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# The Structural Change Emergency in South Africa

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**Executive Director**

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# The Structural Change Emergency in South Africa

Calumn Hamilton<sup>12</sup> & Emmanuel Mensah<sup>34</sup>

## Abstract

In the decade up to 2019, South Africa underwent what may reasonably be described as a structural change emergency. Aggregate annual labour productivity growth was negative on average across the decade; this was accounted for by negative or negligible efficiency gains within all major sectors, and by growth-reducing structural change overall. Growth-reducing structural change implies that labour moved on average from more-to-less productive sectors. The underwhelming structural change and sectoral productivity growth performance of South Africa in this period stand out when compared with earlier periods in post-apartheid South Africa and in international comparison with Africa and the BRICS. Since 2020, there are green shoots of recovery, implying that the structural change emergency may be over. Nevertheless, this recovery is both non-transformative and highly unbalanced sectorally, although it is quite balanced geographically across the provinces of South Africa. The recovery is driven entirely by productivity growth or labour reallocation within, and reallocation of labour towards, the services sector. Recent evidence in the academic literature suggests that services can drive rapid growth through structural transformation, but the current situation in South Africa where non-services sectors are still acting as a drag on growth remains clearly sub-optimal.

**Keywords:** South Africa; servicification; industrialization; structural change; productivity

**JEL classification:** E22, E62, O16, O40

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## Executive Summary

Structural transformation—the movement of workers from low- to high-productivity sectors—is fundamental to rapid economic development. When combined with productivity growth within expanding sectors, this process can be transformative. Conversely, when labour moves from more- to less-productive sectors and productivity stagnates across the economy, rapid growth becomes a practical impossibility. This paper demonstrates that South Africa experienced precisely such a reversal between 2010 and 2019—a period we label a “structural change emergency.” Aggregate annual labour productivity growth was negative across the decade, driven by negligible efficiency gains within all major sectors and growth-reducing structural change. Labour moved on average from more- to less-productive sectors. This performance stands in stark contrast to the preceding decade (2000s), when productivity grew at a healthy 2% per annum, supported by balanced within-sector growth and positive structural change. It also stands out in international comparison with both African averages and South Africa’s BRICS peers.

### Green Shoots of an Unbalanced Recovery

Since 2020, there are signs the emergency may be over. Labour productivity growth has returned to above 1% per annum on average, and structural change has turned positive again. This recovery is geographically balanced across provinces, with only Gauteng lagging modestly behind. However, two fundamental concerns remain. First, the magnitude of post-2020 productivity growth remains below that of the 2000s and the immediate post-apartheid years. Second, and more critically, the recovery is highly unbalanced in sectoral terms. It is driven entirely by within-sector productivity growth in services and reallocations of labour towards services—a pattern of “servicification.” Non-services sectors have seen no improvement; in many cases, within-sector productivity growth in manufacturing and other industries has been more negative in the 2020s than during the “emergency” decade. Industry continues to exert a persistent drag on aggregate productivity growth across all provinces.

### The Emerging Picture: Deindustrialisation and Servicification

Employment deindustrialisation is evident across almost every province, with only Northern Cape showing no significant change since the 1990s. In the economic powerhouse provinces—Western Cape, Gauteng, and KwaZulu-Natal—deindustrialisation has been severe and persistent. Simultaneously, strong servicification in terms of employment share has occurred across every province. However, the services sector absorbing labour is not uniformly productive: trade services (wholesale, retail, accommodation) operates well below average productivity and shows negligible within-sector growth, while personal services (domestic workers, caregivers) is also below average. Finance and business services remains above-average productive but is concentrated in urban centres.

### Key Insights from the Literature on Structural Transformation

The academic understanding of structural transformation has evolved significantly, with implications for how South African policymakers should interpret the results shown in this paper.

*The conventional view:* Traditional models emphasised manufacturing-led development as the primary route to rapid growth. Manufacturing was believed to possess unique properties—in particular, the potential for unconditional productivity convergence and the mass absorption of low-skilled labour—that made it the essential engine of structural transformation. Industrialisation was seen as the only reliable pathway for absorbing surplus labour from low-productivity sectors and driving economy-wide productivity gains. The

aim of many industrial policymakers in developing countries was to attempt to replicate the Chinese/East Asian model.

*Challenges to conventional wisdom:* Recent evidence has undermined key pillars of this orthodoxy, particularly given changes in both the geopolitical backdrop and the nature of global manufacturing and services compared to the 1990s. Unconditional productivity convergence is now seen as a ‘modern’ sector rather than ‘manufacturing’ sector phenomenon, both including the formal part of services and excluding informal manufacturing.

*New views on services-led transformation:* The most significant shift in the literature is the recognition that services can drive structural transformation. Manufacturing-led paths, while spectacularly successful in East Asia in the 20th century, may not be optimal or even possible for all countries in the 21<sup>st</sup> century. The nature of manufacturing has changed—it has become increasingly capital-intensive and “jobless”—while services have become increasingly tradeable and capable of productivity upgrading. India’s growth experience demonstrates that non-tradable services can themselves upgrade and generate substantial productivity gains on the basis purely of domestic demand.

*Within-sector dynamics matter:* The literature increasingly emphasises that structural transformation is not only about movements between sectors, but also about movements within sectors—between formal and informal activities, between types of work, and between spatial locations. Productivity gaps between formal and informal firms within the same sector may be larger than gaps between formal firms in different sectors. For South Africa, where informality in manufacturing is very limited, this reinforces the importance of focusing on upgrading within services.

### **Policy Implications: A Crossroads**

The post-2020 services-led recovery is not inherently concerning in light of this evolving literature. Manufacturing-led paths are no longer considered the universal optimum, particularly in a global context where manufacturing has become increasingly capital-intensive and services increasingly tradeable.

Nevertheless, three policy priorities emerge as essential regardless of the strategic direction South Africa chooses:

**First, arrest the decline in manufacturing and other industries.** These sectors cannot be allowed to continue acting as a persistent drag on aggregate productivity. For productivity declines to cease, value added in these sectors must expand. This may require reconceptualising manufacturing’s role: rather than a source of mass employment, it may function more like mining—a generator of value inflows that stoke demand for services, even if employment gains are confined to a smaller number of higher-skilled workers. High value-added, modern, capital-intensive manufacturing becomes attractive not for labour absorption but for arresting productivity declines and generating revenue.

**Second, upgrade the services sector.** Whether services lead South African development or form part of a more balanced path, this must involve: (a) greater employment expansion in above-average productivity services (transport, finance, business services), and (b) productivity growth in the large and expanding trade services sector. Personal services do not transform economies, and trade services cannot contribute to transformation while operating at well-below-average productivity with no signs of improvement. The literature on within-sector dynamics suggests that policies targeting upgrading within existing service activities (for example: formalisation, improved firm capabilities, digital infrastructure, and competition), may be as important as policies encouraging movement between sectors. There is no reason why industrial policy cannot be aimed at services.



**Third, expand and diversify export markets.** While exports embody a reasonable proportion (20-25%) of South African value added and jobs, the constancy of these proportions over decades suggests South Africa may have reached the limit of what conventional trade partnerships can deliver. This may be an opportune time to focus on new markets, particularly increased South-South and intra-Africa trade. The increasing tradability of services also opens new possibilities for services exports that did not exist in earlier eras. We reiterate that there is evidence that domestic demand and non-tradables can underpin expanding services employment, so exports which primarily generate value added and forex are still to be strongly encouraged.

### **A Dual Role for Manufacturing and Services**

Going forward, we envision a dual role consistent with the frontier of the literature. Manufacturing should continue to generate value added, demand for services, and technological innovation, but may cease to be the mass absorber of low-skilled labour. Services must bear the burden of employment expansion, but they must absorb labour at higher average productivity levels than before, necessitating the movement of workers from less- to more-productive service sub-sectors. South Africa has no large pool of surplus agricultural labour, but it has an expanding pool of below-average productivity trade and personal services workers.

To the extent that South African policymakers wish to engage in industrial policy, of which there has been considerable resurgence of interest, we emphasise that industrial policy need not concern itself exclusively with industry. In terms of productive job creation, the policy priority in South Africa may need to focus on service sectors almost exclusively. The new industrial policy literature recognises that sectoral priorities must be context-specific; for South Africa, that context points towards services.

The structural change emergency may be over, but the recovery has a long way to go. The choice facing policymakers is not whether to return to the balanced patterns of the 2000s—that may no longer be possible in a fundamentally changed global environment. The choice may appear to be whether to lean completely into services-led transformation or to attempt to revive industrial fortunes alongside services. However, either path requires arresting industrial decline, upgrading services, and perhaps developing alternative export markets. The answer lies not, therefore, in choosing between sectors, but in defining their appropriate roles in the South African development strategy of the 21st-century.



# 1 Introduction

The movement of workers out of low-productivity sectors and productivity growth and labour reallocation within expanding sectors drive the process of rapid economic development in emerging economies (Herrendorf et al., 2014; Sen, 2023). In contexts of large productivity gaps between sectors such as agriculture, manufacturing, and services; movements of workers from less-to-more productive sectors can significantly boost aggregate labour productivity growth (Gollin et al., 2013; McMillan et al., 2014). When this is combined with productivity growth and efficient reallocation within the sectors into which labour is relocating, the results can be economically transformative. Conversely, a stagnation of this process can lead to overall economic decline. Productivity declines within sectors combined with movements of labour away from those which are more productive can act as a major drag on growth and renders rapid development a practical impossibility.

We show in this policy paper that the decade 2010-2019 was a period of precisely such malaise in South Africa. We apply a range of growth accounting and other quantitative techniques to South African and international data to demonstrate that aggregate annual labour productivity growth was negative on average across the entire decade, and this was accounted for by negative or negligible efficiency gains within all major sectors, and by growth-reducing structural change. Labour which moved between sectors in this decade appears to have moved on average from more-to-less productive sectors. This decade of decline follows on from a decade of positive and balanced productivity growth and structural change in South Africa. In the 2000s, labour productivity growth in South Africa averaged a healthy 2% per annum, and was comprised of within-sector growth in all major sectors other than mining, complemented by growth-enhancing between-sector structural change. The sudden reversal of fortune between the two decades leads us to label the period 2010-2019 as a 'structural change emergency' in South Africa.

The structural change emergency stands out also in international comparison. We compare South African structural change and sectoral productivity growth to the averages of both Africa and the BRICS economies. The underwhelming performance in South Africa in the 2010s stands out starkly in comparison with both. On a single country basis, South Africa was not the only comparable economy to experience such an emergency in this decade. Brazil and Nigeria also both underwent negative aggregate productivity growth in the 2010s, but both of these were as a result of serious, single-sector collapses rather than the general pattern of decline we observe for the decade in South Africa. On province-specific results, only KwaZulu-Natal, Northern Cape, and the Free State bucked the trend of negative productivity growth in this decade, and even in these provinces structural change was negative and within-sector productivity growth was small. Structural change contributed negatively to growth in eight out of nine provinces, and negligibly in Western Cape.

The good news is that the structural change 'emergency' in South Africa appears to be over, or is at least no longer an emergency. In what we believe to be the first analysis of post-2020 sectoral productivity growth and structural change in South Africa, we uncover a reversion to positive aggregate labour productivity growth on average since 2020, and a reversion to a positive contribution of structural change to growth. This reversion is quite balanced across all provinces, although it is notably weaker in Gauteng. With appropriate caveats over the atypical nature of this period due to the Covid-19 pandemic and recovery, this may be viewed as a move in the right direction. Nevertheless, two concerns remain. The first is that the magnitude of aggregate labour productivity growth post-2020 is not particularly high at below 1.5% per annum on average; lower than in the 2000s and the post-apartheid 1990s. The second, more fundamental concern is that the pattern of post-2020 productivity growth is highly unbalanced in sectoral terms, particularly dominated by personal services. This is in contrast to balanced growth in the 2000s.



The post-2020 structural change and productivity growth recovery in South Africa is driven entirely by the services sector. Fairly modest within-sector productivity growth in services, combined with a pattern of servicification (an increase in the relative size of the services sector) accounts entirely for the positive aggregate growth. Structural change is now contributing positively because labour is relocating into services on average, and from less-to-more productive services subsectors. For these reasons, we label the post-2020 period a ‘services-led recovery’, although the label is tentative because we are yet to see if this pattern will be maintained in the longer term. Non-services sectors have seen no improvement at all since the ‘structural change emergency’, and in many cases and across many provinces within-sector productivity growth in manufacturing and other industries has been more negative in the 2020s than it was in the 2010s. Outside of services and specific cases of the mining sector in the Northern provinces, there has been no meaningful productivity growth in any sector for at least 15 years. Industry continues to exert a drag on aggregate productivity growth across South Africa.

A crucial policy point must now be emphasized, and we reemphasize it throughout this paper. The post-2020 recovery is not concerning because it is led by services. The problem is not, in our view, that manufacturing is not leading growth. The problem is that manufacturing and other industries are actively as a drag on growth. In section 2, we provide an extensive overview of the frontier of the academic literature over structural transformation, as well as earlier perspectives. We do this in part to provide a comprehensive primer for interested policymakers and to illustrate the rapid evolution of the academic conversation in the most recent years. But we do this also to make a series of important, and in our view, still underappreciated points, the most salient of which being that services-led structural transformation is now believed to offer a viable alternative model to industrial-ization; even at earlier and middle stages of development and even when deindustrialization may have begun ‘prematurely’ (Fan et al., 2023; Gollin & Kaboski, 2023; Hamilton et al., 2025; Rodrik, 2022; Sen, 2023).<sup>5</sup> Whilst manufacturing-led paths may have succeeded so spectacularly in China and East Asia in the 1990s (Timmer, 2000), not all middle income countries resemble China in terms of context and structure, nor does the nature of manufacturing and services now precisely resemble how these sectors looked then (Baldwin & Forslid, 2023), nor are global trading conditions and the potential for physical export-led growth the same in the 2020s as they were in the 1990s and 2000s (Gopinath et al., 2025). Put succinctly, whilst manufacturing-led paths may still be optimal for some countries, they are no longer considered the universal optimum, and services-led paths may well be equally viable alternatives (Fan et al., 2023; Gollin et al., 2026; Hamilton et al., 2025). Concomitantly, industrial policy need not, and in many cases should not concern itself exclusively with industry.

It is this more positive view of services along with our new analysis of the 2020s and identification of a ‘services-led recovery’ which represents the most novel contribution of our paper to the policy conversation in South Africa. We are not the first to point out that the 2010s was a decade of productivity growth malaise in South Africa (Andreoni & Tregenna, 2021; Andreoni et al., 2021; Zalk, 2021), although we do bring additional analytical rigour to this finding via a rich sectoral decomposition, international comparison, and province-level results.<sup>6</sup> Where we build further upon the existing literature is to identify that there are green

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<sup>5</sup> The other key evolution in the literature which we discuss at length is the broadening of the concept of structural transformation to represent a wider set of labour reallocations; such as rural-to-urban, home-to-market, informal-to-formal, female labour force participation, etc. Many of these structural changes would appear statistically as ‘within-sector’ changes, and this discussion underpins why we give equal weight to consideration of between- and within-sector productivity growth in this policy paper on structural change in South Africa. It should be recalled throughout this paper that what we characterize as ‘within-sector’ productivity growth may also comprise an element of reallocation between smaller sub-sectors, firms within the same broad sector, or activities of different levels of formality.

<sup>6</sup> Conversely, other sources such as Zalk (2021) and Andreoni and Tregenna (2021) go further in terms of suggesting deeper reasons for the weak productivity growth in South Africa and particularly manufacturing sector performance in the 2010s, whereas we confine our analysis and discussion more to the quantitative facts. We strongly suggest these works be read alongside our policy paper, and we provide an overview of their key messages in section 2.4.



shoots of a services-led recover underway in South Africa, that this may not be a bad alternative for South Africa, and that services-led structural transformation may well be a route by which South Africa returns to more rapid growth. However, the current pattern of services-led structural change in South Africa remains concerning for a number of reasons. First, within-sector growth in services, whilst positive, is not substantial enough to drive transformative growth. Second, non-services sectors continue to perform so poorly that they exert a drag on growth. Third, the nature of services growth in South Africa is sub-optimal in that the sector is still largely comprised of personal services and trade services, both of which are operating at below-average labour productivity, and it is the latter subsector in particular which is expanding most rapidly in relative terms.

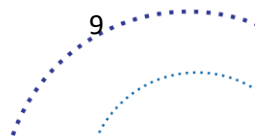
What does all this imply for the policy conversation in South Africa? In this policy paper, we do not provide a detailed list of highly-specific 'policy recommendations', such as to build a business park here, reduce a trade tariff there, or implement a change to this-or-that specific regulation. To do so would be irresponsible in that it would extrapolate too far from the main results we uncover, and would come with a false degree of certainty and specificity. Beyond acquainting policymakers with a set of crucial new facts over structural change in post-apartheid South Africa and with the frontier of the academic literature, our aim instead is in some ways more ambitious: to spark a policy conversation over choices going forward and to encourage a change in thinking about where sectoral and industrial policy can be prioritized, and what the distinct roles of manufacturing and services are and may be in South Africa in the 21st century.

Following from the results of the analysis in this paper, one might take this view that the appropriate policy response starts with a choice: should South Africa lean completely into services as the engine of recovery, growth, and structural transformation; or should South Africa attempt to revive the fortunes of the industrial sectors and seek to return to the balanced patterns of earlier years? Three policy priorities would seem to be essential regardless. First, manufacturing and other industries cannot be allowed to continue acting as a drag on aggregate productivity growth. Second, whether services will lead South African development, or be one part of a more balanced development path, this must involve a greater employment expansion of the above-average productivity services sectors such as transport services and finance and business services, and productivity growth in the large and expanding trade services sector. Third, whilst section 7 shows that exports embody a reasonable proportion of South African value added and jobs, the constancy of these proportions over the years suggests South Africa may have reached the limit of what can be achieved with conventional trade partners, and this may be an opportune time for South Africa to focus on new and different export markets which may take the form of increased South-South or even within-Africa trade.

Having gone over these three essential priorities, our view is that the answer to the choice proposed above becomes less one of choosing between sectors to prioritize in policy, and more one of appropriate emphasis. Going forward we envision a dual role for manufacturing and services, whereby manufacturing continues to generate value added, demand for services, and technological innovations, but may cease to be the mass absorber of low-skilled labour that it once was. It may instead be in services that such jobs are created, and with upgrading within the services sector, these jobs will still come with considerable productivity gains. For productivity to cease declining in the manufacturing and other industrial sectors of South Africa, value added in this sector will have to expand. If South African policymakers cease to view manufacturing as a potential source of mass employment, but instead as a potential source of value flow to the economy (much as the mining sector was in earlier decades), this impacts the type of manufacturing activities which South Africa may wish to promote. High value added, modern, automated, and capital intensive manufacturing may not seem attractive from a structural change perspective when the goal is to absorb labour, but becomes much more attractive if the goal is to arrest productivity declines and increase revenue inflows which may themselves stoke demand for services.



If the priority for manufacturing is to increase value added, then the burden of employment expansion falls onto services. Of equal importance is what is happening within the services sector. Looking at services from a structural change perspective, this sectors needs to not only absorb labour, but also to absorb it at higher average productivity levels than it was before. This also necessitates the movement of workers from less-to-more productive services sub-sectors. South Africa does not have a large pool of surplus agricultural labour from which to draw, but there is a large pool of below average productivity trade services and personal services workers, and this pool appears to be expanding. To the extent to which the South African government wishes to engage in industrial policy, of which there has been a considerable resurgence of interest in recent years (Juhász et al., 2023; Lane, 2025; Mazzucato & Rodrik, 2023), we wish to emphasize that industrial policy need not concern itself exclusively with industry. In terms of industrial policy aimed at (productive) job creation, one might argue that in South Africa the policy priority should be on service sectors almost exclusively.





## 2 Growth through Structural Transformation: Past and Present Perspectives

In this section we provide a thorough overview of the evolution of the academic literature on structural transformation, and of the frontier of this literature which has changed considerably even in the last 3-4 years. We relegate the oldest material to an appendix, nevertheless readers who are already familiar with the fundamentals of the literature may prefer to skip to section 2.3 for the discussion of the most recent advances, and section 2.4 for literature which is specific to South Africa. Those concerned only with our results and their policy implications for South African can skip section 2 entirely.

### 2.1 Conventional Thinking on Structural Transformation and Policy

The conventional approach to structural transformation focuses on large-scale shifts between the main productive sectors of the economy: agriculture, manufacturing, and services. Such shifts matter for economic growth because productivity levels differ substantially across sectors in emerging economies (Herrendorf et al., 2014). The movement of labour in large numbers from low- to higher-productivity sectors therefore generates sizeable gains in aggregate output (Gollin et al., 2013; McMillan et al., 2014). Because agriculture is often associated with rural activity and manufacturing with urban production, structural transformation is sometimes framed in terms of urbanization. Fundamentally, however, both perspectives capture the same process: the reallocation of labour away from where it is less productive and towards where it is more productive.

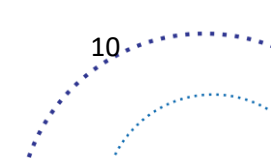
We provide an overview of the historical evolution of the structural change literature in the appendix. While this discussion may appear dated, it forms the intellectual backdrop against which much African macroeconomic and industrial policy was designed throughout the 20th and into the 21st century. From these foundations, two broad policy approaches emerged. The first was a non-interventionist strategy that discouraged industrial policy, instead emphasizing stable investment climates and the reduction of market and spatial frictions, with the expectation that structural transformation and growth would follow (Birdsall et al., 1993).<sup>7</sup> The second can be summarized as an attempt to replicate the Chinese model. Critics of the non-interventionist view argued that it bore little resemblance to the strategies of early industrializers or to the state-led approaches of China and the Asian Tigers (Chang, 2002; Lin, 2012). Key features of Chinese industrial policy included state-led strategic planning, export-oriented industrialization, supportive monetary policy, special economic zones, state ownership of major enterprises, and an aggressive focus on technological progress and transfer (Naughton, 2007). This model has strongly influenced industrial policy efforts across Africa, most notably in Ethiopia (Oqubay, 2015; Oqubay et al., 2020). We argue in the sections that follow that these two approaches do not exhaust the set of policy options available to emerging and middle-income countries, including South Africa.

### 2.2 Main Debates and Perspectives of Structural Transformation in Emerging Economies

We begin by summarizing a few key hypotheses and findings which have come to dominate the literature on structural transformation in emerging economies and on the African continent.

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<sup>7</sup> See Lall (1994) for a contemporary critique of this approach



### **2.2.1 Unconditional convergence in manufacturing?**

A major focus of the conventional structural change literature has been industrialization and the manufacturing sector. In a seminal article, Rodrik (2013) provided a renewed justification for this emphasis, arguing and demonstrating empirically that manufacturing exhibits a form of unconditional convergence: productivity in manufacturing sectors across countries tends to “catch up” to the global frontier, even in low-income settings. This reflects the use of transferable technologies and standardized production processes, which allow countries to adopt existing practices from more advanced economies. With access to foreign investment, expertise, and scale economies, countries with initially low manufacturing productivity can grow more rapidly due to higher marginal returns to capital and technology, enabling convergence even in the absence of significant institutional change.

The policy implications of this hypothesis are appealing. Rodrik (2013) argued that the failure of developing and middle-income countries to converge with advanced economies is largely due to the relatively small size of their manufacturing sectors. By this logic, expanding manufacturing employment should mechanically increase growth and accelerate productivity convergence. However, more recent evidence casts doubt on this conclusion. Using updated GGDC data and sector-specific purchasing power parity adjustments, Herrendorf et al. (2022) find no evidence of unconditional convergence in manufacturing.

This does not imply that South African policymakers should abandon manufacturing as a pathway to convergence. Rather, the literature has moved toward a more qualified position. In his more recent work, Rodrik now acknowledges that unconditional convergence is less a manufacturing sector phenomenon and is in fact a modern sector phenomenon (Rodrik & Sandhu, 2025). This adjustment is important for two reasons. First, not all manufacturing activities are modern. African manufacturing growth is increasingly becoming characterized by small firms and informal manufacturing, although this applies less in South Africa. Such firms do not exhibit unconditional convergence (McMillan & Zeufack, 2022). Second, not all modern activities are manufacturing: high-productivity, formal, and tradable services may also display unconditional convergence. The key message for policymakers is that a general focus on manufacturing growth is insufficient to be truly transformative. What matters is the expansion of modern, formal activities both in manufacturing and elsewhere. We develop this point in section 2.3.

### **2.2.2 Growth-reducing and growth-enhancing structural change**

To the extent that there are productivity gaps between sectors, a *ceteris paribus* shift of workers from a less to a more productive sector will represent growth-enhancing structural change, even in the absence of within-sector productivity growth or efficiency gains. However, structural change is not predestined to always be positive for growth. If workers shift instead from more to less productive sectors, the result will be growth-reducing structural change (McMillan et al., 2014). This is particularly common after conflicts or large disasters when capital and infrastructure may be destroyed, but is not exclusively confined to such cases. The ‘lower productivity’ sector need not necessarily be agriculture, and the ‘higher productivity’ sector need not be manufacturing. Whilst many of the lower income countries in Africa retain a large volume of surplus labour in agriculture (Hamilton, 2025), this is not the case in South Africa as is shown in section 4. There is also a large pool of labour in the trade services and personal services sectors, both of which operate at below average labour productivity in South Africa.

Manufacturing is often viewed as the archetypal high productivity, labour absorbing sector because conventionally it does not require specialist skills, is highly scalable, and has large scope for integration into global value chains. In section 2.3 we will discuss challenges to this traditional view, including whether the manufacturing sector retains these exclusive properties into the 21st century. In the conventional view, growth-enhancing structural change predominantly involves reallocating workers from agriculture to

manufacturing (industrialization). Statistically however, a reallocation of workers into higher productivity services sectors would have the same growth-enhancing effect.

### **2.2.3 *Premature deindustrialization?***

In the classic view from Kuznets (1955) onwards, economies first industrialize in their initial period of rapid growth, and then begin transitioning to services when they reach a certain level of wealth and maturity.<sup>8</sup> This implies that deindustrialization in an economy is not necessarily a bad thing. A small number of comparatively richer African economies have exhibited recent trends of deindustrialization, and these include South Africa (Hamilton & Mensah, 2024). Should policymakers see this as a positive sign of an economy moving to the next stage of development?

Rodrik (2016) cautions strongly against this interpretation. The paper argues that developing and middle-income countries that have deindustrialized in recent decades are doing so at increasingly low peak income levels. By regressing manufacturing share on per capita income and population, as well as their quadratics and a series of decade dummies, Rodrik (2016) identifies an inverted U-shaped pattern in which the turning point shifts to progressively lower income levels over time. This implies that, in late-20th and 21st century emerging economies, deindustrialization is occurring well before the potential gains from industrialization have been fully realized according to the conventional view. Moreover, because these income levels are too low to sustain strong demand for higher-productivity services and complex goods, much of the labour displaced from manufacturing is reallocated (back) into less productive sectors such as agriculture and informal services.

South African policymakers must continue to take Rodrik (2016) seriously. There are, however, some caveats which must be made. First, deindustrialization beginning at lower income levels is only 'premature' when considered in the light of past manufacturing-led developing models. 'Premature' is a relative term, and in this case is relative to past rapid development success stories. Second, the question of where labour 'prematurely' displaced from manufacturing relocates to is very important, and something which may be influenceable. One policy conclusion from a finding of 'premature deindustrialization' is that policymakers should seek to arrest or reverse this process, but a potentially viable alternative is that policy should instead seek to 'direct' this displaced labour into more rather than less productive activities. Third, it is no longer a given that industrialization waves can happen only once, and that deindustrialization necessarily marks the end of a countries' relationship with manufacturing-led growth.

### **2.2.4 *The manufacturing (re)naissance and informal sector dominance***

Recent results from new data on manufacturing on the African continent appear at first glance to be quite positive. Kruse et al. (2023) showed that many African countries which never industrialized before were showing early signs of relative manufacturing sector growth, and that some past deindustrializers were now reindustrializing. South Africa was not one of these, and deindustrialization in South Africa remains persistent as the analysis in section 4 and beyond will show. We therefore do not dwell on this point, other than to say that there is now evidence that reindustrialization may be possible, and that there are real-world examples of 'premature deindustrialization' being arrested in some cases. In a literature which is becoming increasingly pessimistic about the scope for manufacturing-led growth and industrialization in developing and middle income countries, it is worth highlighting this seemingly more positive finding, even though (re)industrialization waves in most African countries tend to be characterized by informal manufacturing activities which are much less common in South Africa.

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<sup>8</sup> In this paper, we use the term *servicification* to denote a relative expansion of the services sector, akin to industrialization in the manufacturing sector. Some other sources prefer the term *tertiarization*.



### **2.2.5 Productivity gaps and reallocation between firms**

A parallel literature to the inter-sectoral structural transformation framework emphasizes that large productivity gaps exist not only between sectors, but also within them, across firms. Empirical work using firm and plant-level data has consistently documented substantial dispersion in productivity even within narrowly defined industries, including within manufacturing (Bartelsman & Doms, 2000; Syverson, 2011). This implies that aggregate productivity growth can arise not only from the movement of labour across sectors, but also from the reallocation of resources between more and less productive firms within the same sector. In this sense, structural transformation can be understood as operating at multiple margins: both inter-sectoral (e.g. agriculture to manufacturing) and intra-sectoral (e.g. low to high-productivity firms within manufacturing), the latter appearing as within-sector productivity growth in aggregate decompositions such as that which we perform.

Trade and liberalization shocks are a key mechanism through which such within-sector reallocation occurs. In a canonical contribution, Melitz (2003) formalizes how increased competition leads to the exit of the least productive firms and the expansion of the most productive, raising aggregate productivity through a process of selection and market share reallocation. Empirically, Pavcnik (2002) shows that productivity gains following trade liberalization in Chile arise from a combination of within-firm improvements and the reallocation of resources across firms, with the latter playing a central role. Subsequent work has reinforced the importance of these mechanisms (e.g. Bernard et al., 2003; Restuccia & Rogerson, 2008). For the purposes of structural transformation policy in South Africa, this literature suggests that even within a given sector, the extent to which resources are allocated toward more productive firms is a critical determinant of aggregate productivity performance.

## **2.3 New Views on Structural Transformation**

After many years of dominance, the classic view of a single, manufacturing-led recipe for rapid development via structural transformation is now coming under question. Developing and middle income country governments have realized that wrestling with the problem of how to shift surplus agricultural or lower productivity services labour to manufacturing en masse is highly challenging when they do not enjoy similar demographic, geographic, or macroeconomic environments as the Asian economies they are seeking to replicate, and when the global economic environment and the nature of manufacturing has changed fundamentally from the 20th century. Meanwhile, academic research is uncovering alternative, often services-led models which, whilst perhaps not transformational to the extent of the East Asian economies, are at least underpinning sizeable economic growth in some countries and regions (Fan et al., 2023; Hamilton et al., 2025).

Outside of East Asia, manufacturing-led development success stories in the 21st century are conspicuously few. There are two alternative interpretations of this. One is that governments are simply failing to effectively implement the East Asian model which would set them on an escalator to rapid economic growth if only they could get the policies right. The other, and increasingly more plausible interpretation, is that what was optimal for East Asia in the 20th century may not be optimal or even possible for other times and contexts. The true lesson of the 'East Asian miracle' may be that countries wishing to grow rapidly must find their own context-specific structural transformation path which is suitable also in the external global conditions in which they find themselves. Finding the 'South African recipe' may be a far greater policy priority than attempting to replicate an 'East Asian recipe'.

A second major innovation in the academic conversation over structural transformation is the need to consider broader forms of structural change than purely reallocations between sectors. Shifts in economic activity between sectors remain very important, because sizeable sectoral productivity gaps clearly persist.

Nevertheless, these are not the only forms of productivity gap, and not the only type of labour reallocations we observe in actual emerging economies.

### **2.3.1 New parths of transformation**

It is becoming increasingly clear that structural transformation is not synonymous with industrialization. When workers shift out of agriculture and also out of rural areas, there are a range of new activities into which they may land. Similarly, in an economy such as South Africa which is already some way along its development trajectory, there are other low-productivity activities from which labour can reallocate, such as informal trade services or domestic services, whilst the share of workers in agriculture is now quite small. If a country is able to generate an expanding manufacturing sector and promote productivity gains in manufacturing, it may be that many of these workers enter the manufacturing sector. But in the absence of these, underlying forces may well propel them in a different direction. Manufactured goods can be imported, but non-tradeable and many consumption services cannot, and in the absence of quite specific favourable manufacturing sector conditions, it is probable that many middle-income countries will enjoy a comparative advantage in the production of non-tradable services. In this case, many of the churning workers may reallocate into the services sector. These more modern services activities may still represent a considerable productivity gain when compared to subsistence agriculture or informal services.

The existence of such processes is not new, but has often been considered an undesirable alternative to manufacturing-led paths (Newfarmer et al., 2018; Rodrik, 2016). Modest productivity growth gains which come from servicification were treated as if they came at the expense of more transformative gains which might have been realized from industrialization. Where workers in developing and middle-income countries shifted from agriculture to services, academics and policymakers focused on how they might change this pattern. But this approach presupposed the possibility of a serious, manufacturing-led alternative. This exclusive focus on manufacturing is now thought to have over-emphasized two factors: a) the uniqueness of the manufacturing sector as an absorber of low skilled labour, and b) the generalizability of experiences in one part of the world, East Asia, at one specific and somewhat unique point in time - the era of post-Cold War globalization. What may have been completely reasonable when global manufacturing continued to employ workers en masse to produce for a quasi-infinite global market, and when most services were non-tradeable and low productivity, may be completely different in an era “when manufacturing is jobless and services are tradeable” (Baldwin & Forslid, 2023).

What does this imply for optimal structural transformation strategy in South Africa? Policymakers must contend with the possibility that South Africa may never be able to stimulate East Asian-style growth via manufacturing. This is not because of specific policy failings or through ‘not getting the recipe right’, but because it may simply not be possible in the current global conditions. This is not to say that manufacturing should be ignored or can play no part in future South African development - far from it. Manufacturing will continue to employ many workers globally for a considerable time and geopolitical shifts may allow countries such as South Africa to access different markets as a result of trade diversion and ‘friend-shoring’ (Gopinath et al., 2025). However, manufacturing is unlikely to be able to absorb large numbers of all types of workers in South Africa as it was across similarly sized economies in Asia in the 1990s.

More optimistically, however, the services sector may not be as static as was once thought. The services sector should not be thought of as one homogeneous mass, and workers within the services sector may move between different types of service activities, whilst labour exiting agriculture (or unemployment) may land in different types of services. These different services activities may come with vastly different average labour productivity levels and some may exhibit the potential for future rapid productivity growth, including in supplying to international markets. This means that a) services-led structural transformation may not always

be suboptimal, and b) structural transformation does not end when workers move to services, but continues as they move between services.

Modern services sectors may also come with their own advantages from the perspective of structural transformation. Whilst service firms are on average smaller than manufacturing firms, this matters less for productivity because in services productivity is not a function of firm size as it is in economies-of-scale driven manufacturing (Bento & Restuccia, 2021). Furthermore, the service sector is much less capital intensive than manufacturing. The widespread manufacturing expansions in East Asia came with significant capital investment which was only possible due to the power of those governments to both mobilize resources internally and attract investment from abroad. The expansion of manufacturing therefore requires the mobilization of two production factors: capital and labour. By contrast, services can expand with far lower levels of capital investment, allowing for a narrower policy focus on labour markets alone.

This growing plurality in the literature has also shifted attention toward alternative development paths beyond East Asia. A recent study by Fan et al. (2023) shows that India's growth has been driven not only by high-skill tradable services, but also by productivity gains in consumer-facing, largely non-tradable services. Importantly, these gains reflect sectoral upgrading rather than merely rising demand. The case of India provides a powerful alternative example to the standard structural change success stories of East Asia. India has an interventionist government and, like South Africa, is democratic and rooted in similar post-colonial institutions. There are, of course, facets of the Indian economy which are not easy to replicate - for example, the large domestic market. Nevertheless, the existence of this alternative model is important, because it implies that services-led development through structural transformation is not merely an idea in theory, but also actively unfolding in a large contemporary economy.

### **2.3.2 New types of transformation**

The study of structural transformation in developing countries has recently been advanced by a major pathfinding paper which has arisen from the influential Structural Transformation and Economic Growth [STEG] initiative. Gollin and Kaboski (2023) emphasize the importance of considering structural transformation along a far broader set of dimensions than purely reallocations between sectors. These include spatial, demographic, informal-to-formal, and home-to-market reallocations. Many of these shifts would contribute statistically to within-sector productivity growth even though they can reasonably be considered as facets of structural change. This advance in thinking is also critical from a policy perspective because it widely expands the purview of structural transformation policy.

What does this imply for the optimal structural transformation policy in South Africa? Again, the story returns to services. If there is, or will emerge in the near future, a binding upper-bound to the share of workers which formal manufacturing can absorb, then comparing average services productivity to average manufacturing labour productivity is something of a false equivalence. It may be that the formal manufacturing sector will increasingly resemble financial services or mining - highly productive, but with a limited capacity to absorb domestic labour. From a structural change perspective which still involves transitioning workers out of lower productivity activities, a more accurate comparison may be between the productivity of services and the productivity of informal manufacturing, as the only two realistic destinations for these workers at least in the short-run. In South Africa where there is very little informal manufacturing, there may in fact be no alternative pathway other than services at all.

## **2.4 Recent Literature on Structural Transformation in South Africa**

Whilst literature on structural transformation and its potential to spark growth on the African continent is proliferating widely, specific studies on the case of South Africa remain relatively few. One notable exception



is the excellent recent book edited by Andreoni et al. (2021), and the chapters therein. Here, we focus on the chapters by Zalk (2021) and Andreoni and Tregenna (2021), although the remainder of the book contains many further fascinating case studies and deep dives into specific South African industries which are well worth further exploration by interested readers.

Zalk (2021) examines the policy backdrop to structural transformation in South Africa in the post-apartheid era. The chapter documents a post-apartheid pattern of high corporate profitability alongside low levels of fixed investment, particularly in agriculture and manufacturing, which may be acting as a constraint on productivity growth in these sectors. This matches the empirical results we present in section 4. The chapter further argues that investment and value added in South Africa have increasingly shifted toward nontradable service sectors where profitability is highest, while tradable sectors have stagnated or declined. Manufacturing profitability has fallen sharply over time, especially outside capital-intensive heavy industry, which has contributed to weak investment and substantial job losses. Within manufacturing, growth has been concentrated in a few subsectors (notably chemicals, metals, and automotive assembly), while diversified manufacturing has failed to expand meaningfully. The result has been deindustrialization and employment contraction in tradable sectors. This analysis is well worth keeping in mind when reviewing our empirical results in sections 4 and beyond, and particularly in consideration of the period 2010-2019 for which we have suggested the label of a 'structural change emergency', although we do add the caveat based on the above discussions that the range of services which may be considered tradable might be larger than conventional thinking dictates.

Andreoni and Tregenna (2021) builds on this analysis of the recent history of transformation in South Africa in order to attempt to characterize the current position. Importantly, they analyse the period at and around 2018, which is at the end of the 'structural change emergency' and before the modest, services-led post-2020 recovery which we uncover in our empirical analysis. The chapter argues that South Africa is "stuck in the middle" of the global income distribution, exhibiting the defining features of both a middle-income trap and premature deindustrialization of the type discussed above in section 2.2.3. Despite being relatively wealthy by developing country standards, South Africa has experienced longterm economic stagnation, weak structural transformation, and declining manufacturing performance. The chapter further argues that South Africa has failed to upgrade industrial and technological capabilities in ways that would support sustained productivity growth in the manufacturing sector, which provides a potential explanation for the persistent lack of within-sector productivity growth in manufacturing which our empirical analysis shows.

The highly pessimistic tone of Andreoni and Tregenna (2021) should be somewhat tempered by, a), its timing, performing analysis right up to the nadir of what we show to be the worst decade of structural transformation and productivity growth in post-apartheid South Africa, and b), its focus on manufacturing, a sector in South Africa which is really continuing to struggle. The situation a few years later, and with a more holistic focus on services as well as manufacturing in light of the above described movements in the literature, does look a little more positive. Nevertheless, Andreoni and Tregenna (2021) provides a highly relevant analysis and diagnosis of the problems in South African manufacturing, problems which do not appear to be improving and with which policymakers will have to contend regardless of the ultimate approach to growth through structural transformation in South Africa.

Beyond Andreoni et al. (2021), structural change in South Africa has also featured as case study in a few edited books and article collections. Most related to this paper is Bhorat et al. (2018), which documents a pattern of servicification in the South African economy in terms of GDP and employment share in the period up to 2013. Covering a period which overlaps with what we classify as the 'emergency decade', the chapter is ultimately lukewarm about the potential for services to drive productivity growth. Nevertheless, it is also realistic about the limited potential for a resurgence in industrialization and shares the pessimism of Andreoni and Tregenna (2021) regarding this sector. Work by Visagie and Turok (2021) further addresses the



topic of services embodied in South African exports, noting the increasing tradeability of services and proportion of services in global trade whilst warning that thus far South Africa does not seem to be taking full advantage of this. They characterize Southern African trade in services as limited and dominated by low-value services. These points are further developed in Visagie and Turok (2023) and Turok and Visagie (2020), and consistent with the results we present in section 7.



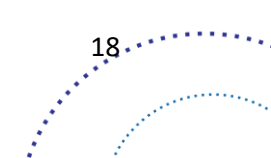
### 3 A Note on Data

The analysis which underpins the remainder of this report is based on South African data from Statistics South Africa, and three multi-country databases, all from the Groningen Growth and Development Centre [GGDC]. The Economic Transformation Database [ETD] provides consistent data on employment, real, and nominal value added [VA] by twelve ISIC 4 sectors in 51 economies for the period 1990-2019, including South Africa (de Vries et al., 2021; Kruse et al., 2023). The ETD or its precursor databases from the GGDC have underpinned numerous influential analyses of structural transformation in sub-Saharan Africa and beyond (e.g. Diao et al., 2017; Kruse et al., 2023; McMillan & Zeufack, 2022; McMillan et al., 2014; Rodrik, 2016). This provides us with reliable data for South Africa which we can also compare directly with other emerging and middle income countries in Africa and elsewhere. As we also want to analyze South Africa in comparison with the BRICS group, and the ETD does not contain Russia, we draw data for Russia from the Economic Transformation Database of Transition Economies [ETD-TE] which has the same data for fourteen former Soviet economies including Russia (Hamilton & de Vries, 2025). The methods used to construct the ETD and ETD-TE ensure incorporation of the informal economy both along the employment and value added dimensions; this is crucial for the internal consistency of productivity estimates. All analysis in this paper therefore includes both formal and informal employment and value added.<sup>9</sup> Full details of the data including all underlying sources and the construction and linking procedures can be found in de Vries et al. (2021).

The latter part of our analysis introduces input-output linkages and therefore requires input-output data for South Africa. The new Africa Supply and Use Tables [ASUT] database provides time-series input-output tables for eleven African countries, including South Africa, for the period 1990-2019 (Mensah & de Vries, 2024). The ASUT database is based on primary supply and use data from National Statistical Institutes as benchmarks (Statistics South Africa in the case of South Africa) and uses estimation techniques and iterative algorithms which follow Temurshoev and Timmer (2011) and Dietzenbacher et al. (2013) in order to interpolate full time series with shifting production structures. The main results presented in this paper are based only on key years (1994, 2007, 2019). The sectoral employment and value added in ASUT are fully consistent with those of the ETD. As this is a policy paper, we do not go into further details of the data here, but these datasets are fully documented in terms of sources and methods in de Vries et al. (2021), Hamilton and de Vries (2025), and Mensah and de Vries (2024).

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<sup>9</sup> A limitation of this paper is that, whilst our analysis incorporates both the formal and informal economies in South Africa, we do not separate the two. This distinction is non negligible as pioneering new work has shown that productivity gaps between formal and informal activity within sectors may be greater than those between sectors (Jat & Ramaswami, 2026), and this form of structural change is one of the key within-sector forms discussed in Gollin and Kaboski (2023). Whilst the manufacturing sector in South Africa is almost 90% formal (according to Stats SA Quarterly Labour Force Survey), this is not the case in all sectors with informality up to 30% in some services sectors. This implies additional potential productivity gains from services upgrading in the form of further formalization. We intend to explore the crucial topic of heterogeneity of informality in South Africa further in a future policy paper.





## 4 Structural change in South Africa

We begin by characterizing the recent sectoral structure of the South African economy, with a particular focus on establishing labour productivity gaps. Figure 1 shows the relative labor productivity of ten different sectors as of 2024, ordered from least to most productive, with the dashed black line indicating the average labor productivity of the whole South African economy, which is normalized to one. Labour productivity is calculated as real value added per worker per annum. The height of the bars therefore shows productivity in each sector relative to this average. The width of the bars is weighted so as to illustrate the share of employment in each sector. This style of graph has a strong pedigree which facilitates easy comparison with other African countries and world regions (Diao et al., 2017; Hamilton, 2025; Hamilton & de Vries, 2025; Hamilton et al., 2025; McMillan et al., 2014, etc.).

Several features of figure 1 are worthy of note. First, if we exclude Utilities which is a very small sector in terms of employment and for which value added is in large part an exogenous outcome of international energy prices, the productivity gaps between sectors are quite small, even in comparison to other middle income countries such as Turkey and the former Soviet economies (Hamilton & de Vries, 2025; McMillan et al., 2014), and much smaller than that of the sub-Saharan African average (Hamilton, 2025). South Africa has a unique structure compared to the rest of SSA in the sense that "those excluded from wage work are more likely to be unemployed rather than working in informal, own-account jobs" (Shah, 2022). With low informality, productivity across sectors tend to be smaller compared to SSA. The second highest productivity sector, Transport Services, is operating only double the national average productivity and just over four times that of the lowest productivity sector, Agriculture.<sup>10</sup> Nevertheless, there are still productivity gaps between sectors. Agriculture is the lowest productivity sector, as is normal in developing and middle income countries (Gollin, 2023; Gollin et al., 2013), although the share of workers remaining in Agriculture is relatively few at below 10%. There is still potential for productivity growth gains via the movement of workers from below-average productivity sectors to above-average productivity sectors. .

A second point worthy of note is the average productivity levels of certain services sectors. Personal services, which includes domestic workers and caregivers is slightly below average productivity in South Africa. Even with low level of informality in this sector in South Africa compared to SSA, the size of this sector in South Africa is however quite large in comparison with elsewhere on the continent.<sup>11</sup> The trade services sector, which includes wholesale and retail services as well as restaurants and accommodation, is quite far below average in terms of labour productivity, a bit lower than most middle income countries. In South Africa, it appears that trade services and, to a lesser extent, personal services have replaced Agriculture as the largest pool of below-average productivity labour. Finance and business services, generally an above average productivity sector both in other middle income countries and elsewhere in Africa, is both fairly high productivity and fairly large in South Africa. The prevalence of private security firms and other outsourced business services firms in South Africa likely accounts for the size of this sector in terms of employment share. An element of this may be a statistical artifact - as manufacturing or transport service firms outsource their supporting activities to private business services firms, these workers may be reclassified as business services workers.

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<sup>10</sup>The grouping together of Financial and Business Services in the Stats SA data masks the fact that Financial Services is also a very high productivity sector, but one with a very limited capacity to absorb labour.

<sup>11</sup> Whether this in fact represents a higher degree of formality and marketization of personal services in South Africa as compared to elsewhere is an open question. In principle, the methods used to construct the ETD should include informal workers. In practice, the personal services sector may be one in which data collection of the informal sector is less reliable due to the non-public nature of many of these activities.

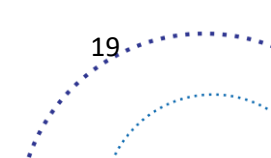
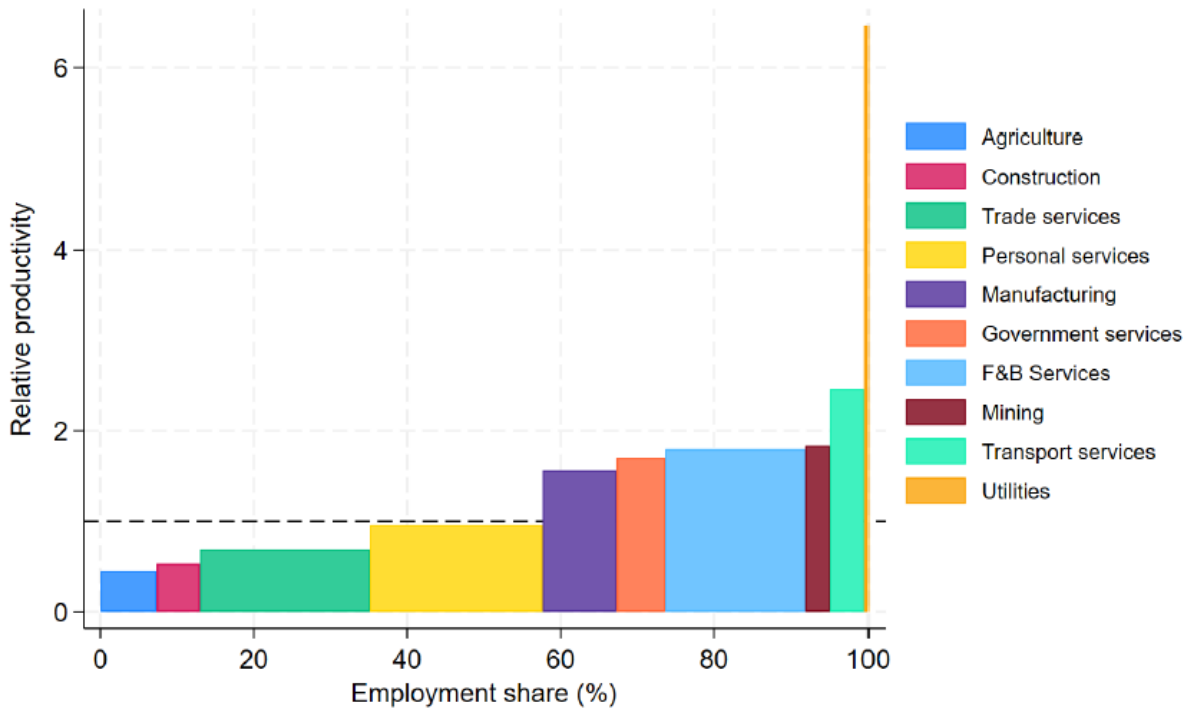


Figure 1: Average Labour Productivity and Employment Share by Sector, 2024



Note: Width of bars denotes share of persons employed in each sector in 2024 in South Africa, height of bars denotes labour productivity of the average worker in each sector relative to the aggregate labour productivity which is normalised to one. Source: Authors calculations from Stats SA.

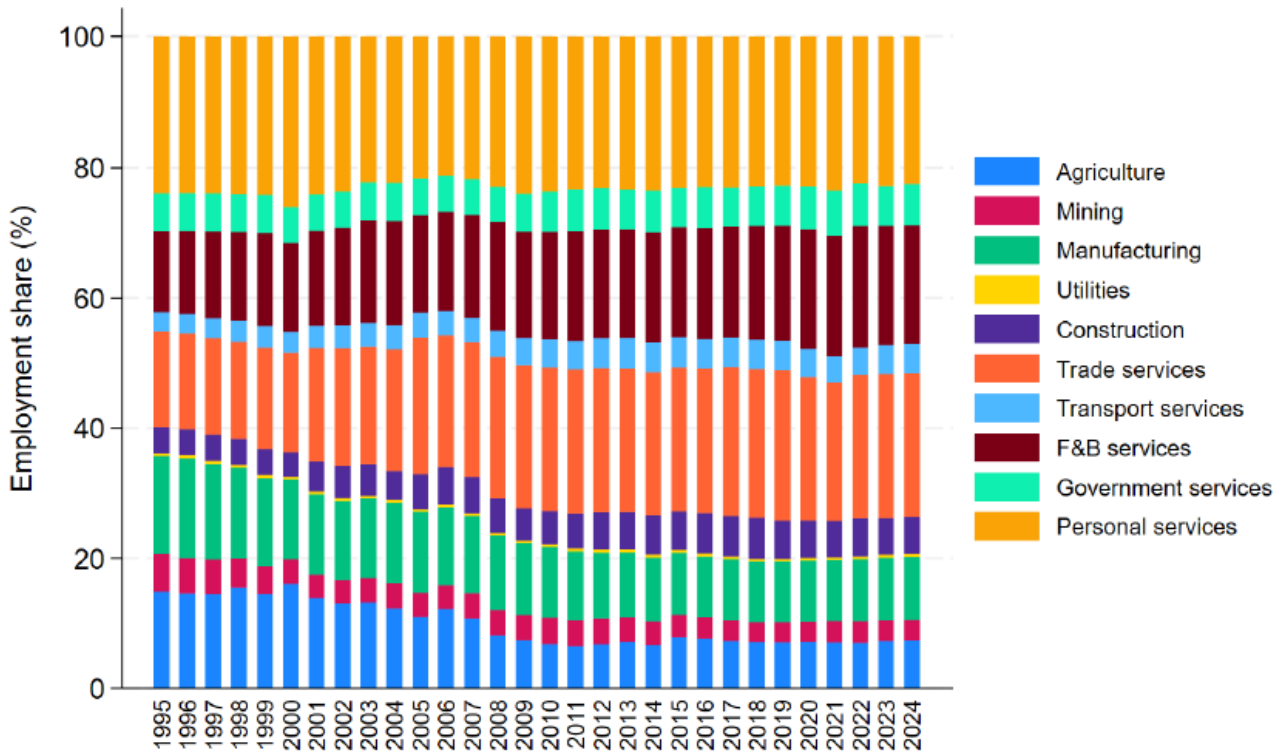
In terms of industry, manufacturing sector productivity is above average, as is usually the case, but this sector is relatively small in terms of workers. At around 10% of the workforce, it is about the same size as the sub-Saharan African average (Hamilton, 2025). We do not comment on government sector productivity because this sector lacks a clear value added definition and productivity growth is often little more than a function of wage growth (Diewert, 2011). The mining sector is unsurprisingly one of South Africa’s most productive sectors, although still not that large in terms of employment share, implying this sector remains highly capital intensive in South Africa as it does in other resource-rich economies (Hamilton & de Vries, 2025). The (well) below average productivity of the construction sector is surprising. Whilst construction is rarely a high productivity sector, it is slightly above average in sub-Saharan Africa as well as in other middle income countries such as Turkey or the countries of Eastern Europe. The low productivity of South African construction likely has both supply and demand side elements - on the demand side, there has been a slump in new construction projects following the boom before the 2010 world cup. On the supply side, construction firms in South Africa are quite small and fragmented, and the sector is said to be afflicted by corruption and inefficiency (Bowen et al., 2012). Low productivity in South African construction is a particular policy concern; the expansion of high productivity sectors such as manufacturing or business and financial services will come with construction needs, and if these are take place at well below average productivity, they may dilute the aggregate gains from high productivity sector expansion at least in the short run.

In order to better illustrate how the sectoral structure of the South African economy has evolved over time, figure 2 presents the employment share of the ten sectors in each year since 1995 using data from Statistics South Africa. Shifts in relative sector sizes are not monotonic, with some jumps, particularly around the middle of the sample period. There is a general trend of reduction in the relative size of agriculture which has approximately halved across the three decades but remained fairly constant since 2008. This may imply that the supply of surplus agricultural labour is close to exhausted. Mining has contracted a little in terms of employment share reflecting both a decrease in the proportion of labour intensive gold mining activities. Manufacturing has also contracted. This decrease in the relative size of two above-average productivity



industries, and particularly manufacturing, is cause for concern under the conventional industrialization-led growth paradigm. Expansion has taken place particularly in trade services and in business and financial services services. The relative expansion of these two, large services sectors at the expense of agriculture and industry is indicative of an overall pattern of servicification of the South African economy. Personal services has remained large and fairly constant.

**Figure 2: Average Employment Share by Sector Over Time in South Africa, 1995-2024**



Note: Bars denote shares of persons employed in each sector in South Africa in each year 1995-2024. Source: Authors calculations from Stats SA.

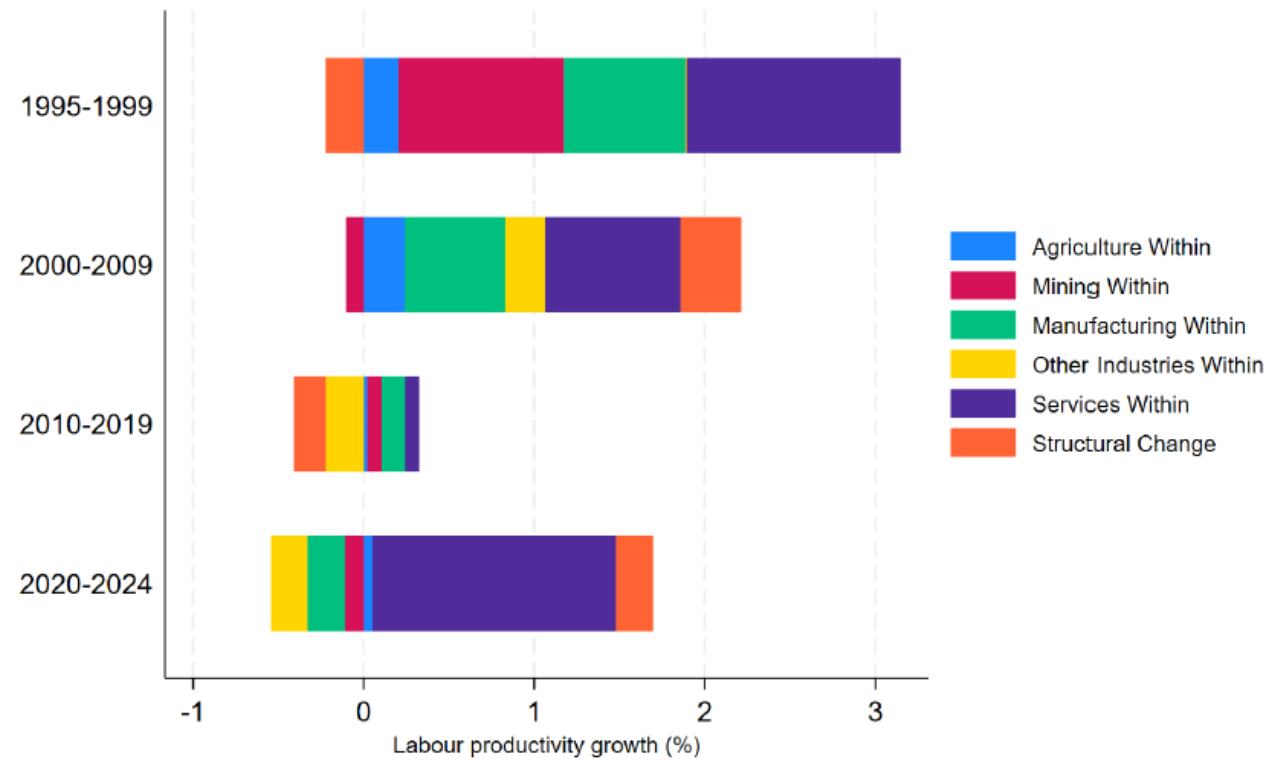
Having characterized the current sectoral structure of the South African economy and the recent trends in this structure, we now seek to unpack the extent to which the different elements of these contribute to aggregate productivity growth. To do this, we apply a growth accounting technique known as the ‘shift-share decomposition’ (Hamilton & de Vries, 2025; McMillan & Rodrik, 2011; Mensah et al., 2023). This approach allows aggregate productivity growth to be split into two parts: within-sector growth and between-sector growth (structural change). The within-sector component can be further subdivided into the separate contribution of within-sector growth in each industry. The within-sector components are positive when those sectors increase their labor productivity across the time period.<sup>8</sup> The between-sector component is positive when, on aggregate, workers reallocated from less-to-more productive sectors. The total sum of all the elements in each bar equals the average annual aggregate labour productivity growth rate in that time period (typically, decade). The technical details of this decomposition originate from McMillan and Rodrik (2011), and can be found in detail in Hamilton et al. (2025) where we perform a comparable analysis for the countries of East Africa.

Figure 3 shows the results of the shift-share decomposition for South Africa separately for four different time periods. Note that the results shown are average annual results; therefore despite the fact that the time periods are of different lengths, the results are directly comparable. The periods are chosen so as to correspond with the four decades or partial decades since the end of apartheid. We look first at total labour productivity growth – the length of the bars. The years immediately after apartheid saw the most rapid labour productivity growth at an average of about 3% per annum. A classic explanation for this is the reintegration



into the global economy and end of sanctions, but the importance of the end of discriminatory restrictions on a huge strata of the population and subsequent expansion of domestic demand should also not be overlooked. We note also that rapid post-apartheid productivity growth was supported by rapid within-sector productivity growth in mining and services, as illustrated by the red and purple bars.

**Figure 3: Shift-share decomposition results for South Africa by period**



Note: Bars show separately the within- and between-sector components of labour productivity growth in South Africa by period since 1995. Source: Authors' calculations using Stats SA data. Real Estate sector extracted.

Productivity growth slowed in the 2000s, but remained healthy at an average of above 2% per annum. Most importantly, the pattern of 2000s productivity growth can be seen to have been quite balanced. Productivity within both the manufacturing and services sectors grew, and the agriculture sector also exhibited modest within-sector productivity growth. All three broad sectors of the economy - agriculture, industry, and services - were gaining in terms of productivity. This was further complemented by modest but positive between-sector growth - growth-enhancing structural change - as indicated by the positive orange bar, which shows that on average workers reallocated from less-to-more productive sectors. This added an additional quarter of a percentage point of growth on average per annum. Only the mining sector represented a slight drag on growth with very small within-sector productivity declines.

Turning to the 2010s, both within-sector and between sector productivity growth collapsed to such an extent as to perhaps constitute a 'structural change emergency'. Average annual labour productivity growth went from a healthy 2% per annum in the 2000s to negative across the entire decade since 2010. Within-sector productivity growth collapsed to positive but negligible magnitudes in all of agriculture, services, and manufacturing, and were collectively insufficient to overcome negative productivity growth in other industries (construction and utilities), and growth-reducing structural change as denoted by the negative orange bar. In the 2010s, on average workers reallocated to less productive sectors, and resulting in a negative contribution of structural change to aggregate productivity growth on top of (lack of) efficiency gains within sectors. This negative contribution was sufficient to turn the overall aggregate productivity growth negative in this decade. This complete productivity growth collapse should be of paramount importance to policymakers.



Finally, the figures from 2020 to 2024 show some modest signs of recovery from the structural change emergency of the 2010s, albeit with some serious caveats. The first good news is that average annual labour productivity growth is no longer negative, at just under 1.5% per annum. This is a little less than the 2000s average, but not substantially so. The second good news is that the structural change contribution has again turned positive, with workers again moving on average from lower-to-higher productivity sectors, leading to a modest addition to aggregate growth. Neither of these magnitudes are transformative, but they are at least in the right direction and might be described as the green shoots of recovery. Now for the caveats. First, this period was dominated by the Covid-19 pandemic, and it is difficult to disentangle the precise impact this may have had on the figures. As these figures capture only the labour productivity of employed individuals, they do not take into account reductions in the total size of the labour force caused by Covid-19 measures, which may still linger. Further, as the pandemic years and the post-pandemic recovery period were both likely atypical, results for these years may not be in any way representative of what we might expect from the remainder of the decade now that things have settled. Second, and of more long term concern, the difference in the pattern of productivity growth in the 2020s as compared to the 2000s is much more stark than the difference in magnitude. Whilst productivity growth in the 2000s was very balanced across sectors, this is not at all the case in the 2020s, where it is thus far dominated by services. Only within services productivity growth and between-sector structural change are making a substantive contribution to aggregate productivity growth in the 2020s - productivity growth within all arms of industry has turned negative, and within agriculture remains negligible. The structural change recovery in South Africa, such that it is, remains services-led and precarious. We hold back a deeper discussion of the implications of this for policy until later in this report; suffice to say for now that if policymakers wish to see this recovery continue, they must either find a way to see productivity growth within industry recover also, or to ensure that productivity growth within services is maintained at all costs.

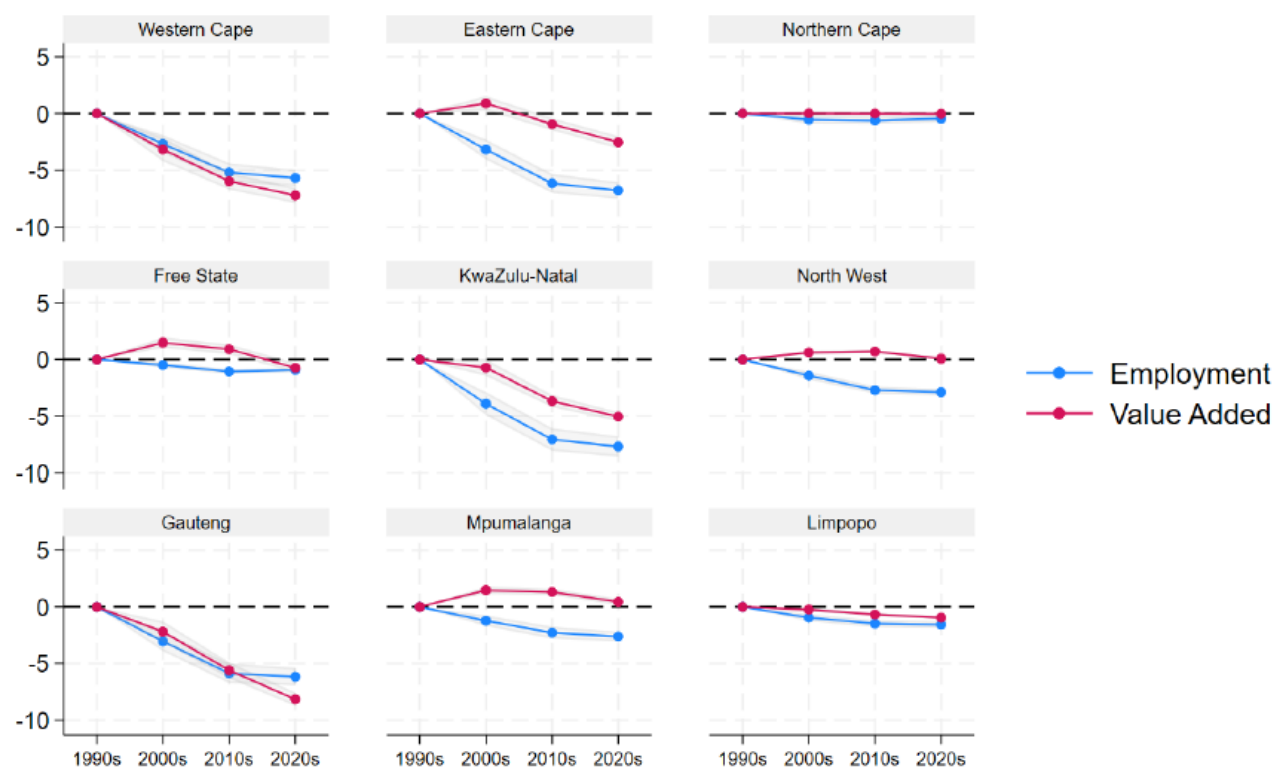


## 5 Structural Change at the Provincial Level

To further illuminate the patterns of structural change and productivity growth within South Africa, and to better inform policymaking, we now present results at the level of provinces. We begin by characterizing the sectoral trends in the employment and value added shares of manufacturing and services in each province of South Africa. We do this by performing a regression of the employment or value added share of manufacturing across all provinces on a set of dummy variables for each decade since the 1990s (which is the benchmark), and a set of interactions between these dummies and a set of province dummies. The coefficients on the decade dummies therefore give the change in manufacturing share between that decade and the 1990s for South Africa as a whole, and the coefficients on the province-decade dummy interactions give the province specific deviations from this trend. The sum of the coefficients on the decade dummies and the province-decade dummy interactions give the changes in manufacturing share as compared to the 1990s for each specific province; it is these which are shown graphically in figure 4.9 We recover standard errors using Taylor approximations, which allows us to provide 95% confidence intervals in the figure in grey. The method may sound complicated, but the visualization of the results is pleasingly simply - figure 4 shows the province-specific trends in the manufacturing shares of employment and value added in each province as compared to the 1990s. Figure 5 shows the trends for the services shares.

Figure 4 shows a clear pattern of employment deindustrialization in almost every province. Only Northern Cape, which had very little industrial activity to begin with, shows no statistically significant change since the 1990s. Most provinces also show a decline in the value added share of manufacturing, although in some cases such as Mpumalanga and the Free State, this begins only in the most recent decades after modest gains in the 2000s. In the economic powerhouse provinces of Western Cape, Gauteng, and KwaZulu-Natal, there is severe and persistent deindustrialization across the period as compared to the 1990s. Overall, this is evidence of an almost general pattern of relative deindustrialization across South Africa.

*Figure 4: Manufacturing trends by province, employment and value added.*

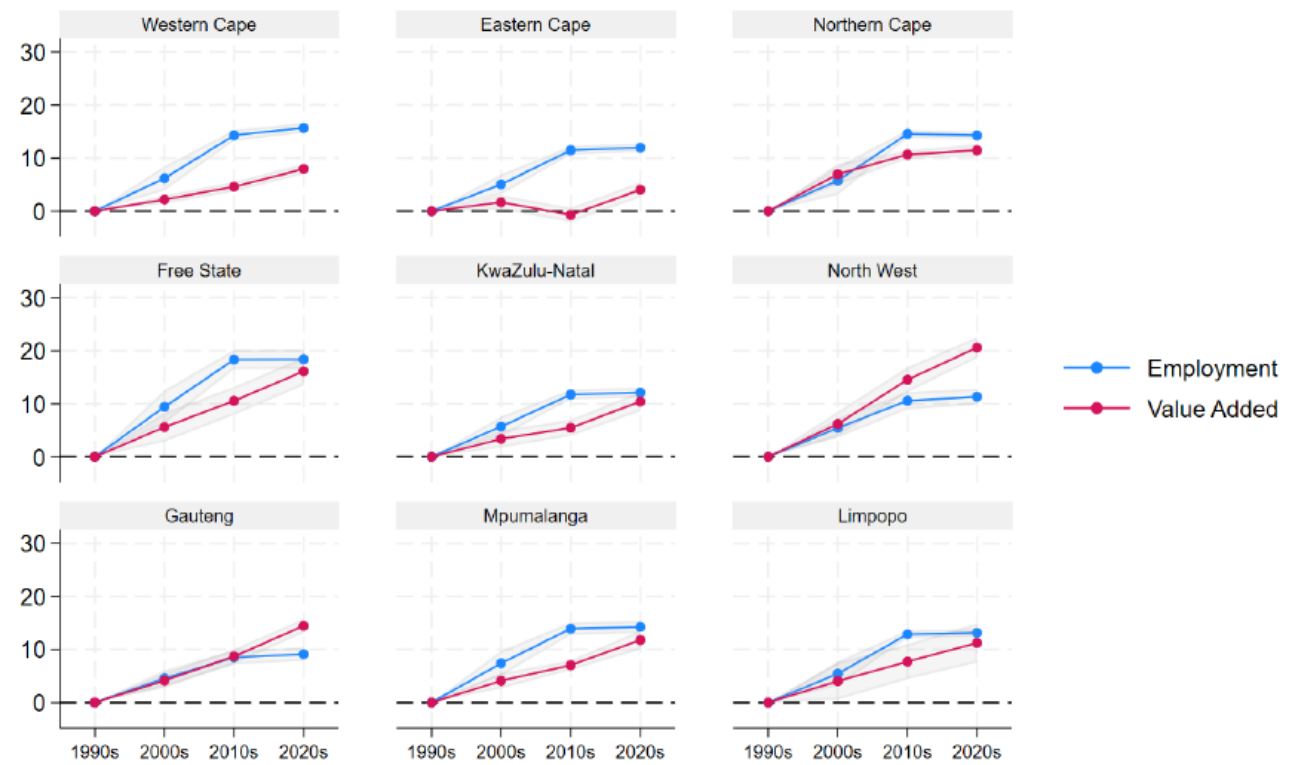




Note: Lines show the sum of the point estimates of the coefficients on the decade dummies and decade-country dummy interactions from regressions of the manufacturing shares of total (aggregate) real value added and employment on period dummies, province dummies, period-province dummy interactions, and province fixed effects, with 95% confidence intervals.

Turning to figure 5, the provincial trends in the services share appear very different. We observe strong servicification in terms of employment share across every province, and in terms of value added share in almost every province, although Eastern Cape is a lone exception in that this trend starts later. In many cases, growth in the employment share outpaces growth in the value added share, implying that labour productivity may be struggling to keep pace with employment expansion in the services sectors of these provinces. In Gauteng, this is not the case, and in North West province the value added share of services actually expanded faster than the employment share.

**Figure 5: Services trends by province, employment and value added.**



Note: Lines show the sum of the point estimates of the coefficients on the decade dummies and decade-country dummy interactions from regressions of the services shares of total (aggregate) real value added and employment on period dummies, province dummies, period-province dummy interactions, and province fixed effects, with 95% confidence intervals.

To verify these overall trends of servicification and deindustrialization for South Africa, we repeat the regression without the province specific interactions and present the results in table 1. Rather than the trends for South Africa as a whole, these results show the unweighted average results across all provinces. From table 1 it can be seen that the point estimates in the manufacturing share regressions are negative and increasing in absolute magnitude in each decade, and are statistically significant on all but the 2000s dummy in the value added share regression. This indicates a clear and strong pattern of deindustrialization. By contrast, the point estimates in the services share regressions are positive and increasing in absolute magnitude in each decade and are strongly statistically significant throughout. This indicates a clear and strong pattern of servicification.

**Table 1: Unconditioned fixed effects regressions of manufacturing and services share of employment and real value added on decade dummies in South Africa, unweighted averages across provinces.**

	(1)	(2)	(3)	(4)
	<i>Man_EMP</i>	<i>Man_VAQ</i>	<i>Serv_EMP</i>	<i>Serv_VAQ</i>
2000s	-2.008*** (0.271)	-0.272 (0.308)	6.703*** (0.486)	4.419*** (0.532)
2010s	-3.693** (0.280)	-1.605** (0.310)	12.947*** (0.347)	7.786*** (0.535)
2020s	-3.857*** (0.302)	-2.681*** (0.359)	13.362*** (0.352)	12.011*** (0.616)
N	270	270	270	270
R <sup>2</sup>	0.919	0.967	0.924	0.964

Robust Standard errors in parentheses

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Notes: Dependent variables are the manufacturing and services shares of employment (EMP) and real value added (VA Q). All regressions use the full sample of 9 South African provinces. Regressions are the manufacturing and services shares of total (aggregate) employment and value added on decade dummies with province fixed effects but with no other RHS variables.

We now perform the shift-share decomposition described in the previous section for each province of South Africa separately. We do this by assembling detailed province-specific data from Statistics South Africa - to the best of our knowledge, this is the first time such analysis has been performed at the sub-national level for any African country. To keep things clean, we start by separating purely into the within-sector and between-sector (structural change) components of aggregate productivity growth. The results of this broad decomposition are shown in figure 6; the first chart shows the (average annual) results across the entire period 1995-2024, the remaining charts present results separately by decade or partial decade. For reference, the overall South Africa results are also included in each chart. In each chart, the provinces are ordered such that those which experienced the lowest overall productivity growth are at the top of the chart and those which experienced the highest overall growth are at the bottom.

Across the entire period since the end of apartheid, all provinces have experienced modest productivity growth of between 1% and 2% per annum on average. Only in Gauteng has the contribution of structural change to growth been negative - i.e., workers reallocated on average from more-to-less productive sectors. In South Africa overall, the contribution of conventional structural change to growth has been positive but quite minimal. It has however been more substantial in multiple provinces, most notably in Limpopo and the Northern Cape, but also in the Western Cape and the Free State. In all provinces but Limpopo, productivity growth within sectors has contributed more to growth than the reallocation of workers between sectors. The provinces which saw productivity grow most rapidly across the entire period since apartheid are the Free State, KwaZulu-Natal, and the Western Cape. Those which saw the lowest rates of growth were North West province and Mpumalanaga; however both Gauteng and Eastern Cape also grew at rates which were below the national average.

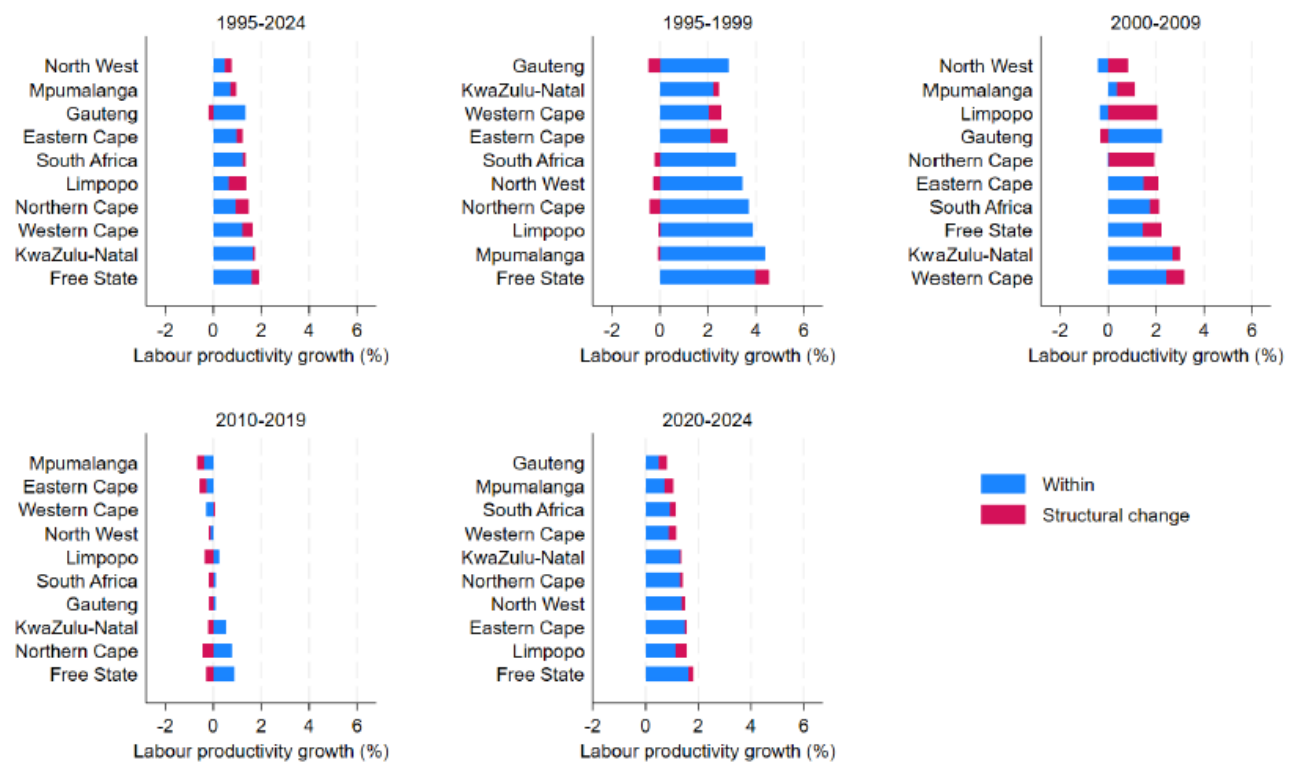
Turning to the decade-specific results, the rapid growth in the immediate post-apartheid years is observed across every province and is predominantly driven by within-sector productivity growth. In the 2000s, between-sector growth (structural change) features much more prominently for many provinces. This is interesting because it implies that, in many provinces (and particularly in North West, Mpumalanga, Limpopo and the Northern Cape), the initial post-apartheid boom in within-sector productivity growth elapsed fairly rapidly, but reallocations of labour from less-to-more productive sectors was able to compensate for this and kept average productivity growth rates reasonably high throughout the decade. This was a particularly strong



decade for the Western Cape and KwaZulu-Natal in terms of productivity growth, both of which saw no substantial slowdown from the 1995-1999 period, in contrast to the national average.

From the bottom left chart in Figure 6, it can be seen that the structural change emergency of the 2010s was a nationwide phenomenon. Only KwaZulu-Natal, Northern Cape, and the Free State managed positive productivity growth across this decade, and in all three cases extremely modest at a rate of below 1% per annum. The other six provinces all experienced negative productivity growth across the entire decade, and in eight of the nine provinces (with the exception of Western Cape), structural change contributed negatively to growth. For all of South Africa, the 2000s was a decade of productivity stagnation and, for the most part, of growth-reducing structural change. Finally, turning to the final chart, it can be seen that the modest 2020s recovery is also a nationwide phenomenon. All provinces have reverted to positive within-sector productivity growth, and in all provinces this is complemented by modest growth-enhancing structural change. Despite this modest recovery, there are two features of the inter-provincial results for the 2020s which may be concerning for policymakers. First, the crucial Gauteng province is bottom of the productivity growth charts with average aggregate growth just scraping 1% per annum - if one province is at risk of dropping out of the 2020s recovery, it would appear to be Gauteng. Second, whilst all provinces are back to growth, and most at above 1.5% per annum, there are no stand-out performers. All provinces, with the possible exception of Gauteng, have grown solidly since 2020, but there are none which have discovered some particularly rapid productivity growth recipe which others may seek to emulate.

Figure 6: Broad shift-share decomposition results for South Africa by province.



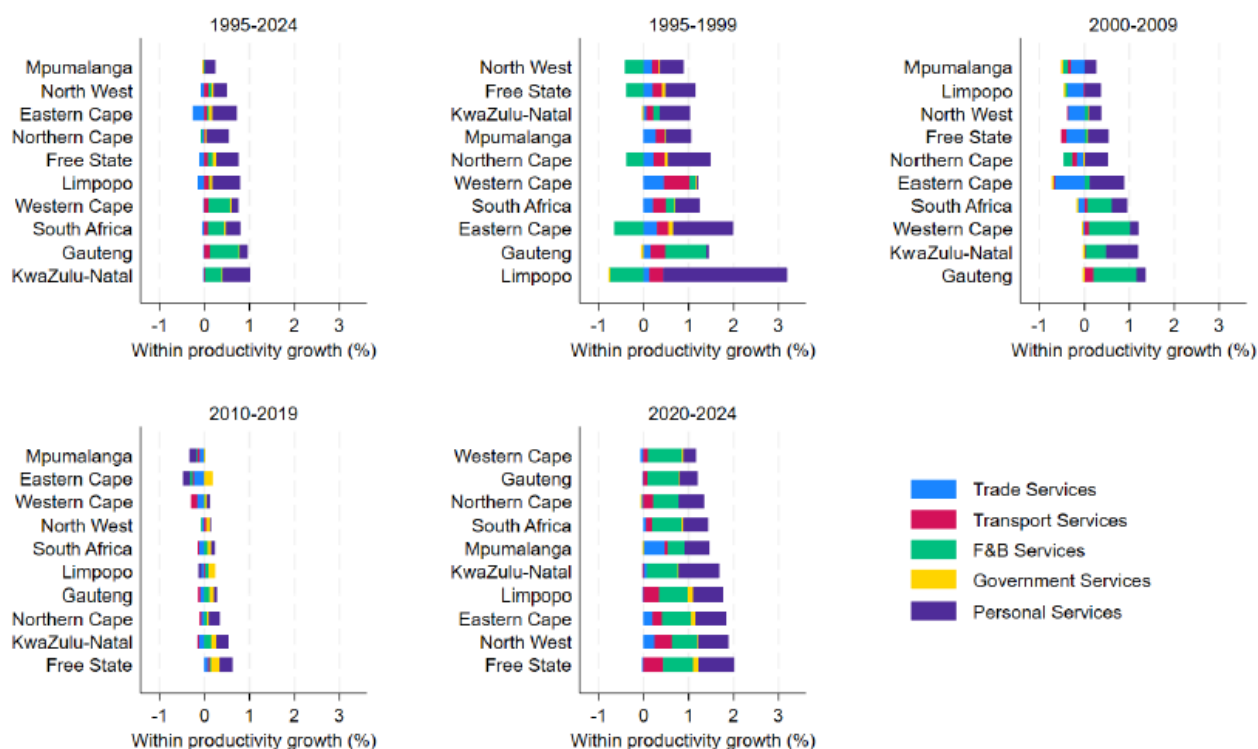
Note: Bars show separately the within- and between-sector components of labour productivity growth in each province of South Africa, separately by decade since 1995. Source: Authors' calculations using Stats SA data. Real Estate sector extracted.

From figure 6 it is clear that, whilst between sector labour reallocations contribute meaningfully to productivity growth in the provinces of South Africa, the bulk of growth is driven by efficiency gains within-sectors. To explore this further, we will now dig deeper into the within-sector component of productivity growth across provinces. We start by examining the services sector, because the results of section 4 indicated that the structural change recovery in South Africa is being driven predominantly by within-sector productivity growth in services. Figure 7 shows only the within-services component of aggregate productivity



growth, for each province separately as well as the nationwide South Africa average, further decomposed into the major services sub-sectors. The time periods match precisely those of figure 6. Looking first at the average results across the entire period since apartheid, two services sub-sectors clearly dominate the patterns of service sector growth: finance and business services, and personal services. Recall from figure 1 that, in South Africa as of 2024, finance and business services is a (well) above average productivity sector, and personal services is a (slightly) below average productivity sector. In the provinces which contain major urban and business centres - KwaZulu-Natal, Gauteng, and Western Cape – productivity growth in the finance and business services sector has been quite strong. In all other provinces, within-sector productivity growth in services has been driven almost exclusively by personal services. Productivity growth in trade services as been negative or negligible in all provinces - this is part of the reason why productivity in this sector in South Africa in 2024 remains so low, as seen in figure 2.

**Figure 7: Services within-sector productivity growth in South Africa by province and subsector.**



Note: Bars show separately the subsector components of within-sector labour productivity growth in services in each province of South Africa, separately by decade since 1995. Source: Authors' calculations using Stats SA data. Real Estate sector extracted.

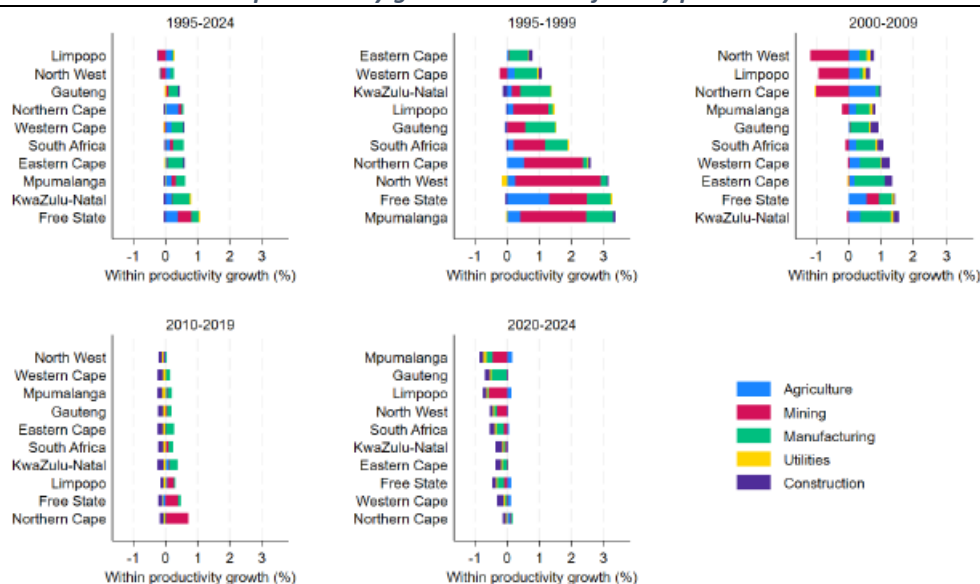
We will not comment too extensively on the specific results of the interim decades of service sector productivity growth in South Africa; save to say that again the 'structural change emergency' of the 2010s further manifested in almost no within-sector growth in any service subsectors in any provinces. Within-sector growth in personal services dominated service sector productivity growth in the immediate post apartheid era, possibly driven by the reduction in discriminatory practices against almost exclusively non-white workers in this sector. The 2000s saw more productivity growth in finance and business services within the aforementioned urban and economic centres, which had already started earlier in Gauteng. Most interesting for policymakers, however, is the nature of the 'services-led recovery' in the 2020s. The good news is that productivity growth in finance and business services is now a consistent phenomenon across all provinces. There is also some reversion to productivity growth in the transport services sector, which has long been held back by internal conflicts such as the infamous 'taxi wars' (Dugard, 2001). Two facts, however, are considerably less positive from the perspective of policy. First, with the partial exception of Mpumalanga and to a lesser extent Eastern Cape and North West province, trade services still remain utterly impervious to within-sector productivity growth. This is concerning because the trade services sector at least partially



underpins observed cases of services-led structural transformation elsewhere in Africa and the BRICS (Fan et al., 2023; Hamilton et al., 2025). Second, personal services is still the dominant sector in terms of growth in many provinces, and a major component of aggregate within-services growth in all. It is difficult to conceptualize how the personal services sector can drive transformative growth or structural change in the long-run.

Finally, we show the province-specific results for the sub-components of within sector productivity growth in non-services in figure 8. In terms of layout, figure 8 mirrors figure 7 precisely. The results of figure 8 starkly illustrate the fragile and unbalanced nature of the 2020s productivity and structural change recovery. Whilst productivity growth in the 1990s was supported by productivity growth in many non-services sectors across provinces, and whilst this continued in the 2000s (with the exception of a collapse in productivity in the mining sector in the three Northern provinces), the 2020s recovery is not meaningfully supported by productivity growth in any non-services sectors in any province. The 2020s recovery, such that it is, is entirely underpinned by between-sector reallocations and within-sector productivity growth in services, and this is the case nationwide. Non-service sector productivity growth is actually worse on average in the 2020s than in the ‘structural change emergency’ of the 2010s in every province. Productivity growth has been negative in manufacturing in all provinces since 2020, and sizably so in Gauteng and the Free State. Productivity growth in construction has also been stubbornly negative since at least 2010. Outside of the services sectors, the ‘structural change emergency’ in South Africa is still going strong. A recovery characterized by purely service sector productivity growth, and largely personal services at that, and in which non-service sectors are acting as a drag on aggregate productivity growth, is clearly sub-optimal from a policy perspective.

**Figure 8: Non-services within-sector productivity growth in South Africa by province and sub-sector**



Note: Bars show separately the subsector components of within-sector labour productivity growth in nonservices in each province of South Africa, separately by decade since 1995. Source: Authors’ calculations using Stats SA data. Real Estate sector extracted.



## 6 South African Structural Change in Comparative Perspective

Thus far we have extensively explored structural change and productivity growth in South Africa as a country and separately by province. We identified a 'structural change emergency' of negative productivity growth combined with growth-reducing structural change across the decade since 2010, and saw that this stagnant decade was a general phenomenon across provinces. We observe green shoots of recovery since 2020, which is general across provinces although somewhat weaker in Gauteng, but which is characterized exclusively by structural change and within-sector productivity growth in services. Unlike the decade before 2010 when the pattern of productivity growth was quite balanced, the post-2020 recovery is highly unbalanced, and productivity growth in non-services was actually worse in all provinces than in the 2010s 'emergency'. This is accompanied by employment deindustrialization and rapid servicification across South Africa. We shift now to a comparative perspective where we explore structural change in South Africa in comparison with peer economies in the world, and with other economies on the African continent. The purpose of this exercise is both to benchmark South African performance against other economies, and to explore the extent to which the above described observations are specific to South Africa or are more reflective of regional/global trends or common issues in comparable economies.

The choice of suitable comparison countries for South Africa is not completely obvious. Generally, such comparisons in the structural change literature are performed regionally, and South Africa is located on the African continent, and specifically in the Southern Africa region. Nevertheless, South Africa has both a very different recent history and is at a different level of development from much of the rest of the continent. In per capita terms, South Africa is one of the richest countries in Africa, including when adjusted for purchasing power parity and especially when atypical island economies are excluded. It also had the highest productivity level of major African economies as of 2015, although others were catching up (E. B. Mensah et al., 2023). In recent years, South Africa has become part of the BRICS, an intergovernmental organization and forum for cooperation of non-Western emerging economies.<sup>12</sup> To a large degree, these are the economies which many South African policymakers view as peers, and beyond collective geopolitical ambitions there are also multiple economic similarities between the original BRICS members (Çakır & Kabundi, 2013). For the sake of balance, we perform a comparison of structural change in South Africa both with the original BRICS and the rest of Africa. It turns out that South Africa stands out as an exceptional case regardless of the comparison set.

Figure 9 shows the shift-share decomposition for South Africa by decade, which is identical to the first three bars of figure 3, alongside the unweighted averages of the decomposition for a) 21 African countries, and b) the five original BRICS. We use data from the ETD and the ETD-TE, as described above in section 3. This data source imposes some constraints - as it runs only until 2018, we are not able to perform a comparison for the most recent partial decade. Further, the set of African countries is constrained to 21 - roughly half of the continent. We do not exclude North African countries as they are not obviously less comparable with South Africa in terms of income level and economic structure than much of sub-Saharan Africa.<sup>13</sup> The interpretation of the bars is the same as that throughout section 4 and with which the reader will by now be very familiar.

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<sup>12</sup> The original BRICS members are Brazil, Russia, India, and China, with South Africa joining shortly after. Collectively the names of these five countries comprise the BRICS acronym, although the group has been subsequently expanded to ten countries including two others in Africa.

<sup>13</sup> A comparable figure excluding North African countries can be found in Hamilton et al. (2025).

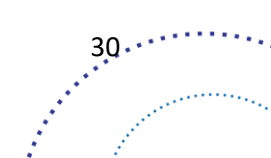
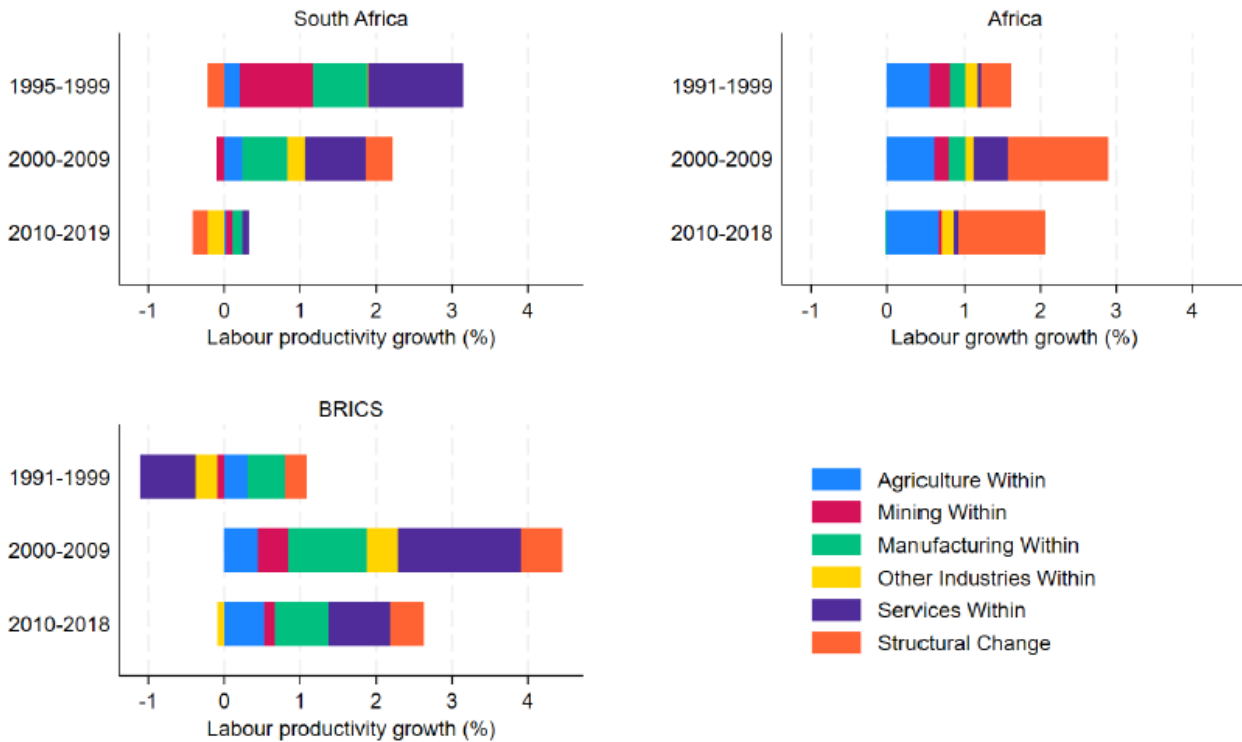


Figure 9: Shift-share decomposition results for South Africa, Africa, and the BRICS



Note: Bars show separately the within- and between-sector components of labour productivity growth by decade since 1990. Panel A) shows results for South Africa, panel B) shows unweighted average results for 21 African economies of the ETD, panel C) shows unweighted average results for the five BRICS: Brazil, Russia, India, China, and South Africa. Source: Authors' calculations using the ETD-TE and ETD. Real Estate sector extracted.

What immediately stands out from figure 9 is the starkness of the 'structural change emergency' in South Africa in the 2010s. In the average BRIC, productivity growth was a healthy 2.5% per annum on average throughout this decade, and fairly well balanced between structural change and within-sector productivity growth across broad sectors. The African average was less balanced and considerably more reliant on structural change, which is unsurprising given the much larger degree of surplus agricultural labour in the average African economy. Nevertheless, the continent on average managed 2% productivity growth per annum across this decade, and within-sector productivity growth was not negative in any broad sector. Negative overall labour productivity growth, growth-reducing structural change, and negligible within-sector growth in those sectors which were not actually negative was a specific South African phenomenon regardless of the choice of peer economies.

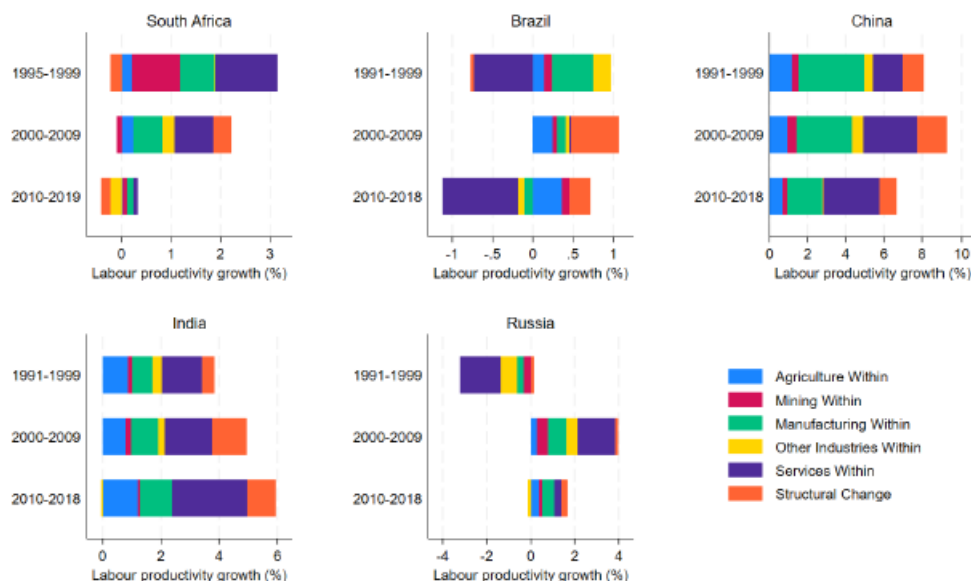
Figure 10 shows the results separately for each of the BRICS, as opposed to the average. From this figure it can be seen the healthy profile of productivity growth in the BRICS post-2000 was somewhat artificially inflated by the exceptional performance of China and India. By this comparison, South Africa is not alone in terms of the 2010 'structural change emergency' - Brazil also experienced negative productivity growth across this decade.<sup>14</sup> The Brazilian experience however is particularly driven by large productivity declines within the services sector, rather than poor performance across all sectors. Furthermore, Brazil did at least experience a positive contribution of structural change to growth in the 2010s, unlike in South Africa. Finally, productivity growth in Brazil in the 2000s was also quite poor, implying the change between the 2000s and 2010s was less stark than in the case of South Africa. The recent structural change and productivity growth

<sup>14</sup> Whilst productivity growth and structural change in Russia in the 2010s may look sluggish, this is mostly due to the scale - average growth in Russia was solid if unremarkable at just under 2% per annum in this decade.



experience in Brazil is more indicative of a long-term malaise rather than a sudden emergency, as in South Africa.

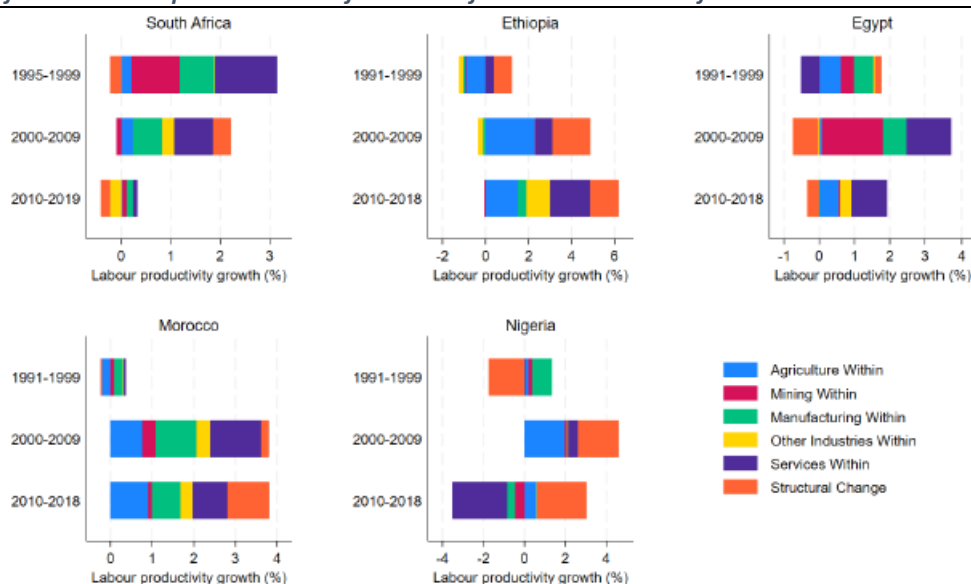
**Figure 10: Shift-share decomposition results for South Africa and the other BRICS.**



Note: Bars show separately the within- and between-sector components of labour productivity growth by decade since 1990 for each of the five BRICS: Brazil, Russia, India, China, and South Africa. Source: Authors' calculations using the ETD-TE and ETD. Real Estate sector extracted.

Figure 11 shows that the 'structural change emergency' in South Africa in the 2010s also stands out when compared to four other leading African economies, although Nigeria has also really struggled in the 2010s. Ultimately, the fact that one or two isolated economies had a recent structural change experience similarly bad to that of South Africa will be of little consolation to policymakers given this was clearly not a general or regional trend.

**Figure 11: Shift-share decomposition results for South Africa and the other African economies**



Note: Bars show separately the within- and between-sector components of labour productivity growth by decade since 1990 for South Africa and four other large African economies (the five largest by GDP for which we have quality data). Source: Authors' calculations using the ETD. Real Estate sector extracted.



## 7 Sectoral Decomposition of South African Exports

We turn finally to exploring the role of international demand in underpinning the structural transformation results for South Africa outlined in the preceding sections. In order to characterize the sectoral employment and value added which are embodied in South African exports in different years, we use value added in exports and employment content in exports from Mensah and de Vries (2024). They apply the hypothetical extraction method of Los et al. (2016) using data from the input-output tables for South Africa which are available from ASUT, as described above in section 3. The method of Los et al. (2016) allows for the gross exports of South Africa to be broken up into various value-added (or employment) components by (domestic) source sector whilst extracting double-counting terms. In this paper, we focus exclusively on South Africa, but readers wishing to make an international comparison can find results for all the countries in ASUT in Mensah and de Vries (2024), and for the East Africa region in Hamilton et al. (2025). These papers also provide the technical details and derivations which underpin our analysis.

Table 2 shows the shares of total domestic value added and jobs embodied in South African exports in three benchmark years of 1994, 2007, and 2019; which roughly correspond to key inflection points in the structural change story of South Africa, as per the above discussion. The contribution of each sector is also shown. Looking first at the final column, it can be seen that the share of SA value added which is embodied in exports has been fairly constant over time at between 20 and 25%. This is quite large in comparison with other African economies (Hamilton et al., 2025; Mensah & de Vries, 2024). There was however a slight decline in the share of value added embodied in exports between 2007 and 2019. The share of jobs embodied in exports is also quite constant between 20 and 23%, tracking quite closely to the share of value added, although continuing to grow from 2007.

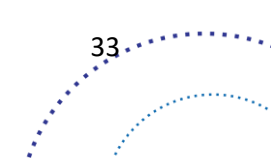
**Table 2: Share of total value added and jobs embodied in exports in South Africa by sector; 1994, 2007, 2019**

	Agric	Mining	Manu	Bus/Fin	Other	Total
<i>Share of value added embodied in exports</i>						
1994	0.9	6.8	5.3	2.1	5.8	20.9
2007	0.6	7.0	5.9	4.0	8.2	25.6
2019	0.8	5.1	5.6	3.2	9.0	23.6
<i>Share of jobs embodied in exports</i>						
1994	4.1	5.2	2.8	1.1	6.7	20.0
2007	2.9	2.0	4.7	2.4	9.6	21.5
2019	4.9	1.4	4.0	3.5	8.9	22.7

Notes: Table shows the share of total South African value added and jobs embodied in exports by sector for three representative years. Source: Authors calculations based on ASUT database (Mensah & de Vries, 2024).

In terms of sectoral contributions to value added and jobs embodied in exports, the largest is from other services at over a third of the total. A large part of this is transport and tourism. Mining is a large contributor in terms of value added; however the mining share of jobs embodied in exports as declined substantially since 1994. By contrast, agriculture contributes a small proportion of value added embodied in exports but a more substantial proportion of jobs. The share of South African jobs which are manufacturing jobs embodied in exports increased between 1994 and 2007, but declined again since, in line with the general pattern of employment deindustrialization. The manufacturing value added content of exports has been more constant; despite a slight decline this also suggests a capital intensification of the South African manufacturing which is producing for international markets. Business and Financial services continues to grow as a source of jobs embodied in exports, but somewhat surprisingly not of value added.

The implications of these results for policy in South Africa may be considered as follows. One, despite the fact that international demand does underpin between a fifth and a quarter of the South African economy both in terms of value creation and employment, there does appear to be a ceiling to this proportion. This





will likely have to be either accepted, or countered with much more intensive policy action. Second, sectors which are growing in terms of employment share embodied in exports seem to be declining in value added share, or vice-versa, suggesting that there is not one single sector which is really driving forward South African exports in both dimensions. In terms of modern tradable services – business and financial services - which are considered by some to have the potential to serve as a backbone of future services trade (Baldwin & Forslid, 2023), policymakers may wish to consider which barriers are holding back expansion of value added embodied in exports in this sector, even though the proportion of jobs embodied in business and financial services is expanding.




## 8 Implications for Policy in South Africa

We frame this section as implications for policy in South Africa rather than policy recommendations, because for the most part the findings of our analysis are designed to stimulate policy reflection and to spark a conversation over policy choices going forward. All is not well in South Africa in terms of structural transformation and productivity growth and, despite green shoots of modest recovery in the years since 2020 after a lost decade of the 2010s, this recovery is fragile and unbalanced. Yet, the choice is not as simple as simply trying to bring back the pattern of the 2000s, or emulate other even more rapidly growing countries of this or earlier time periods. We hope that the discussions earlier in this paper make clear that the situation has changed in terms not only of the global environment and the frontier of academic thinking over structural change and development, but also in the nature of different sectors of the economy themselves.

Let us start by recounting the key facts which emerged from the empirical results of the preceding sections, leaving aside all but those facts which should be of immediate concern to forward-looking South African policymakers. For ease of exposition, we present these in the form of a list.

1. The period 2010-2019 was characterized by negative overall labour productivity growth, negative or negligibly small productivity growth within all broad sectors, and growth-reducing structural change by which labour reallocated on average from more-to-less productive sectors. We label this a period of 'structural change emergency' in South Africa;
2. Productivity growth and structural change in this period stand out as exceptionally weak both compared to the previous decades, and in international comparison, regardless of the choice of comparison group;
3. The situation in the preceding decade (2000s) was much more positive, if not transformatively so. The rate of labour productivity growth on average was a healthy 2% per annum, and this growth was quite balanced between within-sector productivity growth in all major sectors and growth-enhancing structural change. Only mining underwent declines;
4. The period since 2020 has shown some recovery, with the rate of labour productivity growth back above 1% on average per annum. The structural change contribution has turned positive again. As this was an exceptional period of pandemic and recovery, it is unclear if these findings will persist;
5. Productivity growth in this recovery period is much less balanced than in the pre- 'emergency' decades. The recovery, such that it is, is driven almost entirely by within-sector productivity growth in services, with a small additional contribution of growth-enhancing structural change, which is also towards services. Productivity within manufacturing, mining, and other industry is declining as rapidly or worse than in the 'emergency' decade;
6. This post-2020 'recovery' is fairly balanced across provinces, with no clear leaders, and only Gauteng lagging a little behind. However, productivity within industry is declining in every province;
7. Deindustrialization and servicification is a consistent pattern across South African provinces and the country as a whole; at the national level the services sector which is expanding most is the low productivity trade services sector. Despite many workers reallocating into this sector, productivity within the sector is not growing substantially in any province other than Mpumalanga. The share of workers in the below-average productivity personal services sector remains constant and high;

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8. Value added and jobs embodied in South African exports has remained fairly constant since apartheid, but with no rapid expansion either overall or in any single sector. The ability of mining sector exports to sustain jobs in South Africa has substantially declined. Manufacturing is also declining in this regard.

Given this list of facts, many of which are quite sobering, what can policymakers do to stimulate productivity growth and maintain and accelerate a structural change recovery in South Africa? Reading this list, one might take this view that the appropriate policy response starts with a choice: should South Africa lean completely into services as the engine of recovery, growth, and structural transformation; or should South Africa attempt to revive the fortunes of the industrial sectors and attempt to return to the balanced patterns of earlier years?

Regardless of the answer to that choice, to which we will shortly return, three policy priorities would seem to be essential regardless. First, manufacturing and other industries cannot be allowed to continue acting as a drag on aggregate productivity growth. Neither a services-led recovery nor a balanced recovery can transpire with major sectors of the economy in persistent productivity decline. Second, personal services do not transform economies, and whilst trade services can contribute to such transformation, they cannot do so when the sector is operating at well-below-average productivity, and not showing any signs of within-sector productivity growth. Whether structural change towards services and productivity growth within services will lead South African development, or be one part of a more balanced development path, this must involve a) a greater employment expansion of the above-average productivity services sectors, and b) productivity growth in the large and expanding trade services sector. Third, whilst exports embodies a reasonable proportion of South Africa value added and jobs, the constancy of these proportions over the years suggests South Africa may have reached the limit of what can be achieved with conventional trade partners. Given the rapid restructuring currently taking place in global supply chains and what some observers consider to be a break in globalization (Gopinath et al., 2025), this may be an opportune time for South Africa to focus on new and different export markets, which may take the form of increased South-South or even within-Africa trade.

Having gone over these three essential priorities, our view is that the answer to the choice proposed before then become clearer. We stress, however, that we move now into the realm of subjective recommendation. The choice becomes less one of choosing between sectors to prioritize in policy, and more one of appropriate emphasis. We have stated elsewhere that, in general in the developing and middle-income world, going forward we envision a dual role for manufacturing and services, whereby manufacturing continues to generate value added, demand for services, and technological innovations, but may cease to be the mass absorber of low-skilled labour that it once was. It may instead be in services that such jobs are created, and with upgrading within the services sector, these jobs will still come with considerable productivity gains over subsistence agricultural work or lower-level trade or personal services (Hamilton et al., 2025). For productivity to cease declining in the manufacturing and other industrial sectors of South Africa, value added in this sector will have to expand. If South African policymakers cease to view manufacturing as a potential source of mass employment, but instead as a potential source of value flow to the economy (much as the mining sector was in earlier decades), this impacts the type of manufacturing activities which South Africa may wish to promote. High value added, modern, automated, and capital intensive manufacturing may not seem attractive from a structural change perspective when the goal is to absorb labour, but becomes much more attractive if the goal is to arrest productivity declines and increase revenue inflows which may themselves stoke demand for services.

If the priority for manufacturing is to increase value added, then the burden of employment expansion falls onto services. As figure 2 showed, this is already taking place in South Africa. But of equal importance is what is happening within the services sector. Looking at services from a structural change perspective, this sectors



needs to not only absorb labour, but also to absorb it at higher average productivity levels than it was before. This also necessitates the movement of workers from less-to-more productive services sub-sectors. South Africa does not have a large pool of surplus agricultural labour from which to draw, but there is a large pool of below average productivity trade services and personal services workers, and this pool appears to be expanding. To the extent to which the South African government wishes to engage in industrial policy, of which there has been a considerable resurgence of interest in recent years (Juhász et al., 2023; Lane, 2025; Mazzucato & Rodrik, 2023), we wish to emphasize that industrial policy need not concern itself exclusively with industry. In terms of industrial policy aimed at (productive) job creation, one might argue that in South Africa the policy priority should be on service sectors almost exclusively. In terms of industrial policy aimed at productivity enhancement, given that the literature emphasizes that within industry variation is greater than between industry differences, and this is reflected in the larger contribution of within-sector productivity growth to the structural change recovery in South Africa, much of the appropriate industrial policy response need not be sector specific. Rather, policy which focuses on cross-cutting/horizontal constraints to the growth of productive firms in the economy in general may alleviate some of the need to choose between sectors of focus when designing industrial policy.

## 9 Conclusion

This paper has argued and illustrated empirically that the decade beginning in 2010 in South Africa was so poor from a structural change and productivity growth perspective that it might reasonably be described as a 'structural change emergency', both in absolute and comparative terms. A modest, if unbalanced, post-2020 recovery implies that the worst may be over, but that policymakers in South Africa face a crossroads and a series of difficult decisions. The services-led nature of the modest recovery is in tune with global trends, and with expectations at the frontier of the academic conversation, but betrays the fragility of a recovery which is lacklustre, unbalanced, and held back by continued cross-province declines in the productivity of industry. We argue that patterns of employment deindustrialization and servicification seem set in South Africa, and that policymakers have little option but to continue looking to services sectors as a source of labour absorption. But this is not the whole story. Productivity declines in manufacturing and other industries must be arrested which implies the need for expansion of the manufacturing share of value added. Such expansions may also further facilitate job creation in services by bringing the revenues necessary to underpin domestic demand. South Africa may have emerged from the structural change emergency, but the recovery has a long way to go.

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## Appendix A: Historical Evolution of the Structural Change Literature

The centrality of structural transformation to economic growth goes back almost as far as the study of economics itself. Adam Smith (1776) explicitly discusses the processes of industrialization and agricultural modernization as catalysts of the industrial revolution. Nevertheless, specifically inter-sectoral models became formalized in the mid-20th century. Kuznets (1955) provided a major early analysis of the relationship between structural change, economic growth, and inequality in advanced economies, with discussion of the implications for developing countries. However, from a developing country perspective, their key contribution was from W. Arthur Lewis.

Lewis (1954) observed the low productivity levels and large surplus labour in the agriculture sectors of developing countries at the time, and their comparatively minuscule manufacturing and other higher-productivity ‘modern’ sectors. He showed that a process through which workers could be moved from agriculture and reallocated to such sectors would come with no initial cost to agricultural productivity, because the sector was effectively operating at zero marginal productivity, although over time agricultural productivity would have to also increase so as to maintain food supplies to an expanding non-agricultural workforce. This model was further formalized by Ranis and Fei (1961), and re-derived by Jorgenson (1961) to dispense with the necessity of the zero marginal productivity assumption.

The key messages of the Lewis-Ranis-Fei model from the perspective of policy are as follows. First, because early development relies on absorbing surplus labour from agriculture, policy should encourage labour-intensive manufacturing and smooth the transition of workers into this sector. Means through which this can be done are to reduce barriers to internal mobility, and particularly incentivize firms that generate large-scale employment. Second, because the reinvestment of profits is crucial for manufacturing sector growth, policy should support capital accumulation and reinvestment in this sector. This requires the maintenance of functioning credit markets and a stable business environment with low corruption and low expropriation risk. Third, because there will come a point at which surplus agricultural labour is exhausted, policy must be ready to promote upgrading within the manufacturing sector. This particularly involves maintaining an environment which is favourable to technology adoption. Fourth, because agricultural productivity will also have to rise at this point, unproductive agriculture will need to be discouraged. This latter policy point can prove particularly sensitive in developing country settings because it may necessitate the reduction of agricultural subsidies and the consolidation of agricultural land.

Despite the sophistication of these early structural change models, the importance of structural change in growth lacked prominence for many of the subsequent decades. This is likely because of the impact of the Solow (1956) model of economic growth, which shifted the growth literature dramatically towards the advancement of single-sector models and the refinement of the processes of efficiency, capital deepening, and technological progress (within-sector productivity growth) at the expense of dual economy and between-sector perspectives. Nevertheless, empirical analyses of what were then real-time examples of rapid, transformative economic growth continued to uncover a strong structural change component (Chenery & Syrquin, 1975). Among the set of rapidly emerging economies, four East Asian economies - South Korea, Taiwan, Hong Kong, and Singapore - collectively, the ‘Asian Tigers’ prominently stood out. Empirical analyses of these 21st century ‘growth miracles’ pointed to a huge role for structural transformation and particularly industrialization (Nelson & Pack, 1999). The subsequent emergence of China cemented this observation (Chen et al., 2011; Timmer, 2000). Structural change now appeared to be central not just to the growth miracles of the past in the period of industrial revolution, but also the miracles of the present.