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Unlocking Manufacturing Growth in South Africa: Firm Productivity, Labour Mobility and Participation

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Unlocking Manufacturing Growth in South Africa: Firm Productivity, Labour Mobility and Participation

Carol Newman[1]

Abstract

This paper examines the sources of South Africa's manufacturing underperformance through the lens of three interrelated mechanisms: within-firm productivity growth, the between-firm reallocation of resources, and labour mobility and participation. While manufacturing has historically played a central role in structural transformation by supporting productivity growth, export expansion, and relatively stable formal employment, its contribution to output and employment has declined steadily over the past two decades. The paper argues that this decline cannot be understood through aggregate trends alone. Instead, it reflects how distortions across firms and workers disrupt these mechanisms, constraining firm upgrading, weakening reallocation toward more productive producers, and limiting the extent to which labour mobility and participation translate into upward progression for workers and productivity growth for firms. Drawing on evidence from South Africa and the international literature, the paper shows that constraints operate across all three mechanisms. 1) Within-firm productivity growth is constrained by uneven innovation and technology adoption, weak investment, selective productivity spillovers, infrastructure unreliability, and gaps in managerial and workforce capability. 2) Between firms, labour and capital are not reallocated efficiently toward more productive producers. Market power, weak productivity-enhancing reallocation, tariff-induced distortions, financial frictions, and the long-run effects of apartheid-era labour market restrictions all contribute to allocative inefficiency. 3) Labour mobility in manufacturing does not consistently function as a channel of upward progression. Worker transitions are often short-lived and weakly aligned with productivity differences across firms, while access to higher-paying firms remains stratified by gender and education. The paper proposes a "productivity-proofing" framework for policy design, under which all policies and regulations are evaluated in terms of their effects on firm capability, reallocation, contestability, and worker mobility. A more coherent productivity-centred policy approach is necessary to restore manufacturing as a driver of inclusive growth and structural transformation.

Keywords: Manufacturing, productivity, allocative efficiency, firm heterogeneity, labour mobility, industrial policy, productivity proofing

JEL classification: D22, D24, O14, O25, L60

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EXECUTIVE SUMMARY

South Africa's manufacturing sector occupies a central yet increasingly fragile position in the country's growth trajectory. Historically, manufacturing has played an important role in driving structural transformation, supporting productivity growth, and generating relatively stable formal employment. Over the past two decades, however, its contribution to output and employment has steadily declined. Manufacturing's share of GDP has fallen sharply since the early 2000s, employment has contracted persistently, and export dynamism has weakened. These trends raise broader concerns about long-run growth, labour absorption, and inclusive development.

This paper argues that manufacturing's underperformance cannot be understood through aggregate trends alone. Beneath the aggregate decline lies a more complex structural reality characterised by large productivity differences across firms, high and uneven mark-ups, firm and worker churn that does not reliably generate productivity-enhancing reallocation, concentrated export participation, and labour mobility that often reflects churn rather than upward progression. To explain these patterns, the paper examines three interrelated mechanisms: (i) productivity growth within firms, (ii) reallocation of resources between firms, and (iii) labour mobility and participation. Taken together, these mechanisms provide a structured lens through which to understand how the processes of firm upgrading, competitive reallocation, and labour progression are weakened in South African manufacturing.

The first set of constraints affects within firm productivity growth. Firms that engage in innovation, adopt new technologies, or participate in export markets tend to perform better, yet these activities are concentrated among a relatively small group of more capable firms. Spillovers from trade and foreign linkages do occur, but the available evidence suggests they operate primarily through vertical channels and are constrained by high trade costs, logistics inefficiencies, and barriers to accessing intermediate inputs. Labour mobility also has the potential to transmit knowledge across firms, but in practice these gains are uneven and tend to accrue to firms that are already more productive.

These dynamics are compounded by the broader operating environment. Infrastructure reliability, particularly in electricity and logistics, acts as a significant productivity wedge. Persistent shortages and inefficiencies raise production costs, reduce capacity utilisation, and weaken export competitiveness, thereby affecting both short-run firm performance and longer-term investment decisions. More broadly, the declining investment levels may have implications for the pace of technology adoption, productive upgrading and capacity expansion within the manufacturing sector. At the same time, managerial and organisational capability, alongside worker skills, play a critical role in shaping productivity outcomes. Skills constraints persist, and large-scale training interventions have delivered modest and often short-lived gains.

A second set of constraints relates to how resources are allocated between firms. Even where productive firms exist, aggregate performance remains weak if labour and capital are not reallocated toward them. The evidence indicates that South Africa exhibits significant misallocation. Market structure plays a central role. While concentration and high mark-ups may partly reflect the successful expansion of productive firms, persistently high mark-ups and limited firm dynamism raise concerns about contestability and the extent to which resources flow toward the most productive producers. In this environment, productivity-enhancing reallocation may be weaker than it could be, contributing to persistent productivity dispersion.

Policy-induced distortions further reinforce these patterns. Trade protection, particularly through tariffs, can unintentionally allow less productive firms to retain resources, weakening the process through which capital shifts toward more efficient producers. These effects highlight the tension between short-term support for domestic industry and longer-term productivity outcomes. In addition, historical legacies continue to shape

present-day allocation. Apartheid-era labour market restrictions have left persistent imprints on how labour is distributed across firms and locations.

The third set of constraints concerns labour mobility and participation. In principle, labour mobility can enhance productivity by reallocating workers toward more productive firms and facilitating knowledge diffusion. In South Africa, however, mobility does not consistently perform this role. Worker transitions between firms are substantial, but often short-lived and weakly aligned with productivity. As a result, mobility frequently reflects churn rather than upward progression.

These dynamics are further shaped by segmentation in labour market participation. Outcomes differ significantly by gender and education, with women and lower-skilled workers facing reduced access to higher-quality employment. Structural constraints, including spatial mismatch, informational frictions, and limited market access, restrict both entry into manufacturing and movement between firms. Labour market institutions add an additional layer of complexity. Wage-setting arrangements, hiring incentives, and regulatory interventions influence mobility patterns, but do not consistently support sustained progression. Instead, they often reshape the pathways through which workers move, without fundamentally strengthening their ability to access and remain in higher-productivity employment. As a result, labour mobility does not reliably function as a channel for productivity-enhancing reallocation.

Against this backdrop, South Africa's policy landscape for industrial development is ambitious, encompassing industrial strategy, trade policy, competition law, infrastructure investment, labour market regulation, and skills development. The central question, however, is whether these policies are effectively aligned with the constraints identified above. The evidence suggests that while many relevant instruments are in place, policy is not consistently organised around the mechanisms that drive productivity growth. Within firms, policy tends to emphasise frontier innovation rather than the diffusion, adoption and investment challenges that constrain most firms. Between firms, policies affecting competition, trade, and localisation are not always evaluated in terms of their impact on allocative efficiency and contestability. In the labour market, policies address participation and equity concerns but are less clearly linked to progression and mobility across firms.

To address these gaps, the paper proposes embedding a "productivity-proofing" framework into policy design. The central idea is that policies should be systematically assessed in terms of how they affect the underlying mechanisms of productivity growth. In particular, this involves evaluating whether policies improve or distort the allocation of labour and capital, strengthen or weaken contestability and entry, support firm capability upgrading, and enable movement of workers toward higher-productivity firms. Such a framework does not replace other policy objectives, but ensures that interventions do not inadvertently undermine the processes required for sustained growth.

Ultimately, South Africa's manufacturing challenge lies not simply in declining output shares or insufficient industrial support, but in the weakening of the mechanisms that link manufacturing to structural transformation: firm upgrading, competitive scaling, and labour progression. When constraints across these dimensions reinforce one another, productivity growth slows and inclusive employment opportunities narrow. Restoring manufacturing performance therefore requires a coordinated policy approach that strengthens these mechanisms simultaneously. A productivity-centred framework that aligns industrial, trade, competition, infrastructure, and labour market policies and regulations is essential.

1. Introduction

South Africa's manufacturing sector occupies a central yet increasingly fragile position in the country's growth trajectory. Manufacturing has historically played an important role in driving structural transformation, supporting productivity growth, and generating relatively stable, formal employment. Yet over the past two decades, its contribution to output and employment has steadily declined. Manufacturing's share of GDP has fallen sharply since the early 2000s, employment has contracted persistently, and export dynamism has weakened. These trends have raised concerns not only about sectoral performance, but about the broader implications for long-run growth, labour absorption, and inclusive development.

Policy debate frequently emphasises cyclical factors, infrastructure constraints, or global conditions as explanations for the weakness of the manufacturing sector. While these factors matter, they do not fully explain the persistence and depth of the sector's underperformance. Beneath aggregate decline lies a more complex structural reality: substantial heterogeneity across firms, high and uneven mark-ups, weak firm dynamism, concentrated export participation, and persistent productivity dispersion. At the same time, labour mobility within the sector, while substantial is rarely associated with job progression, and participation in higher-quality manufacturing employment remains stratified by gender and skill.

This paper argues that understanding manufacturing's trajectory requires moving beyond aggregate trends to examine three interrelated dimensions: (i) productivity growth within firms, (ii) reallocation of resources between firms, and (iii) labour mobility, and participation.

First, productivity growth within firms is central to competitiveness and long-run income growth and depends critically on firms' ability to invest in new technologies, productive capacity and organisational upgrading. Firm-level evidence shows persistently weak total factor productivity (TFP) growth in South African manufacturing alongside large and persistent productivity dispersion. Low-productivity firms do not systematically converge toward the frontier, and high-productivity firms do not appear to expand sufficiently to drive aggregate gains. This points to constraints to within-firm productivity growth.

Second, evidence shows significant labour and capital misallocation in South Africa, particularly among small-medium sized firms. Market structure, merger dynamics, financial constraints, trade distortions, and policy-induced wedges all shape these reallocation dynamics, which have significant implications for aggregate productivity growth.

Third, manufacturing's role in economic development depends on how workers enter, move within, and progress through employment in the sector. Labour mobility in South African manufacturing is substantial, yet often short-lived and poorly aligned with productivity differences across firms. Mobility frequently reflects churn rather than upward progression. Access to higher-productivity firms is central to earnings growth for workers, however, participation remains stratified by gender and education, and barriers to upward mobility into higher-paying firms reinforce inequality. Entry into manufacturing employment does not guarantee stable or upwardly mobile career paths.

Understanding the manufacturing sector requires an evaluation of the constraints that affect each of these mechanisms: (i) within-firm productivity constraints; (ii) between-firm resource allocation; and (iii) labour mobility and participation. In unpacking these various dimensions, this paper challenges the current policy architecture, in particular, by questioning the extent to which it targets the constraints that bind. The paper proposes a "productivity-proofing" framework for policy, whereby it is not only industrial policy that should be viewed through a productivity lens: trade policy, competition law, product market regulations, labour market policies, spatial planning and policies in relation to education and skills should also be evaluated, not only for their equity or protection objectives, but also to ensure that they do not inadvertently affect factor mobility and allocative efficiency.

The paper proceeds as follows. Section 2 documents long-run trends in manufacturing output, employment, market structure, and trade exposure. Section 3 examines the evidence for the three core mechanisms underlying the productivity challenge facing the manufacturing sector (constraints on within-firm productivity growth, frictions in between-firm reallocation, and labour allocation and participation constraints) and synthesises domestic and international research to interpret these patterns. Section 4 discusses the existing policy architecture mapping current policy onto these three mechanisms and identifies areas for policy alignment. Section 5 concludes.

2. Manufacturing performance and structural context

This section provides a descriptive mapping of South Africa's manufacturing sector, situating recent trends in an international context. It presents evidence on long-run trends in output, employment, market structure and manufacturing trade.

2.1 Output and employment

Over the past two decades, South Africa's manufacturing sector has experienced a sustained decline in its share of GDP, both in absolute terms and relative to key emerging market economies.[2] As illustrated in Figure 1, manufacturing value added as a share of GDP has persistently declined since the early 2000s, falling from 19% to 12-13% by 2024. While manufacturing shares have generally been trending downward across the BRICS (Brazil, Russia, India, China and South Africa) economies, South Africa's contraction was earlier and more persistent. China's share has also declined, but from a much higher base and remains well above the other economies throughout. Focussing on the last decade (see Figure A1 in the Appendix for a more detailed view), South Africa's manufacturing share has stabilised at a low level, with Brazil and Russia converging toward similar levels and India narrowing the gap after a post-2015 decline. The post-COVID-19 period, was characterised less by strong recoveries than by convergence at relatively modest manufacturing shares, indicating weak manufacturing momentum across these economies rather than a uniquely sharp recent deterioration in South Africa.[3]

The decline in manufacturing's contribution to output has been mirrored by a sustained contraction in employment. As shown in Figure 2, manufacturing employment fell from approximately 15-16% of total employment in the early 2000s to below 10% by the early 2020s, consistent with the long-run decline documented by Bhorat and Rooney (2017). This contraction has been substantially sharper than in Brazil, Russia, and India, where manufacturing employment shares have remained comparatively stable over the past decade. This suggests that South Africa's manufacturing sector has not only weakened in output terms but has also lost ground as a source of labour absorption relative to peer economies.

In absolute terms, total manufacturing employment declined from just under 1.3 million workers in 2011 to slightly above 1.09 million in 2021, implying a net loss of over 200,000 jobs (Stats SA, 2023). Employment losses were concentrated in labour-intensive subsectors.[4] Only the food and beverages sector recorded net employment gains and now accounts for the largest share of manufacturing employment (22.8%). The

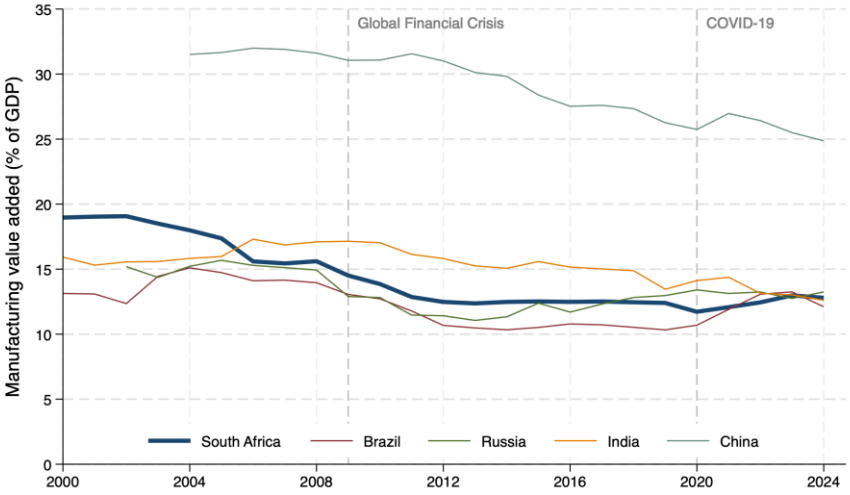
[2] This pattern echoes those highlighted in earlier studies emphasising the long-run contraction of non-mineral tradables, particularly manufacturing, as a central feature of South Africa's growth and employment trajectory (Rodrik, 2008).

[3] Official national accounts confirm these trends: real manufacturing value added declined between 2012 and 2021, with the most severe contraction occurring during the COVID-19 shock, when output fell by nearly 12 per cent in a single year, followed by only a partial recovery thereafter (Stats SA, 2023).

[4] These include textiles, clothing and footwear (-42%), wood and paper products (-28%), and metals and machinery (-23%).

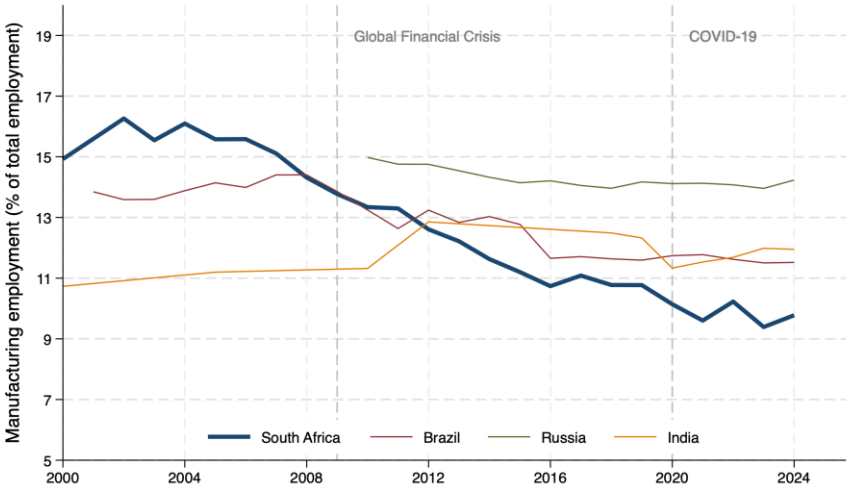
persistent shedding of labour reinforces concerns that manufacturing's role in providing stable formal employment has weakened.[5]

Figure 1: Manufacturing value added as a share of GDP 2000-2024



Source: Author's visualisations based on data extracted from the World Bank, World Development Indicators. Manufacturing value added as a share of GDP (NV.IND.MANF.ZS), latest available data.

Figure 2: Manufacturing share in total employment 2000-2024



Source: Author's visualisations based on data extracted from ILOSTAT (International Labour Organization). Employment by economic activity (ISIC Rev.4), manufacturing, as a share of total employment.

These sub-sectoral patterns in employment are mirrored in measures of firm performance and investment. Profitability has deteriorated across most manufacturing sectors, with aggregate profit margins for the sector as a whole falling steadily over the past decade, reaching just 2% in 2021 (Stats SA, 2023). Particularly sharp declines are evident in metals, metal products, machinery and equipment, transport equipment and coke, petroleum, chemical products, rubber and plastic. There is also heterogeneity across sub-sectors in the extent of income generation. Capital-intensive sectors, in particular, coke, petroleum, chemical products, rubber and plastic, and transport equipment, account for a disproportionate share of manufacturing income, while generating a much smaller share of total employment, further highlighting a production structure

[5] This contraction also has implications for jobs in services given the interlinkages between the two sectors (Treganna, 2008).

skewed toward activities with lower labour absorption (Stats SA, 2023). Capital expenditure data show that investment has become increasingly concentrated in a narrow set of sub-sectors, notably coke, petroleum, chemical products rubber and plastic, food and beverages, and transport equipment, while investment in labour intensive activities (with the exception of food and beverages) has weakened substantially (Stats SA, 2023).

These sectoral shifts occurred against a backdrop of weakening investment at the national level. Gross fixed capital formation (GFCF) has declined substantially since the mid-2010s. Following a prolonged period of expansion during the 2000s, investment peaked in the mid-2010s before entering a sustained decline. By 2023, real GFCF remained more than 10% below its 2015 level, while the investment rate had fallen from approximately 18% of GDP to 15.5% (TIPS, 2024). Particularly concerning from a manufacturing perspective is evidence that manufacturing's contribution to total fixed investment has fallen over time (South African Reserve Bank, 2020). These trends suggest that manufacturing's declining contribution to output and employment has been accompanied by a weakening capacity to expand productive assets and upgrade technology, raising concerns about the sector's longer-term productivity performance and growth potential.

Taken together, these trends depict a manufacturing sector that has experienced a sustained erosion in its role as a driver of output growth and employment, both in absolute terms and relative to comparator economies. The evidence highlights not only a long-run decline in manufacturing's aggregate importance, but also a weakening capacity to generate jobs and absorb labour, alongside shifts in activity toward more capital-intensive segments. These patterns raise important questions about the nature of employment opportunities within manufacturing, the productivity performance underpinning sectoral outcomes, the weakness of investment and capital formation, and the extent to which resources and workers are allocated toward higher-performing activities.

2.2 Firm landscape and market structure

This section describes the key features of the firm landscape in the sector.

2.2.1 Firm size distribution

As illustrated in Table 1, in 2021 large firms account for around 77% of income in the South African manufacturing sector while employing well under half of workers. Conversely, micro and small firms together account for 40% of employment but only 12% of income. This points to very large productivity and/or price-cost margins differentials by firm size. Even without measuring TFP directly, the income-employment gap implies that value added per worker is dramatically higher in large firms than in small and micro enterprises.

There is significant heterogeneity across broad sub-sectors of manufacturing in terms of the relative contribution of different sized firms. Large firms account for 83-90% of income in food products and beverages, coke, petroleum, chemical products, rubber and plastics and transport equipment. In contrast, in textiles, clothing leather and footwear, small and micro enterprises play a central role in income generation: large firms account for just 26% of total income while small and micro enterprises together account for 37% of income. This contrasts with all other manufacturing sub-sectors where income is concentrated in large firms. The prominence of smaller producers is consistent with a production structure characterised by relatively low capital requirements and a greater reliance on labour. Importantly, this organisational structure helps to contextualise the sharp employment losses documented earlier: textiles, clothing, leather and footwear experienced one of the largest contractions in employment over the last decade.

Aterido et al. (2019) further show that firm growth across size classes is extremely limited. Transition matrices indicate high persistence, with the majority of firms remaining in the same employment size category several years later, and very little upward movement from micro and small firm categories.

Table 1: Share of income and employment by firm size in manufacturing 2021

	Large	Medium	Small	Micro
Total manufacturing				
Share of income	77%	11%	5%	7%
Share of employment	42%	18%	12%	28%
	Share of income			
Type of manufacturer	**Large**	**Medium**	**Small**	**Micro**
Division 30: Food products and beverages	84%	9%	3%	4%
Division 31: Textiles, clothing, leather and footwear	26%	38%	16%	21%
Division 32: Wood, wood products, paper, publishing and printing	66%	14%	7%	12%
Division 33: Coke, petroleum, chemical products, rubber and plastic	83%	9%	4%	4%
Division 34: Glass and other non-metallic mineral products	62%	16%	11%	12%
Division 35: Metals, metal products, machinery and equipment	62%	14%	8%	15%
Division 36: Electrical machinery and apparatus	67%	16%	8%	10%
Division 37: Telecommunication, medical and optical equipment	54%	20%	10%	16%
Division 38: Transport equipment	90%	4%	2%	4%
Division 39: Furniture, other manufacturing and recycling	60%	14%	9%	17%

Source: Based on data presented in Figure 2 and Table 8 of Manufacturing industry: Financial, 2021 (Stats SA, 2023). Firms are classified by the total value of sales of manufactured products. Large firms are those with sales exceeding R280.5 million; medium firms record sales between R71.5 million and R280.5 million; small firms between R27.5 million and R71.5 million; and micro firms between R3.98 million and R27.5 million.

2.2.2 Industry concentration

While the firm size distribution highlights stark differences in income and employment generation across enterprises, it does not by itself reveal how competitive the sector is or how easily resources can shift from low- to high-productivity firms. Concentration measures provide the missing link by capturing the extent to which output and income are dominated by a small number of firms thus providing insights into the broader market structure that shape firms' incentives to enter, expand, innovate or exit.

Income in South African manufacturing is concentrated among a small number of large producers in most sub-sectors. On aggregate, the five largest firms accounted for 12% of total manufacturing income in 2021, rising to 21% for the top 10 firms and just over 30% for the top 20 (Stats SA, 2023). Concentration increases sharply further up the distribution with the top 100 firms generating over half of the income in the sector. There is, however, substantial heterogeneity across sub-sectors (Stats SA, 2023). Capital-intensive sectors such as transport equipment and coke-petroleum, chemical products, rubber and plastics are highly concentrated, with the top five firms accounting for 45-56% of income, and the top 20 firms close to or exceeding 70%. These patterns point to production structures dominated by large incumbents, consistent with high capital requirements and limited scope for entry. In contrast, textiles, clothing, leather and footwear stands out as an exception: the top five firms account for just 14% of income, and even the top 20 firms less than 27%, reflecting a far more fragmented structure with a large number of small and micro producers. Notably, this is the sub-sector that experienced some of the largest employment losses over the past decade.

Taken together, these patterns place the weak aggregate performance in South African manufacturing in the context of a firm landscape characterised by dominant incumbents in capital-intensive activities alongside fragile, fragmented production in labour-intensive sectors. High levels of concentration are not in themselves evidence of inefficiency. Indeed, the evidence presented in section 2.2.1 suggests that large firms account

for a disproportionately large share of income relative to employment, implying substantially higher value added per worker than among small and micro enterprises. In some industries, concentration may therefore arise because more productive firms expand and capture market share, reflecting efficient scale economies and the growth of successful firms. The key policy question is whether concentration reflects such productivity-enhancing scaling or whether it is due to barriers to entry, limited contestability, or sustained rents among incumbent firms. Distinguishing between these explanations is critical because aggregate productivity depends not only on the existence of productive firms, but also on whether resources can continue to flow towards the most productive producers over time. At the same time, the vulnerability of less concentrated, labour-intensive sectors suggests constraints to the survival and growth of small firms, raising further questions about whether productive entrants are able to scale and compete effectively over time.

2.2.3 Mark-ups

While concentration ratios describe how income is distributed across firms, mark-ups provide a more direct measure of pricing power and are central to understanding how competition and rent extraction shape productivity, investment and labour outcomes. A large international literature shows that persistently high mark-ups can weaken incentives to innovate and expand, distort resource allocation and lead to worse labour market outcomes (Aghion et al., 2005; De Loecker et al., 2020; Amodio et al., 2020).

Recent evidence for South Africa shows that mark-ups in manufacturing are both high and unevenly distributed across sectors. Using firm-level tax administrative data for the period 2012-2019, Kreuser et al. (2024) estimate mark-ups for South African manufacturing and show that, despite a decline over time, levels are high by international standards and exhibit substantial dispersion across firms and industries.[6] The distribution of mark-ups is rightly skewed: a relative small number of firms charge very high mark-ups while the median firm exhibits much lower pricing power. This pattern mirrors international evidence from advanced economies, where rising aggregate mark-ups are driven primarily by the expansion and reallocation of market share toward high mark-up firms rather than broad-based increases across all producers (De Loecker and Eeckhout, 2018; De Loecker et al., 2020).

Within South African manufacturing, high mark-ups are closely associated with firm size and industry characteristics. Large firms tend to charge significantly higher mark-ups than small and micro enterprises, consistent with the concentration patterns documented earlier. Mark-ups are particularly elevated in capital-intensive sub-sectors such as chemical, petroleum products and transport equipment, while more labour-intensive sectors display lower average mark-ups but also weaker profitability and greater vulnerability to contraction (Kreuser et al., 2024). Earlier work using industry-level data similarly documents persistently high price-cost margins in South African manufacturing, with limited evidence of competitive erosion over time (Aghion et al., 2008; Fedderke and Hill, 2011; Fedderke et al., 2018).

Taken together these findings suggest that market power in South African manufacturing is both unevenly distributed and structurally persistent. While, as mentioned, concentration and high mark-ups may partly reflect the successful expansion of productive firms, *persistently* high mark-ups can also indicate limited contestability and barriers to entry. The question is whether market structure facilitates ongoing productivity-enhancing reallocation or allows less productive firms to retain resources and market share.

[6] Budlender (2019) also presents evidence of a decline in mark-ups in South Africa between 2010-14 but argues that conclusions about whether mark-ups are high or low depends on how they are estimated, highlighting the need for caution in drawing strong conclusions from cross-industry patterns.

2.2.4 Firm dynamics

A large body of international evidence emphasises that aggregate productivity growth and employment creation depend not only on the performance of incumbent firms, but also on the dynamics of firm entry, exit and expansion (Bartelsman et al., 2013; Melitz, 2003; Melitz and Polanec, 2015). High growth economies tend to be characterised by frequent entry of new firms, the exit of unproductive producers, and the reallocation of market share toward more productive incumbents. In manufacturing in particular, these dynamics underpin both technological upgrading and job creation, as new firms introduce new technologies and competitive pressure forces incumbents to innovate, expand or contract.

The evidence on firm dynamism in South Africa presents a more nuanced picture. Earlier studies using administrative tax data point to relatively weak net employment creation through firm entry and exit, alongside an ageing firm population and limited contribution of young firms to aggregate employment. Aterido et al. (2019) document a declining share of young firms over time with nearly 60% of firms more than ten years old, and firm churn concentrated among micro firms. Consistent with this, Tsebe et al. (2018) show that employment growth in South Africa is driven primarily by incumbent firms, while the contribution of firm entry to net job creation is small and the role of exit in job destruction is muted relative to higher growth economies.

More recent evidence, however, suggests that South Africa may not be characterised by low churn per se. Using administrative tax data, Visagie et al. (2026) document relatively high levels of business and worker turnover, with rates of job and establishment reallocation comparable in several respects to OECD economies. However, this substantial gross churn translates into limited net job growth and weak structural transformation highlighting that substantial churn may coexist with weak productivity growth if labour and capital are not systematically reallocated toward more productive firms.

Comparative evidence from other low- and middle-income countries also highlights the importance of distinguishing between turnover and productivity-enhancing reallocation. Diao et al. (2025) show that in countries such as Ethiopia and Tanzania, manufacturing employment growth during growth episodes has been driven largely by the entry and expansion of small, low-productivity firms, with limited employment growth among larger, more productive producers. This is in contrast to East Asian industrialisers where post-entry firm growth and formal sector expansion underpin employment reallocation and productivity gains.

For South Africa, the available evidence points to an important unresolved question. While there is clear evidence of firm and worker turnover, there remains relatively little direct evidence on post-entry scaling trajectories, survival dynamics and the extent to which firm growth and exit are systematically related to productivity in manufacturing. An important area for future research is therefore whether firm dynamics operate through a process whereby more productive firms expand and less productive firms exit, or whether firms instead remain stagnant over time with limited productivity-enhancing reallocation.

Taken together, the evidence on concentration, mark-ups and firm dynamics points to a manufacturing sector characterised by limited competitive churn and weak reallocation of resources across firms.

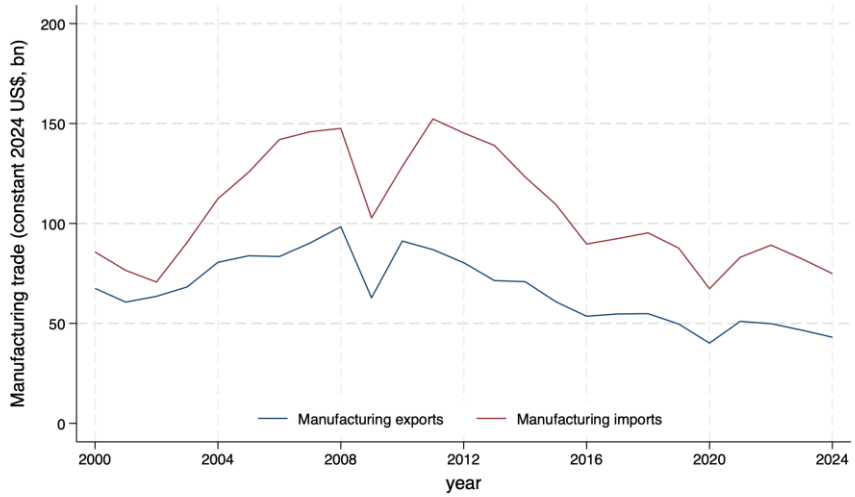
2.3 Trade exposure and international orientation

Market structure and firm performance in manufacturing are closely intertwined with exposure to international trade. Across countries, manufacturing sectors that are more integrated into export markets and global value chains tend to exhibit higher productivity levels, greater firm dynamism, and stronger competitive pressures, while import exposure shapes access to intermediate inputs, capital goods and technologies (Melitz, 2003; Bernard et al., 2007; DeLoecker, 2013). As such, trade outcomes provide an important descriptive lens into the extent to which manufacturing sectors are outward oriented and competitive.

Figure 3 shows that South Africa's manufacturing trade has undergone a clear structural deterioration since the mid-2000s, distinct from, but related to, trends in overall merchandise trade (see Figure A2 of the Appendix). In real terms, manufacturing exports and imports expanded steadily from 2000 to 2008, broadly tracking merchandise trade, before collapsing sharply during the Global Financial Crisis. While merchandise exports rebounded strongly in the early 2010s, the recovery in manufacturing exports is more muted and followed by a prolonged decline, falling persistently from the mid-2010s and remaining well below pre-crisis levels up to 2024.

Manufacturing imports follow a similar but earlier trajectory: after a brief post-crisis rebound, they trend downwards from around 2012-13. Coupled with the decline in manufacturing output, employment and exports, this decline likely reflects weak investment and industrial demand rather than successful import substitution. The COVID-19 shock reinforces these patterns: although both manufacturing and merchandise trade contracted sharply in 2020, the subsequent recovery in manufacturing exports and imports is weaker and less durable than for merchandise trade as a whole. This divergence is consistent with Edwards (2024), who characterises South Africa as facing an export crisis marked by stagnated real exports, declining export dynamism, and a hollowing-out of the manufacturing export base. Edwards (2024) shows that overall exports have failed to regain their pre-2008 contribution to growth and that manufacturing exporters account for most firm exits from exporting over the last decade.

Figure 3: Manufacturing trade 2000-2024



Source: Author's visualisations based on data extracted from the World Bank (2025). World Development Indicators. Washington, DC: World Bank. Retrieved from https://data.worldbank.org/indicator.

Evidence on export performance at the firm-level provides insight into which manufacturing firms participate in export markets and the characteristics of firms that account for the bulk of export activity. Using South African tax administrative data matched to customs records, Matthee et al. (2018) show that only a minority of manufacturing firms participate directly in export markets, and that export activity is highly concentrated among a limited number of firms. Exporting firms are systematically larger, they are more productive and pay higher wages than non-exporters. The largest contributions to export value come from multi-product and multi-destination firms. These patterns mirror international evidence and underscore the narrow and concentrated nature of South Africa's manufacturing export base.

In combination, these trends highlight the close alignment between manufacturing's external performance and its domestic trajectory. The prolonged decline in manufacturing exports and imports since the early 2010s mirrors falling output, employment contraction and weak investment, suggesting that trade outcomes are closely intertwined with broader structural dynamics in the sector.

3. Constraints to productivity growth

The evidence presented in section 2 depicts a manufacturing sector characterised by persistently weak aggregate performance. Output and employment have declined over the long run, while production, income generation, and export activity are increasingly concentrated among a small number of large, capital-intensive firms. Labour-intensive subsectors have contracted sharply, firm turnover does not appear to translate consistently into productivity-enhancing reallocation, and manufacturing trade has failed to recover its pre-crisis trajectory.

These aggregate outcomes, in particular declining manufacturing output shares and persistent job losses, suggest that constraints to productivity growth play a central role in shaping the aggregate performance of the sector. In this section we explore these constraints organized around three core underlying mechanisms: (i) within-firm productivity constraints; (ii) between-firm resource allocation; and (iii) labour mobility and participation. The discussion begins by presenting key trends in productivity growth, allocative efficiency and labour mobility that motivates these mechanisms.

3.1 Productivity growth, misallocation, and labour mobility and participation: key trends

The manufacturing sector in South Africa has experienced persistently weak TFP growth over the last two decades. Using detailed tax administrative data, Kreuser and Newman (2018) document the poor productivity performance of the sector since 2009, a finding reinforced and extended by Kreuser and Brink (2021) for the period 2010-2017. One explanation is low levels of firm-level technical efficiency suggesting that the existence of within-firm productivity constraints impeding technology upgrading and efficiency improvements. These studies also show, however, that the dispersion in productivity across firms is large and persistent over time, with limited convergence between low- and high productivity producers: low productivity firms do not systematically catch up, while high productivity firms do not expand sufficiently to drive aggregate gains. This suggests that a large share of measured productivity differences may also reflect allocative inefficiency (the extent to which output is concentrated in more productive firms).[7]

Indeed, large and persistent differences in living standards across countries are closely tied to differences in productivity. A central explanation for these gaps is the inefficient allocation of resources across firms. When labour and capital are not allocated to their most productive uses, aggregate total factor productivity (TFP) falls even if individual firms are technologically capable. While misallocation exists in advanced economies, it is typically more pronounced in developing countries, where factor markets function less efficiently and regulatory and institutional frictions are more pervasive (Restuccia and Rogerson, 2017; Bun et al., 2023). Seminal work by Hsieh and Klenow (2009) demonstrates the potentially large magnitude of these distortions, estimating that equalising marginal products of capital and labour to US levels would raise TFP by 30–50 percent in China and 40–60 percent in India.

This framework is directly relevant for South Africa given the large share of aggregate productivity changes that can be attributed to allocative inefficiency (Kreuser and Brink, 2021). Newman et al. (2019) quantify the magnitude of these distortions and estimate that misallocation of labour and capital reduced manufacturing TFP by between 16-22% over the period 2010–2014. Capital misallocation is the dominant driver, particularly

[7] It is worth noting that there is substantial heterogeneity in allocative efficiency across manufacturing subsectors (Kreuser and Brink, 2021). Food, paper, and chemicals and pharmaceuticals display relatively high allocative efficiency, with output more strongly concentrated among productive firms, whereas fabricated metals, wood and cork, furniture, and electrical equipment exhibit particularly weak allocation patterns. Industries with higher allocative efficiency tend to be more capital intensive and display higher capital elasticities of output.

among micro, small and medium-sized firms, while large firms exhibit more efficient allocation. These findings do not imply that concentration itself is a source of inefficiency. Indeed, the evidence presented in Section 2 suggests that output is often concentrated among larger and more productive firms. Rather, they suggest that aggregate productivity remains below its potential because labour and capital do not move as efficiently as they could towards the most productive firms.

Labour mobility plays an important role in the reallocation process and is a potential mechanism for productivity growth and wage progression, but only when mobility supports movement toward more productive firms. A central distinction emerging from the literature is between job churn, defined as frequent movements between jobs or between employment and non-employment, and job progression, defined as movement into more productive or higher-paying firms or occupations. Recent cross-country evidence shows that higher labour market dynamism in developing economies often reflects instability rather than progression, with frequent transitions into and out of marginal employment and limited persistence in higher-quality jobs (Donovan et al., 2023). In this context, high job churn does not signal efficient reallocation or upward mobility, but instead a 'slippery job ladder' where workers struggle to secure durable wage growth and stable employment.

Evidence from matched employer–employee administrative data in South Africa shows that job-to-job mobility in manufacturing is quantitatively substantial, with roughly 10% of workers switching employers annually (Hlatshwaya et al., 2020). However, many transitions are short-lived: nearly one-third of workers exit their new firm within one year.[8] Crucially, mobility does not consistently move workers upward along the productivity distribution. Transitions into lower-productivity firms are at least as common as moves into higher-productivity firms (Hlatshwaya et al., 2020). Shorter job spells and limited progression have direct implications for earnings trajectories. Further evidence from matched employer-employee tax data shows that wage levels in South Africa are strongly shaped by firm wage premia: workers who move to higher-paying firms experience substantial increases in earnings (Bassier, 2023). As a result, wage growth depends crucially on whether workers are able to access and remain in more productive, higher paying firms.

This suggests that there is a dual nature to the South African labour market where on one side there is an upwardly mobile group of productive workers that can transition to better jobs, while on the other there is a mass of low-productivity workers transitioning in and out of employment without moving up the job ladder. Where mobility does not facilitate such moves, transitions are more likely to reflect churn than sustained upward progression. These patterns imply that job churn does not reliably translate into improved matching, higher productivity, or sustained wage growth. As a result, labour reallocation does not play the productivity-enhancing role observed in more dynamic manufacturing environments.

Access to high-wage manufacturing jobs is shaped not only by firm dynamics and labour mobility, but also by broader patterns of labour force participation. The ILO data presented in Figures 4 and 5 show a persistent and sizeable gender gap in labour force participation in South Africa over the past two decades. Among the working-age population, male participation rates remain substantially higher than female rates throughout the period, although the gap narrows modestly over time. The disparity is even more pronounced among youth (ages 15–24), where participation rates for both men and women declined in the early 2000s and again during major economic shocks, the Global Financial Crisis and COVID-19, but remain consistently lower for young women.

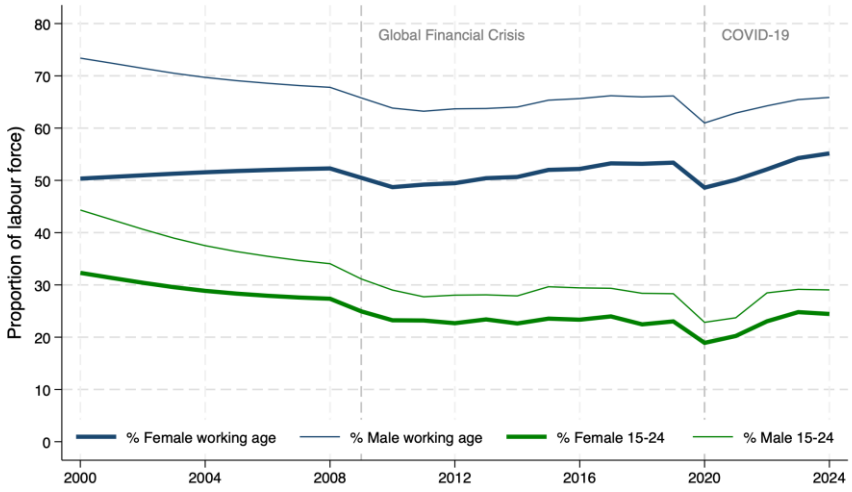
[8] This is part of a longer-term trend in South Africa. Hill et al. (2020) show that since the end of apartheid, South Africa has experienced declining employment stability with shorter job spells and greater concentration in unstable work, reflecting deep structural labour market segmentation.

Figure 5 highlights strong stratification by educational attainment. Participation rates rise sharply with education for both genders, but women with basic education exhibit particularly low and volatile attachment to the labour market, while those with advanced education display participation rates comparable to men. Taken together, these patterns suggest that access to employment, and therefore to high-paying manufacturing jobs, is highly segmented by gender and skill level.

These trends are consistent with Bassier and Gautham (2025) who show that sorting into lower-paying firms accounts for about 45% of the gender wage gap in South Africa's formal sector. While young women enter formal employment at similar firm pay levels as men, wage gaps widen rapidly over the employment lifecycle, reflecting weaker upward mobility into better-paying firms for women. Although women are almost as likely as men to change jobs, they are less likely than men to transition to firms offering higher wage premia. This is reflected in the rising gender wage gap documented in Pleace et al. (2023).

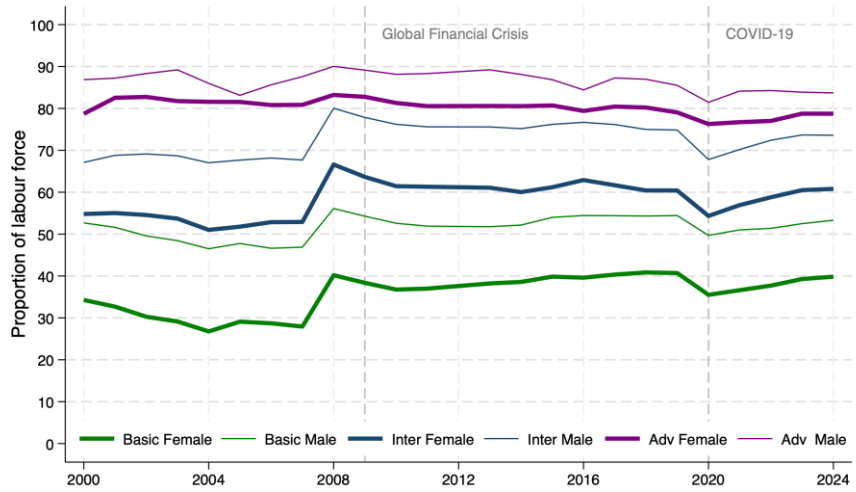
These findings highlight a critical distinction between participation and progression. Entry into manufacturing employment does not, on its own, guarantee access to stable or high-quality jobs. Instead, barriers to movement into more productive firms limit wage growth and reinforce inequality, even among workers who remain continuously employed. This distinction is particularly salient in a labour market characterised by persistently high unemployment and weak labour market outcomes for women and young workers (OECD, 2025). Manufacturing employment no longer reliably functions as a broad-based job ladder, with mobility often reflecting churn rather than progression. These patterns point to labour mobility and firm heterogeneity as central channels through which manufacturing performance translates into worker outcomes.

Figure 4: Labour Force Participation: Gender and youth



Source: Author's visualisations based on data extracted from the World Bank (2025). World Development Indicators. Washington, DC: World Bank. Retrieved from https://data.worldbank.org/indicator.

Figure 5: Skill level by gender



Source: Author's visualisations based on data extracted from the World Bank (2025). World Development Indicators. Washington, DC: World Bank. Retrieved from https://data.worldbank.org/indicator.

Overall, these empirical patterns motivate the three mechanisms used in the remainder of the paper to diagnose the productivity challenge facing the manufacturing sector in South Africa: (i) constraints on productivity growth within firms; (ii) frictions that impede the reallocation of resources across firms; and (iii) labour mobility and participation.

3.2 Within-firm productivity constraints

The first mechanism explores the factors that limit productivity improvements within firms: how effectively firms upgrade technologies, improve efficiency, and expand output.

3.2.1 Innovation and technology adoption

Innovation is widely recognised as a core mechanism for firm-level productivity growth, through formal research and development (R&D) investments, product and process upgrading, and the accumulation of intangible capital (Romer, 1990; Aghion and Howitt, 1992). South African evidence broadly aligns with this literature. Kreuser and Newman (2018) find a positive association between R&D expenditure and total factor productivity (TFP) in manufacturing. Using Business Innovation Survey data, Kahn et al. (2022) show that product and process innovations are positively associated with higher labour productivity, and that exporters are more likely to introduce product innovations. Steenkamp et al. (2018) find a positive elasticity of output with respect to R&D, despite low average R&D intensity. Kilumelume et al. (2025a), using administrative tax and customs data, show that firms undertaking large automation investments experience substantial increases in output, value added, value added per worker and TFP over subsequent years, alongside increases in employment and wages.

At the same time, innovation and adoption are highly uneven and shaped by firm capabilities and external exposure. International evidence shows that competitive pressure and trade can induce within-firm upgrading (Aghion et al., 2005; Verhoogen, 2008; Atkin et al., 2017). South African evidence is consistent with this pattern: Naidoo (2020) finds a positive association between innovation and export participation, while Kahn et al. (2022) show that exporters and firms with higher skilled labour shares are more innovation-active. Avenyo et al. (2024) document low and uneven adoption of advanced digital technologies in manufacturing, with capital constraints, skills, exporting status and foreign ownership strongly associated with adoption. Although policy instruments such as the Section 11D R&D Tax Incentive appear to increase reported R&D expenditure (World Bank, 2019), available evaluations do not provide statistically robust evidence of positive

productivity effects. Overall, the evidence suggests that innovation and technology adoption are associated with higher firm performance in South Africa, but that uptake and adoption is limited.

An important factor underpinning technology adoption is investment. The adoption of new machinery, automation technologies, digital systems and production processes generally requires substantial capital expenditure, while complementary investments in organisational systems and worker skills are often needed to realise productivity gains. The weakening investment trends discussed in Section 2 therefore have implications not only for productive capacity but also for the pace at which firms are able to adopt and diffuse new technologies, potentially limiting productivity growth even where technological opportunities are available.

3.2.2 Productivity spillovers

Productivity spillovers arise when firms benefit from external knowledge, technologies, and practices generated by other firms. International evidence shows that such spillovers operate through a variety of mechanisms including FDI, trade linkages, input sourcing, and labour mobility, but are neither automatic nor uniform (Aitken and Harrison, 1999; Javorcik, 2004; Amiti and Konings, 2007; Verhoogen, 2008; Atkin, Khandelwal and Osman, 2017; Poole, 2013; Newman et al., 2015). In South Africa, the available evidence suggests that vertical linkages are more important than horizontal ones. Sørensen (2020) finds no robust evidence that foreign presence in the same industry raises domestic firms' export sophistication, but documents patterns consistent with forward spillovers: foreign presence in upstream input-supplying sectors is associated with greater export complexity among domestic firms. Edwards (2024) shows that firms that both import and export outperform non-traders on multiple performance metrics, and that greater imported-input variety is positively associated with productivity. However, high tariffs, non-tariff barriers, and logistics inefficiencies increase the costs of importing and exporting, constraining these channels of knowledge diffusion. Labour mobility provides an additional spillover mechanism, but with uneven effects. Using matched employer–employee data, Hlatshwaya et al. (2020) find that high-productivity firms benefit from hiring workers from other high-productivity firms, while lower-productivity firms more frequently hire workers from similar low-productivity firms, leading to negative productivity spillovers.

Taken together, the South African evidence points to asymmetric spillovers. Knowledge diffusion operates primarily through vertical trade linkages and selective labour mobility, rather than through horizontal competition effects. Spillovers accrue disproportionately to firms already connected to foreign suppliers, engaged in two-way trade, or positioned higher in the productivity distribution. Rather than driving convergence, these mechanisms appear to reinforce existing capability differences.

3.2.3 Reliability as a productivity wedge.

South Africa's high-cost operating environment has become a significant constraint on within-firm productivity growth. The OECD Economic Survey (2025) emphasises that persistent electricity shortages, rail and port bottlenecks, rising administered prices, weak infrastructure, and regulatory frictions have weighed on investment, exports and firm dynamism over the past decade (OECD, 2025). This is consistent with international micro-evidence which shows that unreliable electricity reduces firm productivity: Abeberese et al. (2021) estimate that eliminating outages could raise labour productivity and TFP among Ghanaian manufacturing SMEs by roughly 10%, while Cole et al. (2018) find that outages significantly reduce sales, profits and TFP across African firms, especially those without backup generation.

The evidence from South Africa is consistent with these patterns. Ndubuisi et al. (2024) show that electricity crises are associated with significant job destruction in manufacturing, with disproportionately larger effects for energy-vulnerable sectors. Suenaga (2024) highlights economy-wide cost increases from electricity shortages, while Bhorat and Kohler (2025) find that loadshedding is associated with lower employment and

working hours, and generally negative effects on earnings. Although supply conditions in South Africa have improved, the OECD (2025) cautions that financial stress and infrastructure backlogs continue to pose risks to reliability of electricity supply, thereby posing significant risks to manufacturing sector productivity. At a macro level, Fried and Lagakos (2023) suggest that outages reduce aggregate productivity by discouraging firm entry and expansion, implying that reliability affects both short-run production and longer-run industrial development. Beyond their direct effects on production, reliability constraints may also weaken incentives for investment. Frequent electricity disruptions increase uncertainty, raise operating costs and reduce the expected returns to capital expenditure, making firms less willing to undertake long-term investments.

Logistics constraints represent a parallel productivity wedge, particularly for tradable manufacturing. The OECD (2025) documents persistent inefficiencies in rail freight and port operations, including congestion, equipment failures and declining terminal performance. These frictions raise inland transport costs, increase delivered input prices and reduce export competitiveness. Edwards (2024) argues that high trade and logistics costs operate similar to a tax on importing and exporting firms, limiting access to imported intermediates and dampening learning-through-trade channels. Logistics constraints may also affect investment decisions by reducing the attractiveness of expanding production capacity, particularly for firms operating in tradable sectors where competitiveness depends on timely access to inputs and customers.

3.2.4 Management, organisational capability, and skills.

A large body of international research shows that management and organisational capability are central to firm performance and productivity (Bertrand and Schoar, 2003; Bloom and Van Reenan, 2007). Management practices shape how firms organise production, allocate resources and adopt new technologies, and they complement technology upgrading: firms with stronger organisational systems yield higher returns to new technologies (Bloom et al., 2013). In developing countries, however, average management quality is much lower relative to advanced economies (Bloom and Van Reenan, 2007). Experimental evidence indicates though that management quality can be improved through well-designed interventions such as intensive, firm-embedded consulting (Bruhn et al., 2018; Iacovone et al., 2022; McKenzie and Anderson, 2021). Additional studies identify distinct managerial channels through which firm performance can improve: structured consulting that enhances managerial decision-making (Cai and Wang, 2022); interventions that reallocate managerial attention toward higher-return activities (Gosnell et al., 2020); and improvements in supervisory practices and organisational systems within firms (Adhvaryu et al., 2022). Recent work by Bloom et al. (2025) emphasises that management quality is central not only to productivity levels, but to firm scaling and economic dynamism. Well-managed firms are more likely to expand, adopt new technologies, and survive competitive pressure, while poorly managed firms remain stagnant. This shifts the narrative from management as a static correlate of productivity to management as a driver of structural transformation within sectors. Capability upgrading therefore plays a dual role: raising productivity within firms and strengthening the process of growth, selection, and reallocation across firms.

These findings from the international literature suggest that managerial capability could be an important policy-relevant constraint on productivity in South Africa. However, unlike several other emerging economies, South Africa lacks systematic survey-based evidence on management practices comparable to international benchmarks. As a result, it remains unclear whether management quality explains a meaningful share of productivity dispersion across firms or whether targeted management interventions would generate substantial returns.

Worker skills and organisational capabilities further shape within-firm productivity. Training and human capital investments are associated with productivity improvements and stronger adoption of new technologies (Acemoglu and Pischke, 1998). In South African manufacturing, employment growth has been

skill-biased, with expansion concentrated in higher-skilled occupations, particularly managers (Bhorat and Rooney, 2017), while weaknesses in the education and training system constrain the supply of appropriate skills. International evidence indicates that well-designed apprenticeship and training programmes can improve earnings and task complexity (Crépon and Premand, 2025), and that interventions targeting organisational practices, incentives and non-cognitive skills can improve worker and firm outcomes (Friebel et al., 2017; McKenzie, 2017, 2021; Barrera-Osorio et al., 2021; Adhvaryu et al., 2023; Chioda et al., 2021; Campos et al., 2017; Acevedo et al., 2020; Groh et al., 2016; Allemand et al., 2025). However, evidence from South Africa's Learnership programme, suggests that large-scale vocational interventions have delivered only modest and short-lived employment gains (Rankin et al., 2014).

Overall, international evidence suggests that managerial and worker capabilities matter for productivity growth, but in South Africa there remains important gaps in measurement and in understanding which capability-building efforts are most effective.

3.2.5 Summary

Overall, the evidence suggests that within-firm productivity growth in South Africa is constrained by a combination of limited and uneven innovation adoption, asymmetric spillovers, high-cost and unreliable operating conditions, and gaps in managerial and workforce capabilities. While firms that invest in R&D, adopt new technologies, engage in trade, or upgrade management practices tend to achieve higher productivity, these gains are concentrated among more capable and better-connected firms. Knowledge diffusion through trade and labour mobility is selective rather than broad-based, and infrastructure and logistics constraints act as persistent productivity wedges that raise costs and dampen expansion. At the same time, weaknesses in management quality, skills formation, and the effectiveness of large-scale training interventions limit firms' ability to absorb technologies and scale efficiently. Taken together, these factors suggest that productivity constraints are not driven by a single bottleneck but by a reinforcing set of capability, connectivity, and operating environment challenges that hinder firm-level upgrading.

3.3 Between-firm resource allocation

The second mechanism examines how labour and capital are allocated across firms. Even if some firms are productive, aggregate performance will remain weak if resources do not shift toward them. Understanding the sources of misallocation is critical for policy. Restuccia and Rogerson (2017) classify distortions into three broad categories. First, statutory distortions arise from regulations and taxes that vary systematically with firm characteristics such as size or sector. Second, discretionary distortions favour or penalise specific firms, including preferential tax treatment, subsidised credit, or distortions linked to corruption or cronyism. Third, misallocation can result from market imperfections such as monopoly power, weak property rights, or incomplete financial markets.

A growing empirical literature identifies specific mechanisms through which these distortions operate. Cross-country evidence from Bartelsman et al. (2013) shows substantial variation in within-industry allocative efficiency, with adjustment frictions and policy distortions explaining meaningful productivity differences. Asker et al. (2014) highlight the role of dynamic adjustment costs and volatility in generating persistent dispersion in marginal revenue products. More recent work deepens this understanding. Uras and Wang (2024) extend the framework by introducing distortions to firms' production techniques and show that such "technique wedges" can account for a substantial share of sectoral TFP losses, often exceeding those from capital distortions alone. Credit constraints are another central channel. Studies such as Caballero et al. (2008), Caggese and Cuñat (2013), Gopinath et al. (2017), and Midrigan and Xu (2014) show that limited access to finance prevents high-productivity firms from expanding and keeps capital in lower-productivity uses. Labour misallocation also plays an important role. Hsieh et al. (2019) show that improved allocation of

talent across occupations contributed to productivity gains in the United States, while Guner et al. (2008) demonstrate how size-dependent regulations can distort firm growth and labour allocation. Related work by Bento and Restuccia (2017) shows that distortions reduce firm size and lower productivity across the entire distribution, while Garicano et al. (2016) document the welfare costs of size-contingent labour regulations in France.

The findings from the international literature suggest that financial frictions, regulatory burdens, and other barriers to growth may be central to the manufacturing sector's underperformance in South Africa. Identifying and addressing these distortions is therefore essential for restoring allocative efficiency and improving aggregate productivity. In what follows, we review the literature in a South African context that attempts to identify specific sources of distortions. This review is not exhaustive but focuses on areas where credible empirical evidence is currently available.

3.3.1 Market power and weak competitive churn.

Patterns of market power provide an important lens through which to interpret misallocation and weak reallocation dynamics in South African manufacturing. Recent work by Kreuser et al. (2024) estimates industry-level markups for 2012–2019, and documents substantial heterogeneity across sectors. They show that while markups have declined for many smaller industries, sectors accounting for a large share of total sales experience more stable or rising markups, driven in part by compositional shifts toward surviving firms.

Kreuser and Brink (2021) show that structural characteristics differ systematically between industries with higher and lower allocative efficiency. Industries with stronger allocative efficiency display different output and capital concentration dynamics than less efficient ones, reinforcing the idea that market structure and scale interact closely with productivity outcomes. The persistence of productivity dispersion alongside concentrated output shares raises concerns that market power may be inhibiting effective reallocation.

Merger activity appears to be an important mechanism behind these patterns. Kreuser et al. (2024) find that a 1% increase in cumulative merger activity linked to a 0.27% increase in structural mark-up growth over the period. Large mergers play a disproportionate role, and the type of merger matters: vertical mergers are associated with rising structural and materials mark-ups but declining labour mark-ups, while large horizontal mergers tend to increase both labour and structural mark-ups. These findings suggest that rising market power in some segments of manufacturing is not simply a reflection of scale or productivity differences, but is closely linked to ownership changes and the integration of supply chains. Where markups rise without commensurate productivity gains, resource reallocation may be weakened.

These patterns also have direct implications for firm dynamics, which is central to allocative efficiency. Entry, exit and the scaling of high-productivity firms are the primary mechanisms through which labour and capital get reallocated to more efficient producers. When dominant firms command substantial market power, entry by new firms becomes less attractive and post-entry expansion more difficult. Smaller incumbents may face structural barriers to scaling, while low-productivity firms can persist in protected niches. The coexistence of high-markup incumbents and a large mass of low-productivity, low-markup firms suggests weak competitive selection operating at both ends of the distribution. At the top, persistently high markups among dominant firms indicate limited contestability: if competitive pressure were strong, entry or expansion by rivals would erode excess margins over time. At the bottom, the continued survival of low-productivity, low-markup firms implies that inefficient producers are not being forced to exit through competitive pressure. In a well-functioning reallocation process, high-productivity firms would expand and displace less efficient competitors, while entry would challenge incumbents with elevated markups. The persistence of both segments therefore points to weaknesses in productivity-enhancing reallocation: productive firms may not expand sufficiently, entrants may not scale, and low productivity firms may persist rather than exit.

Taken together, the evidence suggests that market power, concentration and merger-driven structural change may be dampening competitive pressures and weakening the reallocation mechanisms that underpin productivity growth. In such an environment, improving allocative efficiency requires strengthening contestability and entry dynamics in concentrated sectors.

3.3.2 Policy-induced wedges.

An important finding in the misallocation literature is that productivity losses often arise not from explicit productivity policy, but as unintended consequences of sectoral, trade, financial, or regulatory interventions. Policies designed to protect firms, stabilize employment, or support strategic sectors can inadvertently distort the allocation of capital and labour across heterogeneous producers. When these interventions shield less productive firms, alter relative prices, or introduce firm-specific wedges, they can weaken the process through which resources shift toward more efficient producers, reducing aggregate TFP.

Recent South African evidence provides a clear illustration of this mechanism. Kilumelume at al. (2025b) show that import tariffs are strongly associated with capital misallocation in manufacturing. Using tax administrative data and a structural decomposition of capital productivity dispersion, they demonstrate that higher industry-level tariffs are linked to larger correlated distortions, where relatively less productive firms command a disproportionate share of capital. A one-standard-deviation increase in import tariffs (6.5 percentage points) is associated with aggregate productivity losses of between 2.8 and 6.2 percent operating through the capital misallocation channel alone. Importantly, these effects are not captured by naïve measures of dispersion; they emerge only when distortions are structurally decomposed into their underlying components. The policy implication is stark: trade protection intended to support domestic industry can, through resource misallocation, reduce aggregate productivity.

These findings align with international evidence presented above showing that policy reforms can alter aggregate productivity through allocative efficiency channels and underscore the need for productivity to be treated as a cross-cutting policy criterion, as interventions that shield incumbents, alter relative prices, or introduce firm-specific wedges can generate persistent aggregate costs by weakening reallocation toward more efficient producers.

3.3.3 Historical legacies.

An important dimension of misallocation in South Africa arises not from contemporary policy design, but from the unintended persistence of historical distortions. Nesongano et al. (2026) show that apartheid-era labour market regulations continue to shape the allocation of labour decades after their formal repeal. During apartheid, a dense web of legislation, including job reservations, closed-shop agreements, racially discriminatory minimum wages, spatial mobility restrictions, and skill certification requirements, deliberately constrained black workers' occupational and geographic mobility. These policies were implemented at fine sector–district levels, creating highly localised distortions in labour allocation.

Linking digitised historical gazette data (1954–1994) to contemporary matched employer-employee administrative data (2012–2018), Nesongano et al. (2026) measure labour misallocation as dispersion in the marginal revenue product of labour within sector–district cells. They find that historically restricted sector-district pairs exhibit between 4-14% higher labour misallocation today relative to unaffected counterparts . The effects are particularly strong for discriminatory minimum wage provisions and ministerial job reservations under Section 77 of the Industrial Conciliation Act. Importantly, they find no significant differences in average firm-level productivity across treated and untreated areas. The long-run cost of apartheid therefore operates primarily through allocative inefficiency, that is, through distortions in how labour is distributed across firms, rather than through persistent differences in firm-level technical efficiency.

3.3.4 Summary

The available evidence suggests that South Africa's weak manufacturing performance reflects not only limited within-firm upgrading, but also persistent frictions that impede the reallocation of labour and capital toward more productive firms. Misallocation is shaped by multiple and interacting forces: financial constraints that limit the expansion of efficient firms; market power and merger dynamics that alter competitive pressures; trade policies that unintentionally distort capital allocation; and deep historical legacies that continue to affect labour mobility decades after formal repeal.

The South African literature has made important progress in quantifying the magnitude of allocative efficiency losses and in identifying specific channels, particularly capital misallocation among smaller firms and the role of tariffs and market structure. However, significant gaps remain. We still know relatively little about the micro-level mechanisms through which financial frictions operate, how entry and exit dynamics contribute to persistent dispersion, how infrastructure and network industries interact with firm scaling, and how different distortions compound or offset one another across sectors. Nor do we yet have a comprehensive understanding of how contemporary industrial and regulatory policies affect allocative efficiency over time. Addressing these gaps is central to developing a coherent productivity strategy: without a clearer diagnosis of why high-productivity firms fail to scale and why low-productivity firms persist, policy risks reinforcing the very distortions it seeks to resolve.

3.4 Constraints to labour mobility and participation

Labour mobility can enhance productivity by reallocating workers from lower- to higher-productivity firms and by facilitating the diffusion of tacit knowledge, skills and organisational routines. Labour mobility can only enhance productivity if workers are able to enter manufacturing employment and remain attached long enough to accumulate experience and access better jobs. As documented above, this mechanism operates poorly in the South African manufacturing sector.

3.4.1 Structural constraints

A number of structural constraints that prevent workers from finding jobs and progressing through the job ladder have been identified in the literature on South African labour markets. Spatial and informational barriers restrict access to employment opportunities, particularly for those located far from economic centres (Banerjee and Sequeira, 2023; Van der Merwe and de Jong, 2023). Amodio et al. (2020) show that limited product market competition could dampen labour market dynamism. In particular, they find that higher employment concentration in high-markup sectors is associated not only with higher unemployment but also lower transitions into employment, indicating that limited product market competition can dampen labour market dynamism. Township economies face additional constraints, including limited access to finance, crime, limited market access and weak managerial capacity, which reduce local job creation (Tshuma, 2022).

3.4.2 Institutional constraints and levers

Labour market institutions shape wage-setting and hiring decisions, and so also influence worker transitions between firms. Budlender and Bassier (2023) show that in the presence of binding wage floors, firms in a lower–mid productivity range do not raise wages or employment in response to productivity shocks, instead absorbing gains as higher profits, while higher-productivity firms expand wages and employment normally.[9]

[9] Related evidence from the 2013 agricultural minimum wage increase shows that wage shocks can also propagate across production networks, reducing employment in upstream-exposed industries (Tan, 2021).

This creates heterogeneity in hiring and wage growth across firms, potentially concentrating mobility and earnings progression in the unconstrained segment of the productivity distribution.

While wage floors can generate productivity-threshold effects that segment hiring responses across firms, centralised bargaining may simultaneously compress inter-firm wage differentials within connected labour markets, altering the incentives governing worker transitions. Bassier (2021) shows that centralized bargaining raises wages in covered firms and generates spillovers to non-covered but connected manufacturing firms through worker flows. By lifting wage floors across interconnected employers, bargaining councils strengthen workers' outside options within local labour markets, thereby facilitating mobility across firms that compete for similar labour.

Policies aimed at affirmative action also play a role. Evidence on the Employment Equity Act (EEA) suggests that compliance requirements altered recruitment strategies in larger firms. Landman and O'Clery (2020) find that firms subject to the Act increased the diversity of sectors from which they recruit female workers and raised average female wages. These effects are particularly pronounced in male-dominated industries, suggesting that affirmative action requirements induced cross-sector labour reallocation rather than simply within-sector adjustments. While the Act aimed to redress historical inequalities, its implementation appears to have had measurable effects on inter-industry mobility and the structure of female employment.

In contrast, the Employment Tax Incentive (ETI) had more modest effects. Introduced in 2014, the ETI provided a temporary payroll tax credit to firms hiring young, low-wage workers, effectively lowering the cost of inexperienced labour. However, firm-level evaluations highlight substantial selection and identification challenges, with credible estimates suggesting at most modest increases in youth employment at the firm level (Budlender and Ebrahim, 2021). Worker-level evidence similarly finds limited aggregate employment gains: while there is some increase in entry into employment among low-wage youth, these effects are too small to shift overall youth employment rates (Ebrahim and Pirtilla, 2025). This suggests that while hiring incentives can facilitate initial labour market entry, they do not fundamentally reshape job-to-job mobility or upward progression within the labour market.

Contractual arrangements further shape mobility patterns. Cassim (2020) shows that the 2015 tightening of protections for temporary employment service (TES) workers increased transitions from TES into the non-TES formal sector for affected workers, and that those who transitioned experienced improved job conditions, especially higher earnings. However, a larger share of affected TES workers also moved out of the tax-registered data altogether, consistent with shifts into informality, unemployment, or inactivity, suggesting that regulatory reforms can re-route mobility flows rather than uniformly strengthening labour market attachment.

3.4.3 Summary

Overall, labour mobility in manufacturing does not reliably function as a mechanism for productivity diffusion or upward mobility. Structural constraints, including spatial mismatch, informational frictions, township-level barriers, and concentrated product markets, limit entry into employment and reduce the dynamism of job-to-job transitions. Within this constrained environment, institutional arrangements reshape mobility in differentiated ways. Wage floors and regulatory protections can generate productivity thresholds that segment hiring responses and concentrate advancement within higher-productivity firms, while centralized bargaining and affirmative action requirements may strengthen outside options and induce cross-firm or cross-sector reallocation. Targeted hiring incentives ease entry at the margin but have limited effects on sustained progression, and contract regulation can redirect transition pathways without uniformly improving attachment. Taken together, mobility in manufacturing is structured rather than fluid: shaped by deep spatial

and market frictions and mediated by institutions that both alleviate and reinforce segmentation. As a result, worker mobility does not consistently translate into broad-based productivity gains.

4. Policy architecture and implications

Industrialisation and job creation are at the centre of the Presidency's Strategic Plan 2025-2030 which prioritises inclusive growth and job creation (The Presidency SA, 2024). Industrial policy is operationalized through a *Reimagined Industrial Strategy* and is implemented through sector Master Plans (since 2019) designed as a platform for coordination between government, business and labour and a mechanism to address sector-specific constraints (DTIC, 2024).[10] The core aims are to revitalise industrial capacity and mobilise investment. Complementary reforms in trade policy, competition law, infrastructure and logistics, labour market regulation, and education and skills also contribute to these aims by shaping the incentives and constraints facing firms and workers. This constitutes an ambitious and evolving policy landscape for promoting industrial development in South Africa.

The evidence reviewed in Section 3 identifies a number of frictions that inhibit productivity growth in South African manufacturing. These frictions affect three broad areas: the ability of firms to upgrade and improve productivity, the efficiency with which labour and capital are allocated across firms, and the extent to which labour mobility supports progression toward more productive employment. The analysis also highlights that distortions affecting these mechanisms arise from a wide range of policies, including industrial policy, trade policy, competition regulation, labour market institutions and infrastructure provision. Indeed, many distortions may arise unintentionally when policies designed for legitimate objectives, such as protection, redistribution, or stability, introduce wedges across heterogeneous firms and weaken reallocation dynamics. A related concern is that these same distortions may also weaken incentives for investment, thereby limiting technology adoption and productive upgrading.

To provide a common lens through which to assess the policy architecture, this paper proposes a productivity-proofing framework. The central idea is that policies should be evaluated not only in terms of their immediate objectives, but also in terms of whether they strengthen or weaken the mechanisms that underpin productivity growth. In particular, four questions emerge directly from the evidence reviewed above:

- How does the policy affect the allocation of capital and labour across firms?
- Does it enhance or weaken contestability and entry?
- Does it strengthen firm capability upgrading?
- Does it improve or constrain mobility of workers toward higher-productivity firms?

The discussion that follows applies this framework to South Africa's existing policy architecture with the aim of examining how multiple productivity mechanisms are simultaneously affected and whether tensions between these mechanisms are recognised and managed.

4.1 Policy to reduce within-firm productivity constraints

Viewed through the productivity-proofing framework, the principal challenge for within-firm productivity growth is whether existing policies strengthen investment and firm capability upgrading. As discussed in

[10] It is worth noting that while the Master Plan approach has improved coordination and institutional dialogue, the TIPS (2024) evaluation of the Master Plan finds that it has not yet produced decisive structural transformation or accelerated aggregate growth, partly due to weak prioritisation, limited strategic coherence, and severe macroeconomic headwinds since 2020.

section 3, South Africa's productivity challenge is not simply low technological capability, but uneven upgrading constrained by capability gaps, limited productivity spillovers, persistent infrastructure bottlenecks, weak investment and skills constraints.

4.1.1 Innovation and technology adoption

Technology upgrading is recognised in current policy as being central to industrial development. For example, the *Reimagined Industrial Strategy* emphasises green industrialisation, digital transition, and sector-level upgrading through coordinated Master Plans (DTIC, 2024). Policy instruments include tax incentives, investment support, and sector-specific initiatives aimed at strengthening competitiveness and facilitating technological advancement. However, the evidence presented in this paper suggests that while frontier innovation is important, a central constraint in South African manufacturing is the uneven diffusion and limited adoption of existing technologies across the manufacturing base. Policy alignment should therefore place a greater emphasis on reducing the fixed costs and risks associated with technology adoption and diffusion, particularly among domestic and non-exporting firms. Linking sector strategies more explicitly to measurable upgrading targets and strengthening the complementarity between skills development and technological adoption would improve the effectiveness of existing instruments.

Viewed through the productivity-proofing framework, however, the objective is not simply to increase innovation activity. Policies that support technology adoption and upgrading should also be assessed according to their effects on resource allocation and contestability. Support that is not linked to measurable improvements in productivity, technological upgrading or export performance may strengthen firm capabilities in the short run while weakening competitive pressures and slowing the reallocation of resources toward the most productive firms. The challenge is therefore to design innovation support in ways that simultaneously strengthen upgrading, preserve contestability, and facilitate the scaling of successful firms.

4.1.2 Productivity Spillovers

The importance of localisation, value-chain development and deeper regional integration, particularly through the African Continential Free Trade Area (AfCFTA) and sector Master Plans is a key feature of the current industrial policy framework (DTIC, 2024). Moreover, trade policy combines selective protection with export promotion, while competition policy reforms aim to reduce concentration and broaden participation. These instruments are intended to strengthen domestic production linkages and expand market access. However, as discussed above, in South Africa, spillovers through international trade are constrained by high trade costs, logistics inefficiencies and policy-induced wedges that raise the cost of importing intermediates and exporting finished goods. The South African evidence suggests that spillovers through FDI operate particularly strongly through vertical linkages between multinational firms and domestic suppliers and customers, although other channels, including competition, imitation, and labour mobility, may also play important roles. Strengthening vertical and horizontal spillover channels requires addressing the underlying constraints that limit supplier integration, knowledge diffusion and interactions between multinational and domestic firms including skills gaps, production reliability, access to finance for upgrading, and logistics bottlenecks.

Policy alignment should therefore focus on strengthening the channels through which learning and spillovers occur, including deeper integration into global and regional value chains, stronger supplier relationships, and greater opportunities for technology diffusion and knowledge transfer across firms. Reducing tariff and non-tariff barriers on intermediate inputs, improving logistics performance, and ensuring predictable trade policy would strengthen the learning effects associated with importing and exporting. At the same time, targeted support for domestic firms to meet export standards could broaden access to spillover channels beyond frontier firms.

The productivity-proofing framework also highlights potential trade-offs within localisation and value-chain development strategies. While these policies may strengthen domestic capabilities and increase opportunities for learning and spillovers, they may also reduce contestability or limit access to more efficient imported inputs if implemented through persistent protection or restrictive local content requirements. Their effectiveness should therefore be evaluated not only in terms of domestic linkage creation, but also according to whether they support investment, facilitate resource reallocation, and strengthen the long-run competitiveness of participating firms.

4.1.3 Reliability as a productivity wedge.

The importance of electricity supply, transport and logistics as constraints on industrial competitiveness are evident in the current policy landscape with large-scale infrastructure investment and logistics reform identified as central to the next phase of industrial policy (DTIC, 2024). It is clear from the analysis presented above that electricity and logistics reliability are not just peripheral constraints but are central productivity levers. Improvements in reliability would raise capacity utilisation, increase the returns to technology adoption and export participation, and reduce structural divergence between large and small firms. As such, priority should be given to ensuring reliability and predictability. While this will require investment in infrastructure, focussing on, for example, grid stability and maintenance backlogs in electricity markets, or rail network operational reliability and port turnaround times in the transport sector are likely to yield short-run productivity gains and improve investor confidence in the sector. Highlighting the role that logistics inefficiencies play in hindering trade should also be explicitly recognised. Logistics reform should be explicitly tied to export participation and value-chain deepening, as mentioned above.

Reliability improvements differ from many other policy interventions because they reinforce all dimensions of the productivity-proofing framework simultaneously. Improved electricity and logistics reliability support firm upgrading and investment, strengthen the ability of productive firms to expand, reduce barriers to entry and scaling, and improve employment opportunities by supporting firm growth. This suggests that infrastructure reform may generate productivity gains not only directly through lower operating costs, but indirectly through its effects on reallocation, investment and labour mobility.

4.1.4. Embedding capability upgrading in industrial support

Current industrial policy places growing emphasis on strengthening workforce skills as a cross-cutting enabler of structural change, particularly in response to digitalisation (including Artificial Intelligence) and the green transition. The *Industrial Policy and Strategy Review* (May 2024) identifies education and training as a key area of focus, highlighting the need to align classroom and workplace learning through vocational pathways and apprenticeships, improve the responsiveness of training to in-demand occupations, and strengthen employability supports such as job placement, interview feedback/coaching, and retraining where workplace skills mismatches arise (DTIC, 2024). These priorities are framed within a broader coordination agenda, reducing fragmentation by aligning industrial policy with wider government interventions, including skills and social policy, to support “workforce readiness” through STEM and vocational training.

Important gaps remain, however, when viewed through the lens of the capability literature presented above. First, policy discussions do not consider managerial and organisational capability as possible drivers of within-firm productivity, a key factor identified in the international literature. Second, skills development is framed primarily as a supply-side or employability challenge, rather than as part of an integrated firm-level productivity strategy that links worker skills, supervisory practices, and organisational systems.

More fundamentally, South Africa lacks systematic measurement of management practices comparable to international benchmarks, limiting the ability to assess whether managerial quality explains productivity dispersion or constrains firm scaling. In the absence of such evidence, policy risks expanding large-scale

training initiatives without addressing firm absorptive capacity, organisational bottlenecks, or managerial constraints that may limit returns to human capital investment. Aligning industrial policy with the evidence would therefore require elevating managerial and organisational capability to a central pillar of productivity strategy, embedding firm-level diagnostics and experimental interventions within priority industries to determine what types and modes of training work best, and integrating skills development with broader reforms to firm organisation and technology adoption.

A common thread running through each of these productivity constraints is the role of investment. Technology adoption, automation, organisational upgrading, skills development and productive capacity expansion all require sustained capital expenditure. The decline in fixed investment discussed earlier is therefore not simply a consequence of weak manufacturing performance, but may also be one of the mechanisms through which weak productivity growth is sustained. Weak productivity reduces the expected returns to investment, while weak investment limits technology adoption, capital deepening and upgrading. Breaking this cycle requires a policy environment that not only supports innovation and capability development, but also encourages sustained investment in productive assets, infrastructure and technological upgrading.

4.2 Policy to improve between-firm resource allocation

A range of instruments that directly affect resource allocation across firms and sectors are embedded in the current industrial policy framework in South Africa. These include competition policy reforms, trade measures, and localisation commitments (DTIC, 2024). While these instruments engage many of the relevant policy margins, they are not consistently organized around an explicit objective of allocative efficiency. The evidence presented above indicates that South Africa's reallocation dynamics remain weak. Market power, tariff-induced distortions and persistent labour misallocation continue to impede the scaling of high-productivity firms and the exit of low-productivity producers.

4.2.1 Market power, entry and competitive churn

The evidence points to persistent mark-ups and firm dynamics that do not appear to generate productivity-enhancing reallocation in parts of the manufacturing sector. These patterns raise questions about contestability and the extent to which productive firms are able to gain market share over time. The current policy framework recognises the importance of competition enforcement and has strengthened the institutional tools available to address concentration and merger dynamics. However, the evidence suggests that reallocation requires not only static enforcement against anti-competitive conduct, but sustained attention to the dynamic margins of competition: entry conditions, post-entry expansion, and the cumulative effects of merger activity on industry structure.

Moreover, the coexistence of high-markup incumbents and stagnant smaller firms suggests that barriers to scaling may be as important as barriers to entry. Policies focused primarily on start-up creation may therefore be insufficient if young or mid-sized firms face structural obstacles in expanding market share, accessing key inputs, or integrating into supply chains.

Ensuring coherence between competition enforcement, merger review, trade and localisation policies, and industrial incentives is therefore critical. Where industrial support, procurement commitments, or trade protections shield incumbents from competitive pressure, or impede the expansion of more productive firms and entrants, allocative efficiency may be weakened. Restoring dynamic competition requires a policy framework that prioritises contestability, lowers barriers to expansion for high-productivity firms, and carefully monitors structural changes in concentrated sectors to prevent the accumulation of persistent market power.

4.2.2 Policy-induced wedges and trade distortions

The evidence presented above shows that policy-induced wedges can generate capital misallocation when they alter relative prices in ways that allow less productive firms to command a disproportionate share of resources. The productivity losses identified by Kilumelume et al. (2025b) operate not through dispersion alone, but through correlated distortions that weaken the reallocation of capital toward more efficient producers. This highlights a central tension in industrial policy: instruments designed to stabilise sectors, protect employment, or deepen domestic production may unintentionally dampen the competitive and allocative mechanisms that underpin aggregate productivity growth.

South Africa's current industrial framework combines selective protection, localisation requirements, sector incentives, and reciprocal trade arrangements with export promotion and investment facilitation. These instruments are intended to support strategic sectors, strengthen domestic value chains, and create space for investment and upgrading. However, when protection or targeted incentives are not closely tied to productivity performance, export competitiveness, or technological upgrading, they risk shielding less productive firms and entrenching capital misallocation. In concentrated sectors, trade protection and localisation commitments may interact with market structure to reinforce incumbent advantage, particularly where merger activity has already elevated structural mark-ups.

Trade, localisation, and sector incentives should be evaluated not only in terms of short-term employment or output stabilisation, but also in terms of their impact on capital reallocation, contestability, and long-run productivity growth. Continuous evaluation of the need for such protective instruments and a clear schedule for their removal once their original objectives have been achieved, will ensure that polices that protect certain firms and sectors only remain in place as long as they are needed. Embedding allocative efficiency as a cross-cutting criterion within industrial policy would strengthen the alignment between structural transformation objectives and aggregate productivity outcomes.

This illustrates the broader logic of the productivity-proofing framework. Policies that successfully achieve one objective may nonetheless weaken the mechanisms that underpin productivity growth. Trade protection, localisation requirements and targeted industrial support may strengthen investment and capability development in some firms, while simultaneously reducing contestability and slowing the reallocation of capital toward more productive producers. The framework does not imply that such policies should be avoided. Rather, it suggests that their effects should be evaluated across multiple dimensions simultaneously and that any trade-offs should be made explicit.

4.2.3 Historical legacies, labour mobility and persistent distortions

The evidence presented above indicates that part of the labour misallocation observed in South Africa reflects the long-run persistence of historically imposed mobility constraints. Distortions introduced under apartheid continue to shape how labour is distributed across firms and locations, even in the absence of differences in firm-level technical efficiency. The core mechanism is impaired factor mobility rather than lower average productivity. The current policy framework places strong emphasis on transformation, spatial development, and labour market reform (DTIC, 2024). However, allocative efficiency is not systematically embedded within these domains. Policies aimed at redress, localisation, or spatial restructuring can influence firm location, hiring patterns, and occupational mobility, yet their implications for labour reallocation are rarely evaluated explicitly. Reducing frictions that limit movement across firms, sectors, and regions, improving labour market information and matching mechanisms, and avoiding regulatory thresholds that create size or location contingent distortions would strengthen reallocation dynamics. Spatial and transformation policies should therefore be assessed not only for their distributional impact, but also for their effects on labour mobility, firm scaling, and long-run allocative efficiency.

4.3 Policy to address labour mobility and participation constraints

The current industrial policy framework recognises employment creation, transformation, skills development and labour market reform as central objectives (DTIC, 2024). Master Plans incorporate employment commitments, while broader reforms address vocational training, labour regulation and youth employment support. However, the evidence suggests that labour mobility in South African manufacturing does not function as a consistent channel of upward progression for workers or productivity diffusion across firms. Indeed, labour mobility spillovers are segmented, with productivity gains concentrated among already high-performing firms.

4.3.1 Spatial and market access constraints

As highlighted above, spatial mismatch, informational frictions and township-level barriers restrict access to manufacturing employment. Workers located far from economic centres face higher search costs and weaker labour market attachment. Concentrated product markets are associated with lower employment transitions and higher unemployment. While current policy recognises the importance of spatial development, transformation and inclusive growth (DTIC, 2024), labour mobility constraints are not always explicitly treated as productivity concerns.

Policy alignment should therefore prioritise reducing spatial and informational barriers to employment. Improving transport connectivity, strengthening labour market information systems, and integrating township enterprise support with broader value chains would enhance entry and job matching. Better matching of workers to jobs will facilitate on-the-job learning, productivity gains for firms and movements of workers up the job ladder. This is where the greatest potential is for productivity spillovers through worker mobility.

4.3.2 Wage-setting institutions and mobility segmentation

Wage floors and collective bargaining arrangements shape hiring responses differently across the productivity distribution. Binding wage floors can generate productivity thresholds that segment hiring, while centralized bargaining may strengthen outside options and facilitate mobility within connected labour markets.

The current policy framework maintains commitments to decent work, collective bargaining structures and employment equity (DTIC, 2024). However, these institutions, in pursuing distributional and equity objectives also have implications for productivity. Policy coherence therefore requires assessing how wage-setting frameworks interact with firm productivity dispersion. Monitoring hiring responses across productivity segments and evaluating how institutional arrangements affect post-entry job progression would strengthen alignment between equity objectives and allocative efficiency.

The productivity-proofing framework is particularly useful in this context because labour market institutions often pursue objectives beyond productivity, including equity, worker protection and income security. While these are highly relevant and important policy objectives in their own right, policies designed to achieve these objectives should aim to minimise unintended effects on labour mobility, firm scaling and resource allocation.

4.3.3 Hiring incentives and entry dynamics

Hiring incentives such as the Employment Tax Incentive have been shown to modest effects on employment entry but limited impact on sustained job progression or aggregate youth employment rates. Similarly, regulatory reforms affecting temporary employment services altered transition pathways but did not uniformly strengthen labour market attachment. Current policy instruments aimed at youth employment and labour market inclusion focus primarily on lowering hiring costs and facilitating entry (DTIC, 2024). While these instruments may ease initial access, they do not necessarily improve job-to-job mobility or upward progression. Policy alignment should therefore extend beyond entry incentives toward supporting sustained

attachment and progression. Linking hiring incentives to training, skills accumulation and longer-term employment trajectories would improve the productivity impact of entry policies.

4.4 Summary and synthesis

Taken together, the productivity-proofing framework highlights that many industrial policies operate across multiple productivity mechanisms simultaneously. Policies designed to support upgrading, localisation, employment or transformation may strengthen some productivity mechanisms while weakening others. For example, protection and localisation measures may encourage investment and capability development in selected firms, but may also reduce contestability and slow resource reallocation if maintained for prolonged periods. Similarly, labour market institutions may advance equity and worker protection objectives while influencing hiring dynamics, mobility and firm scaling. The framework therefore shifts the focus from evaluating policies in isolation toward assessing how different interventions interact across firm upgrading, investment, reallocation and labour progression. Applying this framework systematically would not displace other policy goals, but would help ensure that interventions do not inadvertently undermine the mechanisms required for sustained growth and inclusive industrial development. In particular, it would encourage policymakers to consider how interventions shape incentives for investment, technology adoption, capital formation and long-run productivity growth.

5. Conclusion

This paper has argued that South Africa's manufacturing underperformance reflects the interaction of three structural constraints: weak and uneven productivity growth within firms; limited reallocation of resources toward more productive producers; and labour market frictions that prevent mobility from translating into sustained progression and inclusive participation. The evidence shows that productive firms exist and that technology adoption, exporting, and automation can generate substantial gains. However, these gains are not diffused broadly across the firm distribution. Productivity dispersion remains large and persistent. The available evidence raises concerns that high-productivity firms do not scale sufficiently to drive aggregate growth, while low-productivity firms may continue to absorb labour and capital, resulting in muted productivity-enhancing reallocation. This misallocation reduces aggregate efficiency.

At the same time, labour mobility does not consistently function as a channel of productivity-enhancing reallocation. Worker transitions often reflect short-term churn rather than upward movement into more productive firms. Wage trajectories are strongly shaped by firm-specific premia, yet access to higher-paying firms remains uneven and stratified by gender and education. Manufacturing employment therefore no longer reliably serves as a broad-based escalator of opportunity.

These findings suggest that the manufacturing challenge is not simply one of declining output shares or insufficient industrial support. It lies in the weakening of the mechanisms that historically linked manufacturing to structural transformation: firm upgrading, competitive scaling, and labour progression. When within-firm capability constraints, allocative frictions, and segmented mobility reinforce one another, aggregate productivity growth slows and inclusive employment opportunities narrow. Restoring manufacturing performance requires reinforcing the complementarities between upgrading, reallocation, and mobility. Sustained productivity growth will also require a recovery in investment. Without greater investment in productive assets, technology adoption, infrastructure and organisational upgrading, the gains from improved allocation and stronger firm capabilities are unlikely to be fully realised. Policy interventions that address only one dimension, innovation without competition, protection without upgrading, or job creation without progression, are unlikely to generate sustained gains. As such, coherence between industrial, competition, trade and labour policies is therefore necessary to translate structural reform into sustained productivity growth and stable, accessible employment opportunities.

One approach advanced in this paper for South Africa is to embed a "productivity-proofing" framework into policy design. Many well-intentioned policies can unintentionally distort resource allocation and weaken firm dynamics, underscoring the need to assess systematically how policy interventions affect firm behaviour and market functioning. Embedding such a framework would help safeguard growth by ensuring that policies support efficient reallocation, firm upgrading, and the movement of resources toward more productive uses.

Manufacturing can still play a central role in South Africa's development trajectory. Realising that potential requires aligning policy around the shared objective of strengthening productivity growth and enabling efficient, inclusive reallocation. The evidence presented here underscores both the scale of the challenge and the importance of a coordinated, productivity-centred approach to reform.

6. References

Abeberese, A.B., Ackah, C.G. and Asuming, P.O. (2021) "Productivity losses and firm responses to electricity shortages, Evidence from Ghana." *The World Bank Economic Review*, 35(1), 1–18.

Acemoglu, D. and Pischke, J. (1998) "Why do firms train? Theory and evidence." *The Quarterly Journal of Economics*, 113(1), 79-119.

Acevedo, P., Cruces, G., Gertler, P. and Martinez, P. (2020) "How job training made women better off and men worse off." *Labour Economics*, 65, 101824.

Adhvaryu, A., Kala, N. and Nyshadham, A. (2022) "Management shocks to worker productivity." *Journal of Political Economy*, 130(1), 1-47.

Adhvaryu, A., Kala, N. and Nyshadham, A. (2023) "Returns to on-the-job soft skills training." *Journal of Political Economy*, 131, 2165-2208.

Aghion, P., Bloom, N., Blundell, R., Griffith, R. and Howitt, P. (2005) "Competition and innovation: An inverted-U relationship." *Quarterly Journal of Economics*, 120(2), 701–728.

Aghion, P., Braun, M. and Fedderke, J. (2008) "Competition and productivity growth in South Africa." *Economics of Transition and Institutional Change*, 16, 741-768.

Aghion, P. and Howitt, P. (1992) "A model of growth through creative destruction." *Econometrica*, 60(2), 323-351.

Aitken, B.J. and Harrison A.E. (1999) "Do domestic firms benefit from direct foreign investment? Evidence from Veneauela." *American Economic Review*, 89(3), 605-618.

Allemand, M., Kirchberger, M., Milusheva, S., Newman, C. Roberts, B.W. and Thorne, V. (2025) "Conscientiousness in the workplace: Evidence from a field experiment in West Africa." *The Review of Economics and Statistics*, doi: https://doi.org/10.1162/REST.a.1622

Amiti, M. and Konings, J. (2007) "Trade liberalization, intermediate inputs, and productivity: Evidence from Indonesia." *American Economic Review*, 97(5), 1611-1638.

Amodio, F., Di Maio, M., Li, Y. and Piraino, P. (2020) "Product market competition and the labour market." WIDER Working Paper 2020/39.

Asker, J., Collard-Wexler, A. and De Loecker, J. (2014) "Dynamic inputs and resource (mis)allocation." *Journal of Political Economy*, 122(5), 1013–1063.

Aterido, R., Hlatshwaya, A., Pieterse, D. and Steenkamp, A. (2019) "Firm dynamics, job outcomes, and productivity." World Bank Policy Research Working Paper Number 8788.

Atkin, D., Khandelwal, A.K. and Osman, A. (2017) "Exploring and firm performance: Evidence from a randomized experiment." *The Quarterly Journal of Economics*, 132(2), 551-615.

Avenyo, E.K., Bell, J.F. and Nyamwena, J. (2024) "Determinants of digital technologies' adoption in South African manufacturing: Evidence from a firm-level survey." *South African Journal of Economics*, 92, 235-259.

Banerjee, A. and Sequeira, S. (2023) “Learning by searching: Spatial mismatches and imperfect information in Southern labour markets.” *Journal of Development Economics*, 164, 103111.

Barrera-Osorio, F., Kugler, A.D. and Silliman, M.I. (2021) “Hard and soft skills in vocational training: Experimental evidence from Colombia.” NBER Working Paper Number 27548.

Bartelsman, E., Haltiwanger, J. and Scarpetta, S. (2013) “Cross-country differences in productivity: The role of allocation and selection.” *American Economic Review*, 103(1), 305-334.

Bassier, I. (2021) “The impact of centralized bargaining on spillovers and wage structure in monopsonistic labour markets.” SA-TIED Working Paper #195.

Bassier, I. (2023) “Firms and inequality when unemployment is high.” *Journal of Development Economics*, 161, 103029.

Bassier, I. and Gautham, L. (2025) “The firm-pay gender gap and formal sector churn over the life cycle.” *Journal of Development Economics*, 176, 103498.

Bento, P. and Restuccia, D. (2017) “Misallocation, establishment size and productivity.” *American Economic Journal: Macroeconomics*, 9(3), 267-303.

Bernard, A.B., Bradford Jensen, J., Redding, S.J. and Schott, P.K. (2007) “Firms in international trade.” *Journal of Economic Perspectives,* 21(3), 105-130.

Bertrand, M. and Schoar, A. (2003) “Managing with style: The effect of managers on firm policies.” *The Quarterly Journal of Economics,* 118(4), 1169-1208.

Bhorat, H. and Kohler, T. (2024) “Watts happening to work? The labour market effects of South Africa’s electricity crisis.” SA-TIED Working Paper #227.

Bhorat, H. and Rooney, C. (2017) “State of manufacturing in South Africa.” DPRU Working Paper 201702.

Bloom, N., Eifert, B., Mahajan, A., McKezie, D. and Roberts, J. (2013) “Does management matter? Evidence from India.” *The Quarterly Journal of Economics*, 128(1), 1-51.

Bloom, N., Hartley, J.S., Sadun, R., Schuh, R and Van Reenan, J. (2025) “Management and firm dynamism.” NBER Working Paper 33765.

Bloom, N. and Van Reenan, J. (2007) “Measuring and explaining management practices across firms and countries.” *The Quarterly Journal of Economics*, 112(4), 1341-1408.

Bruhn, M., Karlan, D. and Schoar, A. (2018) “The impact of consulting services on small and medium enterprises: Evidence from a randomized trial in Mexico.” *Journal of Political Economy*, 126(2), 635-687.

Budlender, J. (2019). “Markups and market structure in South Africa: What can be learnt from new administrative data?” SA-TIED Working Paper 76.

Budlender, J. and Bassier, I. (2023). “Rent sharing, wage floors, and development” WIDER Working Paper 2023/132.

Budlender, J. and Ebrahim, A. (2021). “Estimating employment responses to South Africa’s Employment Tax Incentive.” WIDER Working Paper 2021/118.

Bun, M., Kolaiti, T. and Ozden, T. (2023) “Misallocation and productivity growth: A meta-analysis.” DNB Working Paper No 774.

Caballero, R.J., Hoshi, T. and Kashyap, A.K. (2008) “Zombie lending and depressed restructuring in Japan.” *American Economic Review*, 98(5), 1943-1977.

Caggese, A. and Cuñat, V. (2013) “Financing constraints, firm dynamics, export decisions, and aggregate productivity.” *Review of Economic Dynamics*, 16(1), 177-193.

Cai, J. and Wang, S. (2022) “Improving management through worker evaluations: Evidence from auto manufacturing.” *The Quarterly Journal of Economics*, 137(4), 2459-2497.

Campos, F., Frese, M., Goldstein, M., Iacovone, L., Johnson, H.C., McKenzie, D. and Mensmann, M (2017) “Teaching personal initiative beats traditional training in boosting small business in West Africa.” *Science*, 357, 1287-1290.

Cassim, A. (2020) “The impact of employment protection on the temporary employment services sector: Evidence from South Africa using data from tax records.” SA-TIED Working Paper #120.

Chioda, L., Contreras-Loya, D., Gertler, P. and Carney, D. (2021) “Making entrepreneurs: Returns to training youth in hard versus soft business skills.” NBER Working Paper 28845.

Cole, M., Elliott, R.J.R., Occhiali, G. and Strobl, E. (2018) “Power outages and firm performance in sub-Saharan Africa.” *Journal of Development Economics*, 134, 150-159.

Crépon, B. and Premand, P. (2025) “Direct and indirect effects of subsidized dual apprenticeships.” *Review of Economic Studies*, 92, 2979-3028.

De Loecker, J. (2013) “Detecting learning by exporting.” *American Economic Journal: Microeconomics*, 5(3), 1-21.

De Loecker, J. and Eeckhout, J. (2018) “Global market power.” NBER Working Paper No. w24768.

De Loecker, J., Eeckhout, J. and Unger, G. (2020) “The rise of market power and macroeconomic implications.” *Quarterly Journal of Economics*, 135(2), 561-644.

Diao, X., Ellis, M., McMillan, M. and Rodrik, D. (2025) “Africa’s manufacturing puzzle: Evidence from Tanzanian and Ethiopian firms.” *The World Bank Economic Review*, 39(2), 308-350.

Donovan, K., Jianyu Lu, W. and Schoellman, T. (2023) “Labor market dynamics and development.” The Quarterly Journal of Economics, 138(4), 2287-2325.

DTIC (2024) Industrial policy and strategy review. Transforming vision into action: Charting South Africa’s industrial future.” Department of Trade, Industry and Competition, Republic of South Africa.

Ebrahim, A. and Pirttilä, J. (2025) “A policy for the jobless youth in South Africa.” *Journal of Development Economics*, 172, 103394.

Edwards, L. (2024) “Trade and industrial policy for South Africa’s future.” Economic Research Southern Africa Policy Paper 31.

Fedderke, J. and Hill, A. (2011) “Industry structure and labor market flexibility in the South African manufacturing sector: A time series and panel data approach.” *Economic Modelling*, 28(3), 1291-1302.

Fedderke, J., Obikili, N. and Viegi, N. (2018) “Markups and concentration in South African manufacturing sectors: An analysis with administrative data.” *South African Journal of Economics*, 86(S1), 120-140.

Friebel, G., Heinz, M., Krueger, M. and Zubanov, N. (2017) “Team incentives and performance: Evidence from a retail chain.” *American Economic Review*, 107(8), 2169-2203.

Fried, S. and Lagakos, D. (2023) “Electricity and firm productivity: A general-equilibrium approach.” *American Economic Journal: Macroeconomics*, 15(4), 67-103.

Garciano, L., Lelarge, C. and Van Reenen, J. (2016) “Firm size distortions and the productivity distribution: Evidence from France.” *American Economic Review*, 106(11), 3439-3479.

Gopinath, G., Kalemli-Ozcan, S., Karabarbounis, L. and Villega-Sanchez, C. (2017) “Capital allocation and productivity in Southern Europe.” *Quarterly Journal of Economics*, 132(4), 1915-1967.

Gosnell, G.K., List, J.A. and Metcalfe, R.D. (2020) “The impact of management practices on employee productivity: A field experiment with airline captains.” *Journal of Political Economy*, 128(4), 1195-1233.

Groh, M., Krishnan, N., McKenzie, D. and Vishwanath, T. (2016) “The impact of soft skills training on female youth employment: Evidence from a randomized experiment in Jordan.” *IZA Journal of Labor and Development*.

Gunar, N., Ventura, G. and Xu, Y. (2008) “Macroeconomic implications of size-dependent policies.” *Review of Economic Dynamics*, 11(4), 721-744.

Hill, R., Lilenstein, K. and Thornton, A. (2020) “Job spells in an emerging market.” SA-TIED Working Paper #93.

Hlatshwaya, A., Kreuser, F., Newman, C. and Rand, J. (2020) “Worker mobility and productivity spillovers: An emerging market perspective.” SA-TIED Working Paper #88.

Hsieh, C. Hurst, E., Jones, C. and Klenow, P. (2019) “The allocation of talent and U.S. economic growth.” *Econometrica*, 87(5), 1439-1474.

Hsieh, C. and Klenow, P. (2019) “Misallocation and manufacturing TFP in China and India.” *The Quarterly Journal of Economics*, CXXIV(4), 1403-1448.

Iacovone, L, Maloney, W. and McKenzie, D. (2022) “Improving management with individual and group-based consulting: Results from a randomized experiment in Colombia.” *The Review of Economic Studies*, 89(1), 346-371.

Javorcik, B. (2004) “Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages.” *American Economic Review*, 94(3), 605-627.

Kahn, A., Sithole, M. and Buchana, Y. (2022) “An analysis of the impact of technological innovation on productivity in South African manufacturing firms using direct measures of innovation.” *South African Journal of Economics*, 90, 37-56.

Kilumelume, M., Mensah, J.T., Nsabimana, A. and Sen, K. (2025) “Automation, firms and workers.” SA-TIED Working Paper #267.

Kilumelume, M., Morando, B., Newman, C. and Rand, J. (2025) “Tariffs, productivity and resource misallocation.” *The World Bank Economic Review*, https://doi.org/10.1093/wber/lhaf010

Kreuser, C. and Brink, D. (2021) “Total factor productivity in South African manufacturing firms 2010-17.” SA-TIED Technical Note 3.

Kreuser, C., Kilumelume, L. and Burger, P. (2024) “Market power and merger control South Africa.” SA-TIED Working Paper 231.

Kreuser, C. and Newman, C. (2018) “Total factor productivity in South African manufacturing firms.” *South African Journal of Economics*, 86(S1), 40-78.

Landman, M.S. and O’Clery, N. (2020) “The impact of the Employment Equity Act on female inter-industry labour mobility and the gender wage gap in South Africa.” SA-TIED Working Paper #109.

Matthee, M., Rankin, N., Webb, T. and Bezuidenhout, C. (2018) “Understanding manufactured exporters at the firm-level: New insights from using SARS administrative data.” *South African Journal of Economics*, 86(S1), 96-119.

McKenzie, D. and Anderson, S.J. (2021) “Improving business practices and the boundary of the entrepreneur: A randomized experiment comparing training, consulting, insourcing, and outsourcing.” *Journal of Political Economy*, 130(1), 157-209.

McKenzie, D. (2017) “Identifying and spurring high-growth entrepreneurs: Experimental evidence from a business plan competition.” *American Economic Review*, 107(8), 2278-2307.

Melitz, M.J. (2003) “The impact of trade on intra-industry reallocations and aggregate industry productivity.” *Econometrica*, 71(6), 1695-1725.

Melitz, M.J. and Polanec, S. (2015) “Dynamic Olley-Pakes productivity decomposition with entry and exit.” *The Rand Journal of Economics*, 46, 362-375.

Midrigan, V. and Xu, D. (2014) “Finance and misallocation: Evidence from plant-level data.” *American Economic Review*, 104(2), 422-58.

Naidoo, K. (2020) “Firm-level employment growth in South Africa: The role of innovation and exports.” SA-TIED Working Paper #87.

Newman, C., Rand, J., Talbot, T. and Tarp F. (2015) “Technology transfers, foreign investment and productivity spillovers.” *European Economic Review*, 76, 168-187.

Newman, C., Rand, J. and Tsebe, M. (2019) “Resource misallocation and total factor productivity: Manufacturing firms in South Africa.” WIDER Working Paper 2019/46.

Nesongano, T., Newman, C., Rand, J. and Suesse, M. (2026) “Legacy of apartheid: Misallocation of labour and firm productivity.” SA-TIED Working Paper #280.

Ndubuisi, G., Avenyo, E.K. and Asiama, R. (2024) “Dancing on the grid: electricity crises, manufacturing energy vulnerability, and jobs in South Africa.” WIDER Working Paper 2024/41.

OECD (2025) *OECD Economic Surveys: South Africa 2025*. OECD Publishing, Paris.

Pleace, M., Clance, M. and Nicholls, N. (2023) “The gender wage gap in South Africa.” SA-TIED Working Paper #219.

Poole, J. (2013) “Knowledge transfers from multinational to domestic firms: Evidence from worker mobility.” *The Review of Economics and Statistics*, 95(2), 393-406.

Rankin, N., Roberts, G. and Volker, S. (2014) “The success of learnerships? Lessons from South Africa’s training and education programme.” WIDER Working Paper Number 2014/068.

Restuccia, D. and Rogerson, R. (2017) “On the causes and costs of misallocation.” *Journal of Economic Perspectives*, 31(3), 151-74.

Rodrik, D. (2008) “Understanding South Africa’s economic puzzles.” *Economics of Transition and Institutional Change*, 16(4), 769-797.

Romer, P. (1990) “Endogenous technical change.” *The Journal of Political Economy*, 98(5), S71-S102.

South African Reserve Bank (2020) *Quarterly Bulletin, September 2020*. Pretoria: South African Reserve Bank.

Sørensen, B.B. (2020) “Turnin’ it up a notch: How spillovers from foreign direct investment boost the complexity of South Africa’s exports.” SA-TIED Working Paper #90.

Stats SA (2023) Manufacturing industry: Financial, 2021. Pretoria: Statistics South Africa.

Steenkamp, A., Schaffer, M., Flowerday, W. and Goddard, J.G. (2018) “Innovation activity in South Africa.” SA-TIED Working Paper #5.

Suenaga, H. (2024) “Economic impacts of electricity supply shortages in South Africa.” SA-TIED Working Paper #243.

Tan, B.J. (2021) “The minimum wage and firm networks.” SA-TIED Working Paper #185.

The Presidency South Africa (2024) *Strategic Plan 2025-2030*. The Presidency, Republic of South Africa.

TIPS (2024) *Evaluation of the industry/sector Master Plan process*. Trade and Industry Policy Strategies, South Africa.

Treganna, F. (2008) “The contributions of manufacturing and services to employment creation and growth in South Africa.” *South African Journal of Economics*, 76(2), S175-S204.

Tsebe, M., Vukeya, V., Lewis, C., Calvino, F. and Criscuolo, C. (2018) “Firm dynamics in South Africa.” Economics Department Working Papers No. 1528. OECD.

Tshuma, M.M. (2022) “Accelerating private sector job creation and poverty reduction in South Africa’s townships.” SA-TIED Working Paper #211.

Uras, B.R. and Wang, P. (2024) “Misallocation, productivity and development with endogenous production techniques.” *Journal of Development Economics*, 167, March 2024, 103251.

Van der Merwe, J. and de Jong, T. (2023) “Job accessibility and spatial equity: A City of Cape Town case study.” WIDER Working Paper wp2023-148.

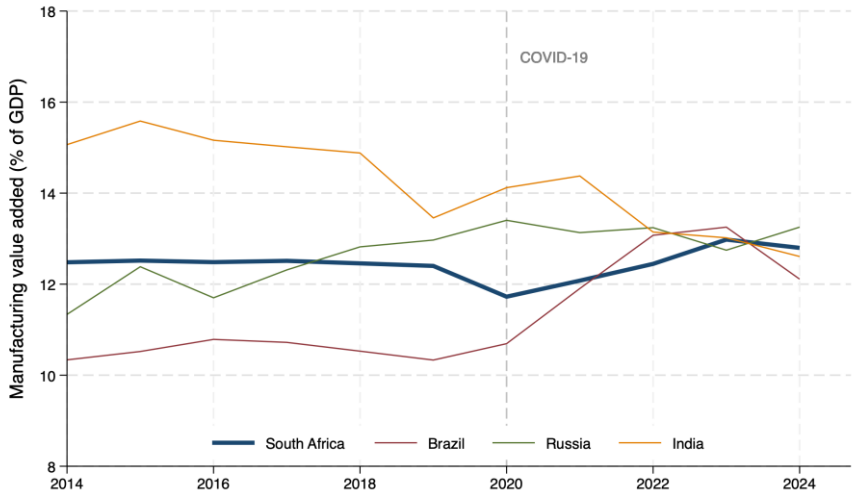
Verhoogen, E. (2008) “Trade, quality upgrading, and wage inequality in the Mexican manufacturing sector.” *The Quarterly Journal of Economics*, 123(2), 489-530.

Visagie, J., Turok, I. and Nell, A. (2026) “Creative destruction or just a reshuffle? Turnover among business and jobs in South Africa.” *South African Journal of Economics*, 94, e70010.

World Bank (2019) *Impact evaluation of the R&D Tax Incentive in South Africa*. World Bank Group, Washington DC.

Appendix

Figure A1: Manufacturing value added as a share of GDP 2014-2024



Source: Author's visualization using data from World Bank, World Development Indicators. Manufacturing value added as a share of GDP (NV.IND.MANF.ZS), latest available data.

Figure A2: Merchandise exports and imports 2000-2024

Source: Author's visualization using data from World Bank (2025). World Development Indicators. Washington, DC: World Bank. Retrieved from https://data.worldbank.org/indicator.