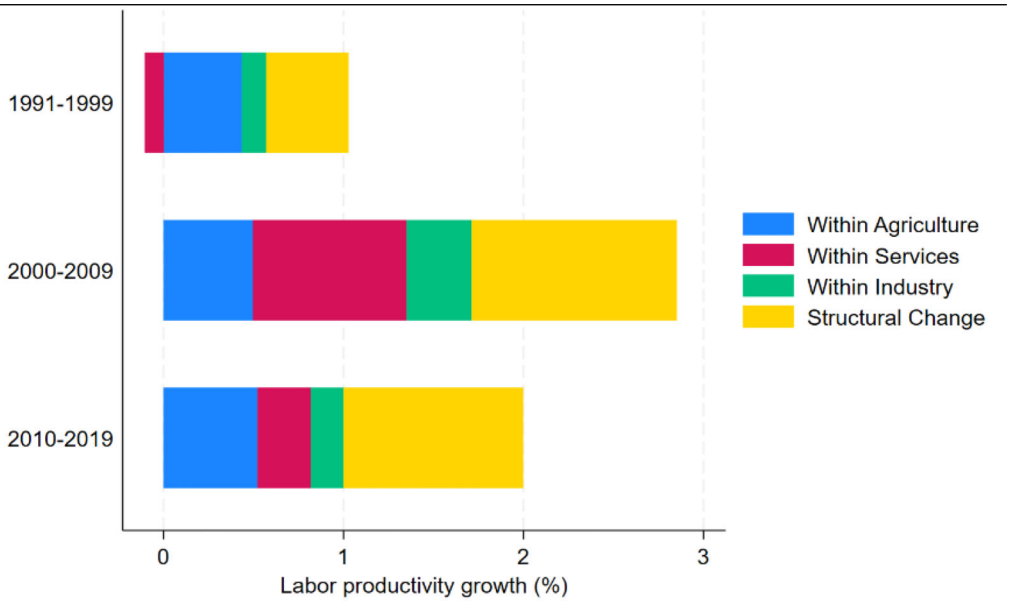
Note: Countries are classified by income groups (see also chapter 1) as follows: **Low-income countries**: Burundi, Burkina Faso, Central African Republic, Democratic Republic of the Congo, Ethiopia, Guinea, Gambia, Guinea-Bissau, Liberia, Madagascar, Mali, Mozambique, Malawi, Niger, Rwanda, Sudan, Sierra Leone, Chad, Togo, Uganda, Zambia. **Middle-income countries**: Angola, Benin, Botswana, Côte d'Ivoire, Cameroon, Congo, Comoros, Cape Verde, Algeria, Egypt, Gabon, Ghana, Equatorial Guinea, Kenya, Lesotho, Morocco, Mauritania, Namibia, Nigeria, Senegal, Sao Tome and Principe, Swaziland, Tunisia, United Republic of Tanzania, South Africa.

tries. Most French-speaking African countries have a pegged exchange rate due to historical arrangements with France. While the pegged exchange rate provides stability and policy certainty, it renders the tradable sector uncompetitive, hindering structural change and productivity growth. McMillan et al. (2014) show that an overvalued exchange rate penalizes structural transformation, a point also emphasized by Rodrik (2008). Secondly, many French-speaking countries are in the Sahel region, which is prone to extreme climate conditions and rebel activities. The fragility resulting from these two factors makes these countries less attractive to foreign investors.

Additionally, the figure indicates that productivity growth is 0.5 percent higher in low-income countries than in middle-income countries. Consistent with standard theories, structural change has occurred more rapidly in low-income countries, particularly during the last two decades. Low-income countries typically have a high proportion of agricul-

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Figure 6. Results for ETD Countries Using WDI–ILO Data



Source: Authors' calculation using WDI-ILO Data.

Note: Figure 6 uses data from the International Labour Organization (ILO) and the World Development Indicators (WDI) and shows the unweighted average for the 21 African countries included in the Economic Transformation Database (ETD): Botswana, Burkina Faso, Cameroon, Ethiopia, Egypt, Ghana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Morocco, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia. The result is identical to the result using the ETD data except for the small negative productivity growth within services in the 1990s.

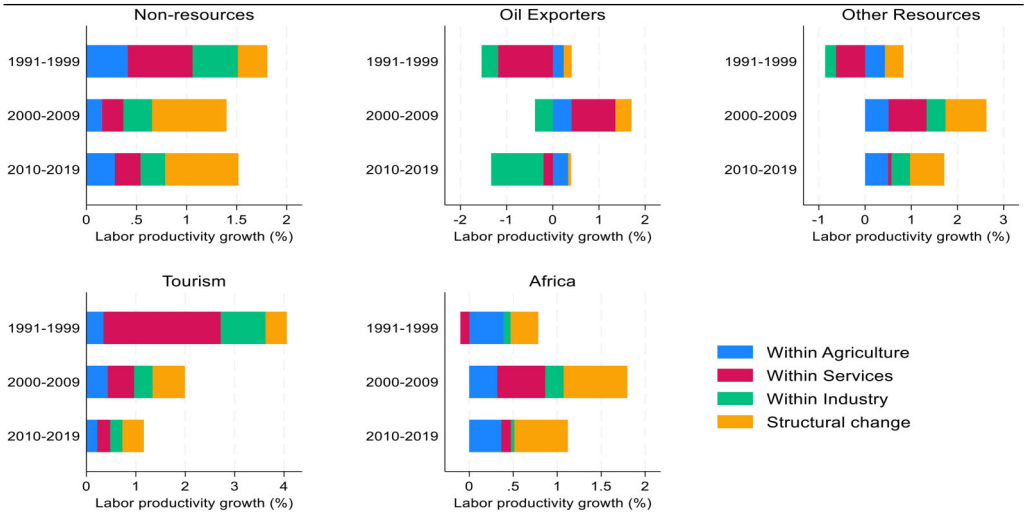
tural labor, and as argued by Lewis (1954), this surplus agricultural labor tends to drive faster structural change. Another notable trend is that while productivity growth within industries is positive in low-income countries, it is negative in middle-income countries in the 2010s. However, the evidence in Diao et al. (2025) indicates that productivity growth in formal manufacturing firms has been strong for both a low-income country (Ethiopia) and a lower middle-income country (Tanzania). Taken together, the negative growth in the industrial sector suggests the emergence of an informal manufacturing sector in Africa, characterized by rapid employment growth but negative productivity growth (Kruse et al. 2023; Diao et al. 2025).

2.3.2. Patterns by Resource Group

Patterns of productivity growth among resource groups are also markedly different. In tourism-dependent countries and for oil and other resource exporters, significant productivity growth stems from within-sector productivity growth, particularly within services (in the case of tourism-dependent countries) and natural resources (for oil and other resource exporters). The contribution of structural change to productivity growth is partic-

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Figure 7. Aggregate Labor Productivity Growth: Contribution from Within and Structural Change, Resource Groups, 1991–2019



Source: Authors' computations using data from the International Labour Organization and the World Development Indicators.
Note: Countries are classified as follows (see also chapter 1): **Non-resource group:** Burundi, Benin, Côte d'Ivoire, Comoros, Cape Verde, Ethiopia, Gambia, Guinea-Bissau, Kenya, Lesotho, Morocco, Madagascar, Mozambique, Mauritania, Mauritius, Malawi, Rwanda, Senegal, Sao Tome and Principe, Eswatini, Togo, Tunisia, Uganda. **Oil exporters**: Angola, Cameroon, Congo, Algeria, Egypt, Gabon, Equatorial Guinea, Nigeria, Chad. **Other resources**: Burkina Faso, Botswana, Central African Republic, Democratic Republic of the Congo, Ghana, Guinea, Liberia, Mali, Namibia, Niger, Sudan, Sierra Leone, United Republic of Tanzania, South Africa, Zambia, Zimbabwe. **Tourism**: Comoros, Cape Verde, Mauritius, Sao Tome and Principe.

ularly strong among non-resource exporters, especially in more recent years, signaling the relative diversification of sources of growth in non-resource exporters (fig. 7).

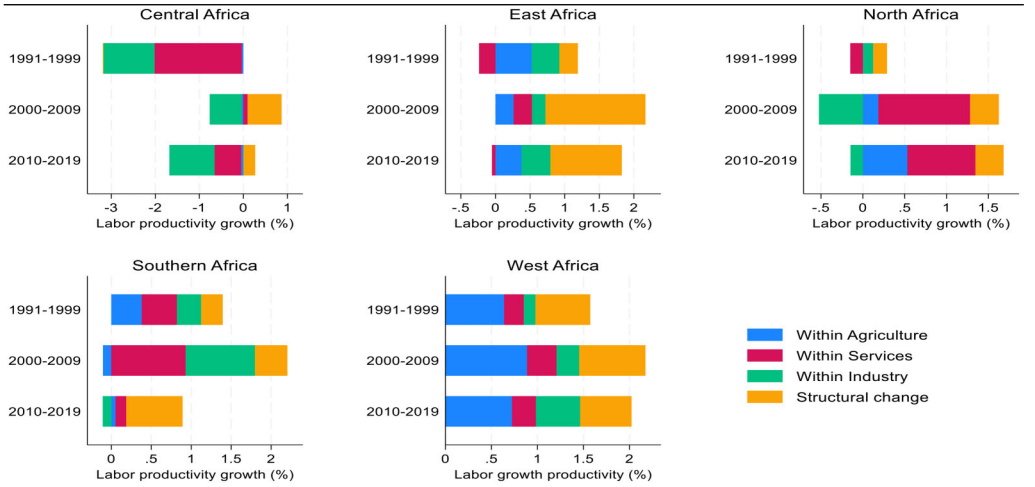
Another important highlight here is the high volatility of growth in oil-exporting countries compared to that in non-resource exporters` and tourism-dependent countries. During the last commodity price boom (2004–2014), economic growth soared to a record high in resource-rich countries due to high commodity prices. However, this growth proved fragile and heavily reliant on external factors. Since the decline in commodity prices post-2014, resource-rich African countries have experienced slower growth rates compared to the regional average. After the commodity price boom, annual GDP per capita growth in resource-rich countries averaged 2.5 percentage points lower than during the boom years and 1.5 percentage points lower than in non-resource-rich countries within the region. This underscores the importance of promoting diversification to enhance economic resilience in these countries (Cust and Zeufack 2023).

2.3.3. Patterns by Region

Across regions, important differences in performance can also be identified (see fig. 8). The average growth rates of labor productivity from 1991 to 2019 show that East Africa grew

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Figure 8. Labor Productivity Growth Decomposition, by African Region 1991–2019



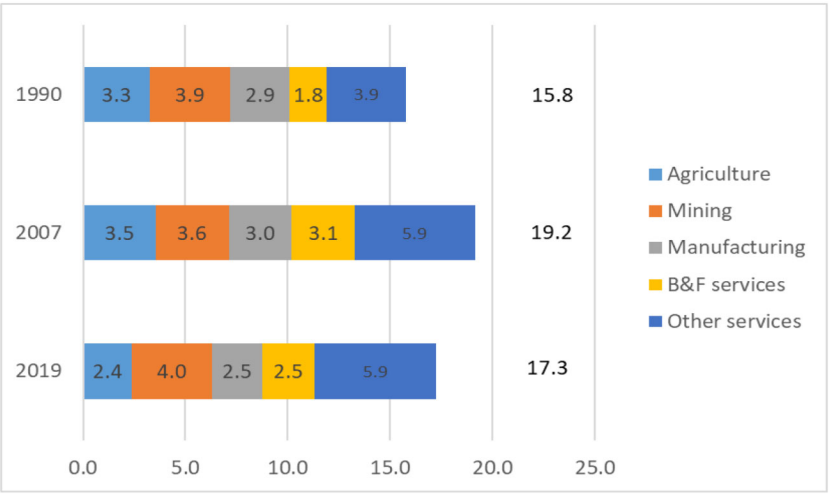
Source: Authors' elaboration using employment and value-added data from the ILO and WDI, respectively.
Note: Countries are classified by region as follows (see also chapter 1): **Central Africa**: Cameroon, Central Africa Republic, Chad, Congo, Congo, DRC, Equatorial Guinea, Gabon. **East Africa**: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Seychelles, Somalia, Sudan, Tanzania, Uganda. **North Africa**: Algeria, Egypt, Mauritania, Morocco, Tunisia. **Southern Africa**: Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe. **West Africa**: Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo.

by 1.7 percent per annum, Southern Africa by 1.5 percent, West Africa by 2 percent, Central Africa grew by −1.25 percent, and North Africa by 1.2 percent. In Central, West and North Africa, significant productivity growth comes from within sectors. For instance, in Ghana and Nigeria, two of West Africa's largest Anglophone countries, almost 100 percent and 80 percent of average productivity growth comes from within-sector productivity growth, respectively. In Francophone West Africa, on the other hand, structural change tends to play a more significant role in the growth process. For instance, although the within effect tends to play a more significant role in the growth process in Burkina Faso and Togo, the contribution from structural change still dominates. This is similar to countries such as the Republic of Congo in Central Africa where structural change dominates the process of growth despite a substantial contribution from within sector productivity growth (fig. 8).

In East Africa, structural change contributed more to labor productivity growth than within-sector productivity. In Tanzania and Rwanda, growth-enhancing structural change made a significant contribution to productivity gains. This contrasts with the experiences of Uganda and Ethiopia, where the contribution from within-sector productivity growth dominates. In Southern Africa, significant productivity growth comes from within sectors, with moderate contributions from structural change.

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Figure 9. Sectoral Domestic Value Added Embodied in Exports (percent of GDP)



Source: Reproduced from Mensah and de Vries (2024).

2.4. *Rapid Growth in Income and Jobs Embodied in Services Exports: New Evidence*

Contrary to the mainstream view of development, which often emphasizes supply constraints, Goldberg and Reed (2023) highlight the significance of demand as a constraint to structural change in developing countries, particularly those in Africa. They underscore the role of foreign demand and integrated markets in driving structural change in African countries, many of which are characterized by small market size. Regional integration has arguably reduced the market-size constraint. In particular, the establishment of the African Continental Free Trade Area has opened numerous possibilities for the region. Following approximately two decades of inward-looking development strategies, most African countries opened to regional and global markets in the 1990s. The question arises: Has this newfound market access impacted sectoral exports, productivity, and job creation in Africa? Mensah and de Vries (2024) address this question using a newly released database of national input–output tables and supply–use tables for African countries (ASUT Database). They calculate the domestic value added and jobs embodied in exports using the hypothetical extraction method introduced by Los et al. (2016). This method considers the ratio of value added to gross output and the ratio of employment to gross output to compute the value added and the jobs embodied in exports, respectively. Figure 9 and Table 1, reproduced from their paper, show striking changes in employment and value-added contributions by sector over time.

First, fig. 9 shows that the share of domestic value added embodied in exports is decreasing in agriculture, flat in mining, slightly decreasing in manufacturing, and increasing in services. The results are consistent with the broad patterns of structural change

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Table 1. Number of Jobs Embodied in Exports

	Jobs induced by foreign demand (thousands)			Share (in total employment)		
from:	1990	2007	2019	1990	2007	2019
Agriculture	6,406	10,430	7,858	6.3%	6.6%	3.2%
Mining	1,895	2,715	2,392	1.9%	1.7%	1.0%
Manufacturing	4,077	7,746	8,643	4.0%	4.9%	3.5%
B&F services	106	425	1,106	0.1%	0.3%	0.4%
Other services	1,146	3,027	6,545	1.1%	1.9%	2.6%
Total	13,628	24,343	26,544	13.3%	15.5%	10.7%

Source: Reproduced from Mensah and de Vries (2024). The value added and jobs embodied in exports are computed using the newly released Africa Supply and Use Tables (ASUT) Database. *Note:* B&F services are Business and Finance Services (ISIC rev. 4 codes JtK). The figure and the table show the unweighted average for the 11 African countries covered in the database: Cameroon, Ethiopia, Ghana, Kenya, Mauritius, Nigeria, Rwanda, Senegal, Tanzania, South Africa, and Zambia.

documented earlier, where services are the driving force behind African countries' recent growth. Mensah and de Vries (2024) observe that the rising share of domestic value added in manufacturing during the 2000s, followed by a decrease in the 2010s, was primarily driven by manufacturing activities related to natural resources, such as petroleum refining and fabricated metal products. This suggests that the contribution from other manufacturing industries remained stagnant, which is consistent with the general observation that the export-oriented aspect of manufacturing is not expanding: Most manufacturing firms are producing to meet local demand (Kruse et al. 2023).

According to Table 1, jobs embodied in exports nearly doubled over three decades, increasing from over 13.6 million in 1990 to over 26.5 million in 2019. The share of jobs embodied in exports decreased for all sectors except for services, although the share for services started from a lower value. While the share of jobs embodied in service sector exports is increasing rapidly, it is important to note that the total share of jobs embodied in service exports (3 percent) is still lower than that for manufacturing (3.5 percent) and agriculture (3.2 percent).

2.5. Summarizing the Evidence

In summary, there has been a significant reallocation of workers away from agriculture, and this labor has moved mainly to services. The shift has led to growth-enhancing structural changes in Africa, as the average productivity level in services tends to be higher than that in agriculture. However, productivity growth within services is lackluster, primarily because the service subsector that is expanding most rapidly (wholesale and retail trade) overwhelmingly comprises informal firms.

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The growing role of services extends beyond value-added and employment data; it is also reflected in trade data. Input–output analysis suggests that domestic value added embodied in exports (as a percentage of GDP) and jobs embodied in exports (as a percentage of total employment) are increasing in services but decreasing in manufacturing.

Manufacturing, although traditionally associated with structural change, has played a limited role in Africa's structural transformation since 1990. Formal manufacturing, despite exhibiting superior productivity compared to non-tradable services, is absorbing fewer and fewer additional workers, indicating that the nature of manufacturing production is evolving. The most productive manufacturing firms in Africa are increasingly using more capital than labor, in line with the labor-saving nature of emerging technologies (Diao et al. 2025).

These patterns suggest that Africa's growth trajectory fundamentally diverges from the industrialization experienced in East Asia and Latin America. The question is no longer whether this divergence is temporary or problematic, but rather how to build effective development strategies that recognize and harness Africa's actual transformation dynamics rather than relying on outdated development models. More broadly, there is a need to reconsider development strategies that, despite decades of well-meaning external advice, have failed to deliver sustained improvements in living standards across much of the continent.

The findings here contrast with Wood (2019), who does not consider the possibility that services can drive productivity growth, nor does he account for the role of service exports, assuming instead that services contribute to the economic structure solely through domestic demand. The evidence above, however, shows that Africa exports a significant amount of services, and these activities generate employment and income, playing a key role in shaping African economic structures.

3. A New Development Strategy for Africa?

There is no shortage of advice on how low-income (African) countries ought to develop. Moreover, the advice from academic economists has changed dramatically in a relatively short period of time. For example, in 2011, Dani Rodrik argued that developing countries would be foolish to ignore the imperative of building a robust manufacturing sector (Rodrik 2011). More recently, Rodrik (2022) argued that, because the bulk of future jobs will come from services, policymakers should focus on an industrial policy for services. Stiglitz (2021) and Rodrik and Sandhu (2024) offer more nuanced advice, acknowledging the need to incorporate climate change and the changing geopolitical landscape into development strategies.

Although academic thinking has changed, most African governments continue to view manufacturing as central to their development strategies, with Ethiopia being the most determined proponent of this view. The African Union has been hosting an annual African industrialization conference since the late 1980s. The specifics of the African Union's recipes have changed over time, but industrialization remains at the heart of the message; for instance, in 2024, the conference theme targeted the use of artificial intelligence and green

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industrialization. This focus on manufacturing has persisted despite empirical evidence for the changing nature of manufacturing and the lack of job creation in formal manufacturing across the continent of Africa. See, for example, Bhorat et al. 2025, on industries without smokestacks.

In this section, we consider some potential pathways for increasing productivity in the region. Although government policies have an important role to play, we note that beyond the basics of macroeconomic stability, governments have few powerful tools. In particular, in economies where most people generate their livelihoods within the informal economy, governments may lack direct policy levers. With constrained fiscal space, governments have little scope to direct capital investment. Furthermore, in a world where global capital flows are fickle, there may be little potential to attract foreign investment through tax incentives or relaxation of regulations.

Governments in the region continue to prioritize manufacturing in their development strategies, but there are few examples of success in this domain. We review the evidence for the significance of manufacturing in driving both employment opportunities and productivity enhancement, drawing insights from the research conducted by McMillan and Zeufack (2022) and Diao et al. (2025). We then consider the applicability of development strategies based on services, drawing on recent work by the World Bank and others who have tried to measure productivity in the service sector. Subsequently, we delve into transformative processes that raise productivity, which are often overlooked within the discourse on development strategies. Our bottom line is that a development strategy that hinges on one sector alone is likely to disappoint.

3.1. The Role of Manufacturing in the Development of Africa

The traditional development path taken in the 19th and 20th centuries was industrialization. For small and medium sized economies, manufacturing was export focused, albeit with backward linkages and often including components of import substitution (See Leelavathi 2021). However, the world has changed enormously since then, and evidence suggests that in recent years, this path has been more difficult to emulate. Rodrik (2022) explains that the share of labor in manufacturing is peaking across the world—not just in Africa—at ever-lower levels due to technological changes that are shifting the relationship between capital and labor in manufacturing. These changes have made capital a more effective substitute for low-skill labor and thereby undermined the previous comparative advantage of labor-abundant countries in this sector. In addition, a substantial reversal of globalization has complicated the adoption of export-oriented strategies for low-income countries. Global value chains are being rebuilt based on geopolitics (Shivakumar et al. 2022). In 2025, the global economic environment does not favor trade-based strategies for growth; the imposition of high tariffs (and uncertainty with respect to tariff levels) suggests that African countries should not rely unquestioningly on export-based development strategies.

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On a more positive note, McMillan and Zeufack (2022) argue that manufacturing retains an important role in African development. Whilst acknowledging that this sector may create fewer jobs than in the past due to rising capital intensity, they find in a review of 18 African countries that employment in African manufacturing has grown rapidly over the past 20 years. These employment gains have been accompanied by (a) large increases in the number of small manufacturing firms; (b) limited employment gains in large firms; and (c) robust labor productivity growth in Africa's large firms. Nevertheless, evidence from Ethiopia and Tanzania indicates that despite contributions to value added and export growth, employment growth in the formal manufacturing sector was subdued. Instead, manufacturing grew rapidly in the informal sector, where productivity growth was minimal (Diao et al. 2025).

3.2. Can Services Drive Productivity Growth?

The persistence of growth and structural transformation without industrialization (Gollin et al. 2016), along with new evidence regarding productivity in the service sector (see, for example, Nayyar et al. 2021, Fan et al. 2023; Hamilton, Mensah and Sennoga 2025), has raised the question of whether the service sector can plausibly drive a development and growth strategy within Africa. The centrality of manufacturing has long been accepted by policymakers in both high-income countries and LMICs, despite very limited evidence in the academic literature for the proposition that manufacturing plays a crucial role in long-run growth. For instance, the United States economy has maintained an approximately constant long-run growth rate for the past hundred years even as the country has undergone massive deindustrialization. The same is true of many other high-income countries, where the shift from industry to services has not necessarily slowed growth rates. Even in poorer countries, there is little evidence that productivity growth in manufacturing has been more rapid than the growth in agriculture or services, as documented by Herrendorf, Rogerson, and Valentinyi (2022). In today's high-income countries, manufacturing has been associated with higher-quality jobs—perhaps because of the presence of organized labor and more easily enforced labor standards—but it is not clear that the quality of jobs is intrinsically related to the sector of production.

The possibility of service-led growth seems important to examine, given what appears to be a *de facto* process of service-sector expansion in LMICs. This idea is the focus of a recent report published by the World Bank: "At your service? The promise of services-led development" (Nayyar et al. 2021). The report accepts that traditionally, manufacturing-led development epitomized the path to prosperity for low-income countries. It goes on to suggest that there has been a shift in paradigms with the rapid growth in services in many low-income countries and then explores the opportunities and challenges inherent to services-led development.

Abstracting from the difficulties associated with measuring productivity in services, this report sets forth several useful stylized facts about the service sector in relation to manufacturing. First, service sector firms are smaller on average than manufacturing firms, and

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this gap is largest in rich countries (see also Bento and Restuccia 2021). Second, size matters less for productivity (Nayyar et al. 2021 using data from Bento and Restuccia 2021): In high-income countries small service sector firms are just as productive as large service sector firms (Nayyar et al. 2021 using OECD data). Third, physical capital plays a smaller role in the production of services relative to manufacturing. And fourth, productivity growth within service sector firms is similar to that in manufacturing. These features of the service sector appear to be good news for African countries where labor is abundant, capital is expensive, and small firms dominate the landscape.

Of course, the service sector is highly diverse. For our purposes, it helps to group services into the following 3 categories: (1) high-skill tradable services like information and communication technology (ICT), finance and insurance; (2) low-skill services including wholesale and retail trade and accommodation and food services and; (3) skill-intensive social services like education and health. Employment expansion in the service sector across LMICs—and by implication Africa—has been concentrated in service subsectors that are intensive in the use of low-skilled labor, especially retail trade. The expansion of retail trade across much of Africa has boosted productivity through structural change, as the employment share in retail trade increased, and this sector is (at least marginally) more productive than agriculture.

But a key question remains: Can the service sector and retail trade also be a source of within-sector productivity growth, perhaps offering a viable development strategy for today's low- income countries? Can service-led growth be generated in other areas beyond the high-skill tradable services in which African countries have little obvious comparative advantage at present? One interesting and suggestive experience is that of India. In a recent study on service-led growth in India (Fan et al. 2023), the authors examine India's extraordinary growth performance over the past three decades. It is widely understood that India's growth has come from services, rather than from manufacturing, but most narratives tend to assume that the key subsectors in which India has prospered have been high-skill tradable services, including digital-based exports. For instance, India has had well documented successes in attracting call centers, data entry services, software development, and other sectors that rely on a well-educated workforce and good digital connectivity. Somewhat surprisingly, however, Fan et al. (2023) find that an even stronger source of growth has come from consumer-facing services in India, such as wholesale and retail trade, transport, and other non-tradables. As in most African countries, consumer services comprise the majority of the services employment in India, and the study finds that productivity growth within this sector has been strong and robust.

An important challenge in studying the rise of consumer services is disentangling whether increases in output reflect true productivity gains or are simply a byproduct of rising incomes and demand. Because the share of income spent on services rises with income, higher output in services could just mirror demand shifts rather than sector-specific efficiency improvements. Fan, Peters, and Zilibotti (2023)address this by developing a novel way to measure productivity growth in consumer services—such as retail, restaurants, and

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real estate—in India, where prices and quality are hard to track. Exploiting detailed household expenditure data, they estimate the income elasticity of demand for non-tradable services, which allows them to separate demand-driven growth from productivity-driven growth. Complementing this with firm-level data, they distinguish between consumer-oriented services and those serving firms. Their findings reveal that big cities have experienced substantial productivity growth in consumer services. In other words, the expansion of this sector is not simply a function of increasing demand; they argue that there has been a significant increase in productivity within this sector. They also caution that this pattern is not likely to be distributionally neutral. They show that changes of this kind may disproportionately benefit wealthier urban households. They argue, however, that productivity growth in consumer services has played a central role in India's economic transformation.

This study leaves some important questions unanswered. First, what exactly was the source of the within-sector productivity growth in consumer services? One clue is that it occurred mainly in urban areas. One can imagine supermarkets and fast-food restaurants making services more productive through consolidation and economies of scale, relative to the highly fragmented industry structures that currently prevail. Is this the source of productivity growth? If not, what are the sources of productivity growth within services? Understanding the sources of productivity growth in consumer services is of first-order importance for policymakers.

Second, how do the improvements in services productivity relate to (and rely on) public investments, policies, and other elements of structural transformation? This question has important implications for the potential replicability of India's experience in African countries. Does service-sector productivity growth require some set of accompanying changes in transportation infrastructure, housing, energy use, diet patterns, or other dimensions of urbanization? There are reasons to think that India's experience is not unique and could apply to African contexts. Although the case is not exactly parallel, recent evidence from Tanzania during the COVID-19 pandemic is consistent with India's experience (World Bank 2023).

Another recent paper, "Can the Service Sector Lead Structural Transformation in Africa? Evidence from Cote d'Ivoire" by Foltz and Jing (2023), uses firm-level data for services and manufacturing to show that total factor productivity is 7 percent higher on average in services than it is in manufacturing. They also show that high-productivity firms in services hire more workers, especially low-skilled workers, than low-productivity firms in services. They conclude that the data are consistent with the idea that the service sector is leading structural transformation and growth in Cote d'Ivoire. While this evidence is encouraging, it is limited to a single country, and the challenges of measuring total factor productivity are substantial. Nevertheless, there are reasons to take seriously the proposition that economic growth in Africa is possible without a manufacturing boom.

There are many questions, to be sure, about a development strategy that is led by productivity growth in non-tradable services. One question is how this approach would allow economies to earn the foreign exchange needed to service debt and purchase imported goods. Productivity growth in non-tradable services may suffice for creating jobs and for

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lifting aggregate output per worker, but it is not going to generate the hard-currency earnings that are essential for African countries. But perhaps the point is that the sectors bringing in foreign exchange do not need to be identical to those generating employment and productivity growth. Primary product exports from mining and agriculture may remain important for African economies, even if these are not the sectors directly creating jobs or driving productivity growth.

Another concern with services-led strategies may be the distributional consequences. India has only recently relaxed longstanding restrictions on foreign direct investment in the retail sector, and many other sectors of consumer services retain some policy limits that are designed to protect small-scale "mom-and-pop" operations from competition with multinational firms. This reflects concern over the potential distributional consequences of opening traditional service sectors to competition. As in Fan, Peters and Zillibotti (2023), competition and productivity growth within this sector will normally tend to drive down profit margins and drive low-productivity firms out of business. While this may be desirable from a long-term perspective, the welfare impacts may be ambiguous or even negative. This topic deserves further exploration.

A discussion of services-led growth in Africa should certainly not neglect tradable services such as tourism, business and finance, and ICT. There are a wide range of skills required across these service sectors as well as a number of public initiatives to train young Africans in the required skills.[6] For example, tourism has emerged as a pivotal sector contributing to Rwanda's strong economic performance. The government, together with the Mastercard Foundation, launched a program training youth for the tourism sector, and it appears to be paying off.[7]

Although ICT doesn't employ a very large share of the labor force, ICT services are critical to running all sorts of businesses and organizations regardless of sector. Kenya has emerged as a leader in Africa's ICT revolution, even being nicknamed the "Silicon Savannah."[8]

The scope for productivity growth in the service sector thus seems substantial. Innovation and rising incomes result in consumers demanding far more services than before. In the US in 2022, services accounted for 66 percent of consumer spending compared with 42 percent in 1980 and 36 percent in 1960.[9] Moreover, technology has increased the range of services that can be traded, including ICT, consumer support/call centers, business services including legal, design and accounting and back-office work and finance. There is scope to export more traditional services like tourism, international transport, distribution, logistics and consulting. Historically non-traded services, such as education and health, can also be exported.

3.3. The Role of Non-Sector Specific Transformations

Thus far, this paper has focused on structural transformation at the level of economic sectors. But recent thinking has emphasized that sectoral changes are only one of the broader

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structural changes that accompany growth and development. Although policy conversations have focused on sectoral changes—and especially industrialization—as the key drivers of structural transformation, this focus embeds a strong assumption about the direction of causation. At least to some degree, sectoral changes are themselves a response to other dimensions of transformation. For instance, people may move out of agriculture not in response to the availability of better jobs in industry or services but because of the attractions of urban relative to rural life. Most cities in the developing world have a more readily available range of amenities than rural areas—for example, access to (and quality of) health care and education or the relatively greater availability of water and electricity.[10]

Recent literature (e.g., Gollin and Kaboski 2024) thus considers structural transformation beyond sectoral changes. The spatial patterns of economies change during growth—both through urbanization and through the growing spatial integration of economies. Localized autarkic modes of production (such as quasi-subsistence agriculture) give way to more integrated domestic markets, allowing for economies of scale and specialization, as well as urbanization. On the production side, huge changes take place in the structure of production. Typically, the locus of production shifts from home to the market. This shift is accompanied by changes in the scale of production (from micro firms to larger businesses), in the complexity of management structures (from self-employment to multi-level hierarchies), and in the legal structure and visibility of firms (typically associated with moves from informality to formalization). There may also be important changes in social norms—e.g., around the participation of women in labor markets or around the cultural acceptability of economic profits.

If structural change encompasses these many other dimensions, and if these dimensions are in turn causally linked to sectoral change, economic growth, and development, then the policy space for development is far broader than a narrow focus on policies that promote industrialization or exports. As Gollin and Kaboski (2024) argue, the role of policy in driving economic growth must be understood far more broadly than as simply choosing and supporting specific sectors of the economy. Although there may be a potential role for effective states in prioritizing certain sectors, there are many other margins on which policy can affect the growth potential of the economy.

Some of these margins are not usually seen as obvious candidates for growth policy—and may be actively rejected by finance ministries that see fiscal costs rather than growth benefits. For instance, improvements in business-to-business infrastructure—some of them as simple as the formalization of street addresses—can support the development of deeper input–output structures in an economy. Programs that support the provision of safe childcare may increase women's labor market participation, not only expanding the size of the workforce but also driving up the demand for market services that substitute for what is often women's work in the home. Reducing transport and search frictions in labor markets may allow for better matching between firms and workers, expanding productivity across sectors (Abebe et al. 2021). In the same vein, reducing frictions in housing markets may al-

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low people to achieve better matches between home locations and work locations in ways that have beneficial effects on productivity (Andersen et al. 2022).

Many of these policies are not explicitly linked to specific sectors. In that sense, the argument here differs from an older conversation about whether governments should pursue "soft" or "hard" industrial policy—i.e., promoting industrialization by providing infrastructure and investing in education (soft) rather than promoting specific industries (hard). The difference in the current conversation is that it does not identify industrialization as the target—or even as a useful metric of success. The goal instead is to create a functioning economy with lower frictions and greater internal integration. Rather than choosing a specific direction for sectoral change, the idea is to make it easier for land, labor, capital, and talent to move into productive uses and to reduce misallocation of these resources.

Moreover, rather than focusing explicitly on the export of final goods, the new literature emphasizes the potential gains that can take place within domestic economies, including deepening the extent of market integration. Exporting low-skill manufactured goods may be a good source of hard currency earnings, but if all the intermediate inputs are imported, the value added and technology transfer are limited; essentially, countries hosting this kind of activity are mostly exporting labor, almost as though they were sending international migrants out of the country.[11] By contrast, policies that focus on reducing spatial and institutional frictions within the economy can have important benefits across sectors. By promoting the creation of value chains within the domestic economy, such policies can support market integration—in the spirit of Adam Smith—with concomitant gains through specialization and exchange. Note that these value chains often include extensive service-based components, such as the linkage of retail supermarkets or retail food service (i.e., restaurants) to the production, packaging, storage and transport of domestically produced agricultural goods (as described by Barrett et al. 2022).

Creating policy environments—and infrastructure—to support domestic market integration is not a substitute for international trade, and it does not generate foreign currency earnings, but it can be an important source of productivity growth for countries. To the extent that they may have other sources of foreign exchange through mining or primary product exports, it may be possible to drive the productivity growth of the economy through non-tradable sectors, so long as the external macro position of the economy can be sustained through other means. In short, policy has focused for a long time on the idea that LMICs need to achieve productivity growth through the same sectors that generate export earnings; if those two objectives can instead be separated, there is scope for a broader set of development strategies.

4. Structural Barriers to Transformation

The evidence presented in previous sections reveals that Africa's structural transformation is already underway, driven primarily by services rather than manufacturing. However, the pace and quality of this transformation, and particularly the modest productivity growth

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within the expanding service sectors, reflects deeper structural constraints that policy reforms alone cannot address.

While policy distortions such as overvalued exchange rates and trade restrictions have long dominated critiques of development, we argue that these issues are secondary to the deeper structural constraints facing African economies (Hausmann, Rodrik, and Velasco 2008). Beginning with the *Africa Adjustment Report* and continuing through decades of reform programs, international financial institutions—most prominently the World Bank—have emphasized dismantling market distortions, including agricultural marketing boards and trade restrictions (World Bank 1981; Easterly 2005; Page 2012; Konte et al. 2022). Yet despite these efforts, broad-based structural transformation has remained elusive. As Dercon (2022) argues in Gambling on Development, the key lies not in correcting distortions per se but in overcoming structural (and political) constraints that limit the capacity for sustained growth.

The limited impact of these reforms reflects a more fundamental reality: The foundational barriers to productivity growth lie less in policy distortions per se and more in the absence of basic infrastructure, human capital, and productive capacity. These constraints limit African countries' potential for productivity growth and quality job creation.

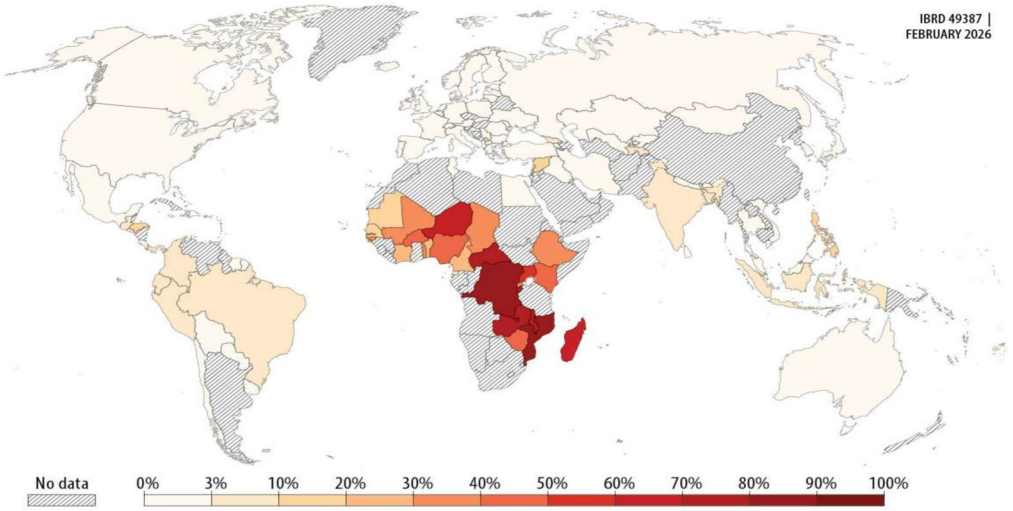
The point in raising these issues is not to single out failures. Rather, we wish to highlight that addressing these constraints will require sustained domestic investment, complemented by international partnerships that support African-led development priorities. Moreover, these constraints vary significantly across the continent; in this section, we also point to specific examples in which countries have made substantial progress on alleviating these constraints.

4.1. Extreme Poverty Limits Domestic Demand

Figure 10 shows that in many African countries, more than half the population lives on less than $2.15 per day. When such large populations subsist at these income levels, domestic markets for non-tradable services remain severely limited, constraining the productivity growth potential of the very sectors driving Africa's structural transformation. This demand constraint is particularly binding for non-tradable services such as retail trade, transport, and personal services that cannot easily access international markets. Unlike manufactured goods that can be exported to overcome domestic demand limitations, most services require local markets with sufficient purchasing power (Rodrik 2016). The expansion of wholesale and retail trade documented in this paper represents structural change, but poverty constraints mean these activities often remain stuck at subsistence levels. Small-scale traders cannot invest in inventory, storage, or transportation because their customer base lacks purchasing power for anything beyond basic necessities. Service providers cannot upgrade their offerings or invest in productivity-enhancing technologies when demand is limited to the lowest-cost options.

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Figure 10. Share of Population Living in Extreme Poverty, 2024



*Source:*Our World in Data. (2025). "Share of population living in extreme poverty, below the International Poverty Line of $3 per day." World Bank Poverty and Inequality Platform (2025). Data expressed in 2021 international-$, adjusted for inflation and cost of living differences. Retrieved from https://ourworldindata.org/poverty (accessed August 15, 2025).

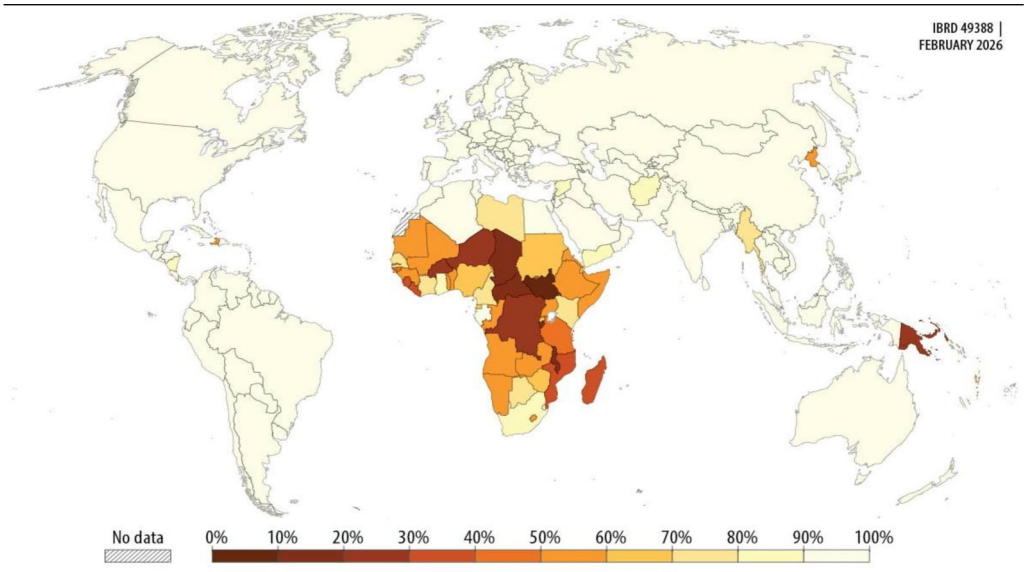
Approximately 82 percent of the poor in Sub-Saharan Africa live in rural areas (United Nations Development Programme (UNDP) & Oxford Policy Health Initiative 2022). Thus, breaking this poverty-demand constraint requires a coordinated effort to raise rural incomes, whether through agricultural productivity improvements, rural infrastructure development, or direct transfer programs. Without addressing the underlying poverty that limits domestic purchasing power, even well-designed policies will struggle to generate sustained productivity growth in the sectors that are absorbing most of Africa's growing labor force.

4.2. Lack of Access to Electricity Constrains Productivity

Figure 11 shows that Africa is home to most of the least electrified countries in the world, where "access" means only the ability to charge a phone or listen to a radio for up to 4 hours. According to the World Bank (2025), "Affordable, accessible energy is at the heart of development driving job creation, growth and shared prosperity." Limited access to electricity severely limits productivity in modern activities—from retail operations that cannot maintain cold chains, to financial services that cannot operate digital payment systems, to business services that cannot maintain reliable internet connectivity, to firms that cannot operate without electricity (Foster and Steinbuks 2009). Energy access also affects women's

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Figure 11. Share of the Population with Access to Electricity, 2022



*Source:*Our World in Data. (2025). "Share of population with access to electricity (ability to provide basic lighting and charge a phone or radio for 4 hours per day)." Data compiled from multiple sources by the World Bank. Retrieved from https://ourworldindata.org/energy (accessed August 15, 2025).

labor force participation by reducing the time spent on household activities (Dinkelman 2011).

4.3. *Poor Health Directly Undermines Labor Productivity*

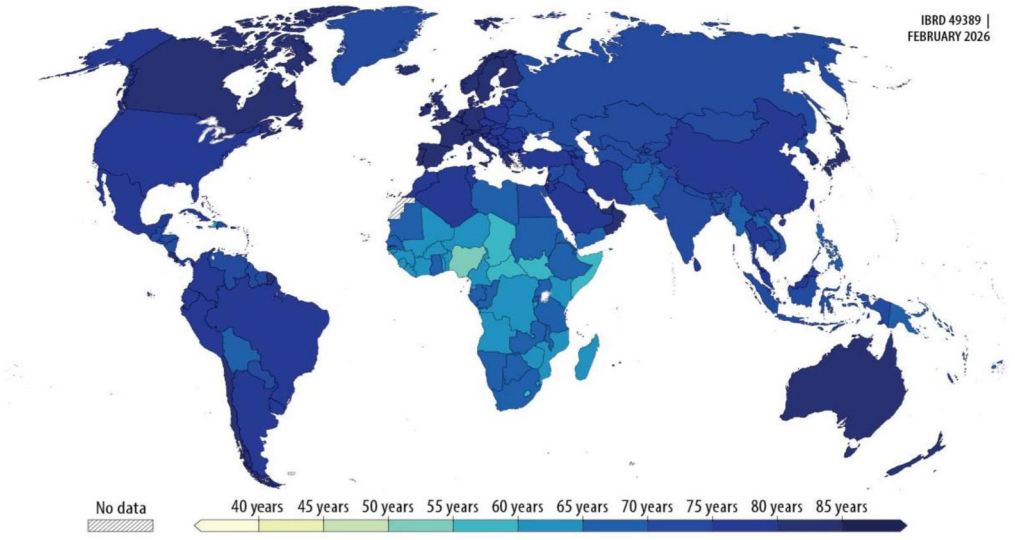
Figure 12 shows that life expectancy across Africa remains the lowest globally, with some countries not exceeding 50 years. Poor health reduces the effective labor supply and cognitive development, directly constraining labor productivity (Weil 2007). The disease burden in Africa, particularly from malaria, HIV/AIDS, and other infectious diseases, imposes substantial costs on both individuals and economies. Health improvements can have significant economic returns through increased labor productivity, reduced absenteeism, and enhanced cognitive development in children (Miguel and Kremer 2004; Baird et al. 2016). Recent evidence from malaria eradication programs demonstrates significant long-term effects on educational attainment and economic outcomes (Lucas 2010).

4.4. *Lack of Literacy and Numeracy Constrain Possibilities*

Figure 13 indicates that effective years of schooling across Africa average between 4–6 years. The expansion of wholesale and retail trade documented in this paper represents an

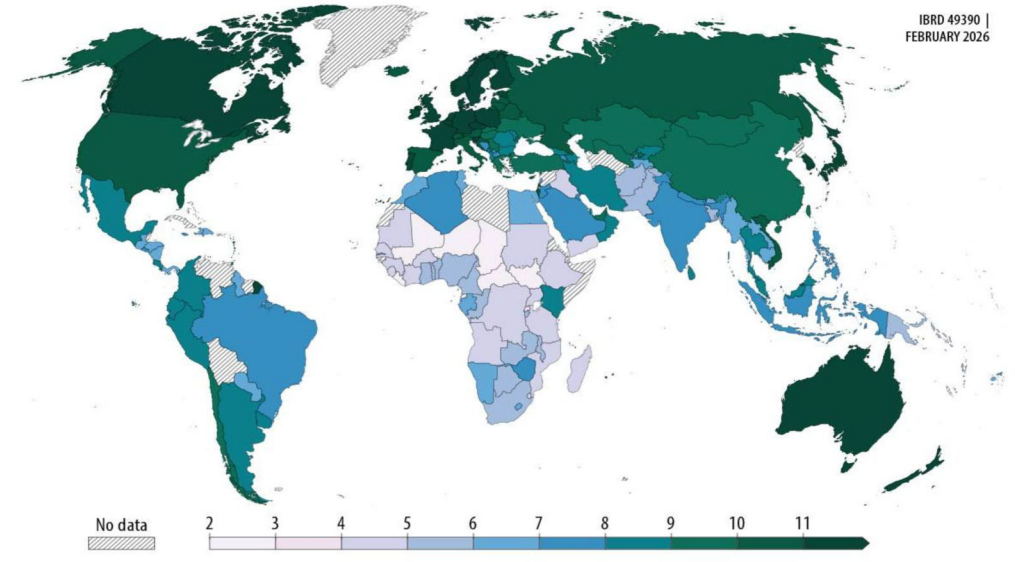
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Figure 12. Life Expectancy at Birth by Country, 2023



*Source:*Our World in Data. (2024). "Period life expectancy at birth." Data from Human Mortality Database (2024) and UN World Population Prospects (2024). Retrieved from https://ourworldindata.org/life-expectancy (accessed August 15, 2025).

Figure 13. Average Learning-Adjusted Years of Schooling, 2020



*Source:*Our World in Data. (2025). "Learning-adjusted years of schooling (LAYS)." Data from World Bank, based on methodology in Filmer et al. (2018). Retrieved from https://ourworldindata.org/global-education (accessed August 15, 2025).

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important first step in structural transformation, but upgrading these activities requires basic literacy, numeracy, and business skills (Herrendorf and Schoellman 2018). Educational quality matters as much as quantity; Pritchett (2013) demonstrates that years of schooling without learning provide little economic benefit. Without basic education, workers cannot adopt new technologies, manage inventory systems, or expand beyond subsistence-level trading activities. The skill requirements for modern activities, even seemingly low-skill retail activities, increasingly demand the cognitive abilities provided by basic primary education (Nunoo et al. 2024).

4.5. *Overcoming These Constraints is Possible*

Recent African experiences demonstrate how targeted investments can address these foundational barriers, with several countries making remarkable progress on specific dimensions.

4.5.1. Addressing Extreme Poverty Through Rural-Focused Development

Ethiopia exemplifies how coordinated rural development can break poverty–demand constraints. Between 2000 and 2016, the national poverty headcount fell from 44 percent to 24 percent—one of the fastest rates of poverty reduction globally. This transformation was driven by agricultural growth, rural infrastructure expansion, and targeted safety net programs such as the Productive Safety Net Programme, which provided both immediate support and long-term productivity investments (Gilligan, Hoddinott and Taffesse 2009, World Bank 2015, Bahru et al. 2020). These gains illustrate how sustained policy focus on raising rural incomes can expand domestic demand for goods and services.

4.5.2. Expanding Electricity Access for Productivity Growth

Kenya and Ghana demonstrate that rapid electrification is achievable with the right policy mix. Kenya increased national electrification from approximately 32 percent in 2013 to over 75 percent by 2022 through grid densification, regulatory reform, and innovative off-grid solar solutions (International Energy Agency (IEA) 2022). Ghana has achieved near-universal urban coverage, though rural gaps persist (Lee, Miguel and Wolfram 2020; IEA 2023). These expansions directly enable productivity improvements in retail, financial services, and other sectors that our analysis shows are absorbing Africa's growing labor force.

4.5.3. Building Health Systems for Enhanced Labor Productivity

Rwanda provides a leading case of health system strengthening that directly addresses labor productivity constraints. Since 2000, under-five mortality has fallen by two-thirds and maternal mortality by three-quarters, supported by programs such as the Human Resources for Health initiative and governance reforms including decentralization and performance contracts (*imihigo*) (Binagwaho et al. 2014; Chemouni 2017). These health improvements

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translate directly into enhanced labor supply and cognitive development—essential for the service sector transformation documented throughout this paper.

4.5.4. Investing in Human Capital to Raise Productivity

Botswana and Mauritius demonstrate the long-term returns to sustained human capital investments. Botswana has consistently allocated resources to expand and reform education systems, while Mauritius spends nearly 5 percent of GDP on education and has coupled this with infrastructure investments supporting economic diversification (Bosupeng 2015; Sunde 2017). These countries show how basic education provides the foundation for workers to upgrade from subsistence-level trading to more productive activities.

Taken together, these examples reinforce that overcoming structural barriers is possible in the African context. It may require what Dercon (2022) terms a "development bargain," in which political elites commit to prioritizing growth-enhancing investments and institutional learning. Importantly, these investments are complementary across sectors—rural electrification supports both agricultural productivity and service sector development, while improved health and education outcomes enhance productivity whether workers are engaged in farming, manufacturing, or services. The countries that have made the most progress recognize that addressing these foundational constraints simultaneously creates synergies that amplify the returns to each individual investment.

4.6. Policy Implications

The prospects for economic transformation in Africa must be assessed against this backdrop of foundational deficits. These structural barriers constrain productivity growth not only in the service sectors driving the current transformation, but across all economic activities. Extreme poverty limits domestic demand for both agricultural outputs and manufactured goods, not just services. Lack of electricity constrains agricultural processing, manufacturing operations, and service delivery alike. Poor health reduces labor productivity whether workers are engaged in farming, factory work, or retail trade. Inadequate human capital limits the adoption of improved agricultural techniques, modern manufacturing processes, and service sector innovations.

These are not marginal obstacles but define the feasible frontier of change across the continent. Importantly, these investments are complementary across sectors. Rural electrification supports agricultural productivity through irrigation and processing, enables manufacturing through reliable power supply, and facilitates service sector development through improved market access and digital connectivity. Similarly, improved health outcomes enhance productivity whether workers are engaged in farming, manufacturing, or services, while better education enables technological adoption and quality improvements across all economic activities.

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When viewed from this perspective, it is perhaps remarkable that so many African countries have managed to generate sustained productivity growth in any sector—a testament to the ingenuity and entrepreneurship of African people working within severe constraints.

5. Conclusion

This paper uses an expanded and updated dataset which includes important and previously uncounted activities to revisit Africa's structural transformation story and take stock of Africa's transformation over the past thirty-five years. This evidence is consistent with previous work showing limited industrialization across the continent alongside a rapid expansion of employment in non-tradable services. These patterns extend beyond value added and employment data; they are also evident in international trade data. Input–output analysis indicates that the share of domestic value added and the jobs embodied in exports are declining in manufacturing and rising—albeit from a low base—in services. At the same time, growth in many African countries has been reasonably robust over the past two decades. Taken together, this evidence—along with new findings on the productivity potential of non-tradable services (Fan, Peters, and Zilibotti 2023)—suggests the need to reframe the role of both manufacturing and services in Africa's development strategies.

African countries have abundant (though low-skilled) labor, natural resources (including land and solar energy) and many other resources. There is scope for generating growth based on these resources. But any development strategy for Africa must begin by confronting the structural barriers facing African countries. The patterns revealed here point toward several areas that merit serious consideration.

5.1. Reconsidering the Role of Foundational Investments

The modest productivity growth within Africa's expanding service sectors may reflect insufficient foundational capacity rather than inadequate sectoral policies. The experiences of countries like Ethiopia, Kenya, and Rwanda suggest that investments in electricity access, health systems, basic education, and rural income generation might yield broader productivity gains than sector-specific interventions. This raises important questions about whether development strategies should prioritize removing constraints that limit productivity across all economic activities.

5.2. Context-Specific Approaches

The successful examples reveal different entry points for addressing structural constraints, suggesting that countries might benefit from tailoring their approach based on existing conditions and institutional capacity. Countries with limited state capacity might consider beginning with interventions like rural electrification or targeted health programs, while those with stronger institutions could explore more complex integrated approaches. How-

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ever, the sequencing and prioritization of these investments remains an open question requiring further research.

5.3. Rethinking International Partnerships

These findings raise important questions about how international partners support African development. Rather than emphasizing policy reform and market liberalization, there may be a case for reorienting development assistance toward long-term investments in foundational capacity. The most successful African countries appear to have combined external support with a strong domestic commitment, suggesting that effective partnerships might require better alignment around African-led development priorities.

Moreover, Africa's service-led transformation represents a development path that differs from historical manufacturing-led models. Whether international trade and investment policies should adapt to support this alternative trajectory deserves serious consideration, particularly given structural constraints that may make manufacturing-led growth less feasible in many African contexts.

5.4. The Need for a New Framework

Africa's service-led structural transformation is already underway. Rather than trying to redirect this process toward manufacturing, the challenge may be to develop new frameworks for understanding and supporting service-led development. This requires acknowledging that constraints on transformation may lie not in sectoral policies but in foundational investments that enable productivity growth across all economic activities.

What we can say with confidence is that the prevailing development paradigm—rooted in market liberalization and oriented, at least in rhetoric, toward industrialization—has proven insufficient to overcome the structural constraints limiting Africa's transformation potential. As Industries without Smokestacks (Newfarmer et al. 2018) suggests, Africa's future growth will depend not only on new sectors but also on deepening domestic market integration—linking rural and urban economies, lowering internal trade costs, and building the infrastructure that connects producers and consumers. This perspective broadens the meaning of structural transformation beyond the export-led template, emphasizing the role of internal demand and regional dynamics in shaping inclusive and sustainable development.

For policymakers, this may imply a shift in emphasis toward investing in domestic and regional market integration that has the potential to unlock productivity growth and lay the foundations for long-run transformation. For scholars, our work highlights the need for new empirical research on how domestic market integration shapes firm behavior, labor reallocation, and long-term growth dynamics in Africa. Together, these agendas point toward a development agenda more firmly rooted in Africa's realities and comparative advantages.

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Notes

Douglas Gollin (Douglas.Gollin@tufts.edu), Tufts University. Margaret McMillan (corresponding author, Margaret.McMillan@tufts.edu), Tufts University. Emmanuel Mensah (e.b.mensah@uu.nl), Utrecht University. Gideon Ndubuisi (G.o.ndubuisi@tudelft.nl), Delft University of Technology. Solomon Owusu (skowusu@bu.edu), Boston University.

1. Real GDP per capita growth decreased from 2.1 percent in 2021 to 1.7 percent in 2022 (MEO, AfDB 2024).

2. To understand the importance of this revision, consider that Nigeria's film industry—one of the largest in the world and currently valued at US$ 6.4 billion (*Business Day Nigeria*, January 2, 2025)—was previously omitted from GDP statistics; following Nigeria's 2014 GDP rebasing, it is now included. Updates like this took place in several African countries, and they allow us to capture a more complete and more accurate picture of employment and value added, particularly in the expanding service sectors that appear to be central to Africa's transformation. While we operate within a sectoral framework, our analysis is mindful of its limits. We view sectoral shifts as one dimension of transformation and interpret them alongside deeper shifts in how and where production takes place, including transitions from home-based to market activity and from informal to formal employment.

3. Structural change is the reallocation of economic activity across agriculture, industry, and services. It is sometimes used interchangeably with "structural transformation," which extends to include social changes such as demographic shifts, institutional adjustments, and changes in social structure (see Gollin and Kaboski 2024, for new forms of structural transformation).

4. In this graph, we use the Economic Transformation Database for a more detailed breakdown, but it only covers 21 African countries. To include a broader set of countries, 48 in total, we resort to using more aggregated data from the World Development Indicators. See section 2.3.3.

5. Decomposition of labor productivity: Methodology. The decomposition method in this report is based on McMillan and Rodrik (2011). As explained above, labor productivity can grow in two ways. First, productivity can grow within sectors through capital investments, technological innovation, efficiency gains arising from intra-industry trade, and the reduction of misallocation within sectors. Second, productivity can grow through the reallocation of labor from low productivity sectors to high productivity sectors. This is the so-called "structural change" component. Aggregate labor productivity growth at time t is defined as the weighted sum of sectoral productivity, with the weights being the employment shares, that is $p_t = \sum_i p_{it} s_{it}$ (1) where p_{it} is the labor productivity of sector i at time t given by $p_{it} = {}^{VA_{it}}/_{l_{it}}$, with VA_{it} being sector i's real value added, and l_{it} being the number of persons employed in sector i at time t. s_{it} is the sectoral employment share defined as the ratio of each sector's employment to the total employment of the economy at time t. Equation 1 can be decomposed as $\dot{p} = \frac{\Delta p}{p^{t-1}} = \sum_{i=1}^{N}[\frac{(p_i^t - p_i^{t-1})s_i^{t-1}}{p^{t-1}}] + \sum_{i=1}^{N}[\frac{(s_i^t - s_i^{t-1})\, p_i^t}{p^{t-1}}]$ (2) where N is the number of sectors analyzed. The first term on the right-hand side is the *within* effect, and the second term is the *structural change* effect.

6. Structural transformation in Tanzania—A tale of services-led growth. Tanzania's recent experience with structural transformation was broadly like those of other LMICs, with the increase in the employment share of services roughly matching declines in agriculture's share. From 2006 to 2014 (the first period), business and trade services absorbed most of the labor shed by agriculture (6 percentage points of employment share out of 7). From 2014 to 2021 (the second period), labor flowed from services back to agriculture (2 percentage points), reflecting a contraction especially in the demand for the services provided by hotels and restaurants during the COVID-19 pandemic. The employment share of manufacturing barely changed. While productivity growth in services was negative over the first period, it turned positive in the second one, dwarfing that in manufacturing. Infrastructure investments, which increased rural electrification eight-fold and overall internet access seven-fold in less than a decade, were reportedly instrumental in this productivity growth. Tanzania's public gross-fixed capital formation increased from 33 percent of GDP to 43 percent over the second period, and the subsequent improvements in transport and ICT helped to boost market access and reduce operating costs. However, a second reason for the strong performance in the service sector may be directly related to COVID-19. During the second period, the share of employment in agriculture increased by 2 percentage points

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while the share of employment in non-tradable services fell. Anecdotal evidence suggests that in Tanzania (as in many richer countries), migration out of cities and back to rural areas was one way of coping with the COVID-19 pandemic. The workers most likely to leave the city were probably informal workers in the service sector. While this was happening, and somewhat unrelated to COVID-19, the second period also witnessed a proliferation of small informal firms employing fewer than 10 workers, mostly in trade services. In 2013, about 145,000 firms were formally registered. By 2021, this number increased to almost 400,000. With these, the share of business and trade services in formal employment increased from 10.5 percent to 26.1 percent and that of transport and communications from 18.5 percent to 27.6 percent. Overall, services played a key role in Tanzania's recent economic growth. (Source: Privatizing Growth: A Country Economic Memorandum for the United Republic of Tanzania, World Bank, December 19, 2023).

7. Tourism and hospitality training in Rwanda. The tourism and hospitality sector has been growing in Rwanda and has emerged as a pivotal contributor to the country's economic growth, employment generation and development trajectory. Recognized for its stunning landscapes, diverse wildlife and vibrant culture, Rwanda has increasingly positioned itself as a prime tourist destination in East Africa. According to the Rwanda Development Bank (2021), in 2020, the sector employed over 164,000 people with different education and skill levels. With this growth, there has been a concerted effort to bolster the labor force within the sector through various training initiatives and educational programs. Universities and vocational institutions have played a crucial role in equipping individuals with the necessary skills and knowledge to thrive in the industry. These initiatives not only aim to meet the growing demand for skilled professionals in tourism and hospitality but also seek to empower local communities by providing them with opportunities for meaningful employment and economic development. One important initiative is the Hanga Ahazaza, also known as *Create the Future,* a Mastercard Foundation supported initiative under the organizations' Young Africa Works project that aims to reduce poverty by tackling youth unemployment in Rwanda. Hanga Ahazaza is a US$50 million five-year initiative focused on increasing employment opportunities for young people by expanding tourism and hospitality in Rwanda. The initiative aims to equip 30,000 young men and women with skills for jobs in the tourism and hospitality sector. Youth under this program are receiving training in communication, customer service, digital literacy and ICT. Additionally, the initiative also supports small businesses in the tourism and hospitality sector through training in business development skills and access to financial services. Hanga Ahazaza has partnered with 15 different institutions to ensure skills and knowledge transfer to youth. Notably, Cornell University's Nolan School of Hotel Administration is among the 15 institutions and provides online training programs for the youth. Rwanda is also home to the University of Tourism, Technology and Business Studies (UTB). The UTB has been offering degree programs in hospitality and tourism since 2008 and short-term courses including a 9-month program in food and beverage operations, front office and housekeeping skills. The UTB's international job and internship exposure program helps its best students to go to some of the best hotels in Dubai or Qatar, where they acquire the different skills necessary to thrive in the hospitality and tourism industry. There are at least four other universities in Rwanda offering courses to prepare people to work in the tourism industry and at least one—Mt. Kenya University—offers a Bachelor of Science in Tourism. (Yves Rwego, International Growth Centre, Rwanda, April 2024).

8. Kenya, the Silicon Savannah of Africa. In the early 2000s, Nairobi emerged as Africa's technology epicenter, branded the 'Silicon Savannah' after San Francisco's original Silicon Valley. The defining feature of the Kenyan economy since 2000 has therefore been the development of the information technology sector with the dual arrival of internet access and mobile telephones. In 2002, mobile phone penetration in Kenya stood at 9 percent; by 2018, it had reached 80 percent (compared to 89 percent in the United States). According to Wired magazine, Nairobi's tech sector was worth US$ 1 billion; the city houses incubators like iHub and Nailab and at least 200 startups. Additionally, Nairobi has become a hub for Microsoft and IBM, which established a research center in Kenya and South Africa. Mobile money transfers facilitated innovation and growth in several related sectors, including remittances. For example, in 2017, Kenya received over US$2 billion in inbound remittances, up 13 percent from 2016. In 2018, M-PESA entered into an agreement with PayPal and Western Union, paving the way for further remittances through mobile banking. This union reduced the cost of remittances to 1.7 percent per US$200 transaction. Moreover, people receiving remittances on their mobile money account could buy government bonds through M-Akiba, facilitating investment. Complementing the growth of mobile technology

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and platforms, Kenya also aimed to build one of the strongest information and communication technology (ICT) ecosystems in the region. In 2013, Kenya launched its "National Broadband Strategy" to extend fiber optic cables across the country and install ICT centers at universities. By 2019, more than 250 government services were available digitally through the country's e-Citizen platform. The shift from cash to digital payments also led to an upsurge in tax and revenue collection. Following the deployment of online tax systems, the Kenya Revenue Authority reported collecting Kshs 1.366 trillion (US$13.2 billion) in the 2016/2017 financial year. This figure was Kshs 115 billion (US$1.1 billion) more than the amount collected in the year preceding implementation of online tax procedures. (Source: Harvard Business School, Kenya and the Silicon Savannah, April 2023).

9. Yellen, Janet, Remarks by Secretary of the Treasury Janet L. Yellen on Way Forward for the Global Economy, U.S. Department of the Treasury Press Release, April 13, 2022.

10. For a discussion of these amenity differences, see Gollinet et al. (2021).

11. To be fair, having labor-intensive *maquiladora*-type factories does generate knock-on demand from the workers who are employed in the sector. While international migrants spend much of their labor income in receiving countries, the workers in *maquiladora* firms spend most of their income domestically, and some portion of their expenditure will be on non-tradable services, implying that these jobs may generate greater general equilibrium effects than migrant labor.

Acknowledgements

This is a background paper for Chapter 2 of the 2024 African Economic Outlook Report by the African Development Bank. We thank the Macroeconomic Policy, Debt Sustainability & Forecasting Division for research and financial support. We are also grateful to anonymous reviewers within and outside the bank for their helpful suggestions. The views expressed in this paper are those of the authors and do not represent the views of the African Development Bank Group.

Conflict of Interest

All authors declare that they have no conflicts of interest to disclose.

Data Availability Statement

Data will be provided upon request or uploaded to the WBROJ website upon publication.

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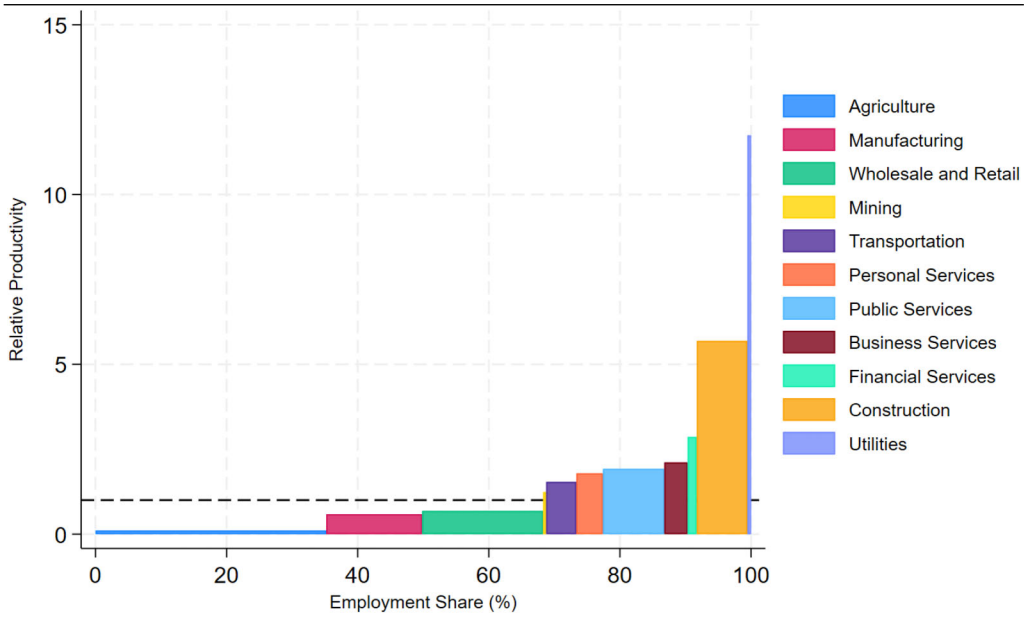
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Appendix A

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Figure A.1. Relative Sectoral Productivity and Employment Shares in Developing Asia, 2018



Source: Authors' illustration using the Economic Transformation Database (Kruse et al. 2023) and sector-specific value-added purchasing power parities from the Productivity Level Database (Inklaar et al. 2024).
Note: The figure shows the average for 14 developing Asian countries**:** Bangladesh, Cambodia, China, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam.

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https://doi.org/10.1093/wbro/lkag001