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Value Chains and Industrial Development in South Africa

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Working Paper Series
Number 2021-3

Abstract

This paper focuses on the dynamics of global value chains (GVC) engagement and industrial development in South Africa through two case studies - the automotive and textiles/apparel sectors. The further industrialisation and development of South Africa and of the Southern African region will depend heavily on further developing their engagement in GVCs and simultaneously upgrading their capacities into higher valued and more skill intensive activities. The automotive industry is import and export intensive, offering the potential for technological advancement, increasing skill intensity and upgrading, and positive economic spillovers. Apparel is domestically market oriented, sourcing domestically, regionally in Southern Africa, and from Asia. It is an example of a low technology, labour intensive industry, exhibiting lower levels of managerial capabilities and skills. It is challenged by rising capabilities to meet new value chain requirements and extending the supplier base to increase value addition (and by implication employment) in the economy.

Keywords: Global and Regional Value Chains, Industrial Development, Technological Advancement, Managerial Capabilities, Worker Skills.

Acknowledgments

This is a working paper version of a chapter forthcoming (2021) in the Oxford Handbook of the South African Economy, edited by Arkebe Oqubay, Fiona Tregenna and Imraan Valodia.

Recommended citation:

Morris, M., Barnes, G. and Kaplan, D. 2021. "Value Chains and Industrial Development in South Africa". *PRISM Working Paper 2021-3*. Cape Town: Policy Research on International Services and Manufacturing, University of Cape Town.

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Introduction

The process of globalisation has resulted in production being increasingly organised within Global Value Chains (GVCs). Lead firms, typically located in developed countries, acquire inputs from diverse global locations. Suppliers may simply supply intermediate inputs whereby the last stages of assembly are undertaken by the lead firms or they may supply the finished product with the lead firms undertaking activities such as marketing, branding, advertising and customisation.

GVCs are recognized as being important because they drive the organization of industrialisation activities (encompassing manufacturing, and related services, agri-processing, minerals, and energy) on a global and national scale. GVCs are essentially about global and regional linkages, and hence exports and imports play an important role in fostering industrial employment. These global and regional value chains are themselves driven by powerful lead firms which exercise power (in the form of structured governance) over chain activities. It is the dynamics of governance that are crucial for understanding access to value chains, upgrading within them to build capabilities and skills, and linkages (forward, backward and horizontal) to extend value added productive activities more widely and more deeply across an economy.

The GVC literature stresses that upgrading processes are shaped by the type of value chain in which firms are inserted, and in particular by the governance structure of chains, as determined by lead firms. These structures influence the flow and allocation of activities and resources within chains, and hence, firms' prospects of entry and upgrading and the distribution of rewards and risks along chains (Gereffi et al., 2001; Gereffi et al., 2005; Kaplinsky and Morris, 2001).

Currently, engagement in GVCs is heavily concentrated in the regional blocs of East Asia, Europe and North America; Africa's participation is very limited (Baldwin, 2012; UNCTAD, 2013; African Economic Outlook, 2014). However, while dwarfed by other regional trading blocs in developed and developing regions, Africa's imports and engagement in GVCs has been growing more rapidly. As a result, Africa captures a small but growing share of trade in GVCs (Foster-McGregor et. al., 2015).

Engagement in GVCs has many potential advantages for developing countries. No longer required to create entire new industries, developing countries can specialise in particular tasks and provide intermediate inputs to GVCs for final assembly and market customisation. Engagement in GVCs and participation in global markets has the potential for technology transfer, enhancing efficiencies and management on the part of participating firms. This, in turn, may have positive spillover effects on other local firms.

Notwithstanding the positive potential of engagement in GVCs, countries may become trapped in low value-added segments of the GVC in which there is little potential for technology transfer and consequently positive spillover effects. A critical issue therefore is whether engagement in GVCs allows firms, over time, to enhance productivity and to become competitive in higher value-added processes and products.

A very large part of Africa's participation in GVCs consists of firms that are located upstream and that provide primary products or, less frequently, very simple manufactures to firms located further downstream. These production activities, more particularly the production of primary products, are low value-added and low skilled with very little potential for technology or skill upgrading. Engagement in GVCs by these firms consequently has very limited positive spillovers on other local firms. By contrast, downstream participation by African firms is very limited and has shown only marginal signs of increasing over the last two decades. As noted by Foster-McGregor et. al. (2015:6), "Downstream participation in GVCs by Africa is found to be relatively low, and more importantly has shown little sign of increasing since 1995." The net effect is that, the enhanced participation in GVCs has had only a limited impact on transforming production in African economies.

However, there are some significant exceptions. Some African countries have succeeded in developing significant production capacities downstream. A number of African countries have reported that more than 50% of their total GVC involvement is located in downstream activities. These countries include Mauritius, Botswana, Ethiopia, Kenya and Tanzania (Foster-McGregor et. al., 2015).

The Southern African region is more heavily integrated into GVCs than the rest of the continent. Moreover, participation in GVCs has increased significantly over the last decade (AUC/OECD 2019). However, the report noted that "…Southern Africa's participation in global value chains remains peripheral." It notes that South Africa is a partial exception as it is more integrated into GVCs than any other African country, and provides a potential entry point for other countries in the region to engage in GVCs. South Africa is hence pivotal to the region. "It is the region's natural gateway into global value chains" (AUC/OECD, 2019: 137).

The further development of regional value chains focused on South Africa, and in products that are destined for global markets, represents the best opportunity for countries in the region to deepen their engagement in GVCs. The AUC/OECD report recommended that regional value chains should be developed so as to "piggy-back on South Africa's participation in GVCs" (AUC/OECD, 2019: 120 – 121). The report singled out five value chains in the region that have the greatest potential for further development – automotive, textiles and apparel, meat, agribusiness and minerals.

This paper is concerned with the first two of these high potential value chains (viz. textiles and apparel and automotive). A significant part of South Africa's participation in GVCs is in downstream production. Moreover, much of South Africa's engagement in GVCs is located in high value and skill intensive activities that offer at least the potential for significant technological advancement and positive spillovers to the rest of the economy. Upgrading within GVCs is therefore central to South Africa's further industrial and economic development.

The automotive and apparel manufacturing sectors have the most developed GVC linkages in South Africa, but in very different ways. This paper will therefore analyse them as two case studies to understand the different dynamics exhibited by industries in South Africa linking into GVCs. These two case studies form the substantive part of the study, analysing their recent trends, current dynamics, and prospects.

The South African automotive industry is deeply engaged in GVCs and is undoubtedly the sector that currently, through this engagement, offers the greatest potential for technological advancement, increasing skill intensity and upgrading. Automotive is a scale and skill intensive industry requiring very considerable foreign investment and advanced management practices. Moreover, the capabilities developed in the South African automotive sector are core to the network of globally exported products. These same technological capabilities are located in a product space that strongly suggests that these same technological capabilities can be fairly readily deployed to the production of other sophisticated products (AUC/OECD, 2019:125).[1]

The South African automotive sector is predominantly export oriented, but it is also highly import intensive. It is an example of a medium technology industry that requires relatively high levels of capabilities and skills. The foreign owned assemblers located in South Africa drive the value chain according to strict adherence to lean manufacturing principles. They determine the levels of local sourcing in domestically assembled vehicles that are then sold locally, regionally and internationally. The locally based component sector plays an important role in terms of GVC linkage development, as well as providing technology spillovers into other sectors. However, the South African automotive component industry still exhibits relatively thin levels of value added and independent design and product development capabilities.

South Africa's apparel industry is almost wholly domestic market oriented, sourcing both globally as well as through extended regional value chains in Sub Saharan Africa. The sector is an example of a low technology, labour intensive industry. A few Johannesburg Stock Exchange (JSE) listed large retail groups drive the sector and determine what is manufactured in South Africa, elsewhere in the Southern African region and from Asia. It is these firms that determine the different dynamics prevalent within local supplier activities, and hence opportunities for upgrading and development. The sector is characterised by lower levels of managerial capabilities and worker skills. However, more recently the retail lead firms are moving to develop Quick Response (QR) based value chain capabilities and are

[1] The automotive industry is centrally situated within the map of economic complexity as developed by Harvard University, 2019

therefore either developing local suppliers or building their own vertical design, product development and manufacturing capabilities. The major challenge the industry faces is raising its capabilities and worker skill levels to meet these new value chain requirements while also extending the supplier base to increase value addition (and by implication employment) in the economy.

The production of textiles and apparel is widespread. All the countries in the Southern African region have some production with a concentration in Lesotho and South Africa. The South African textile and apparel industry is focused almost exclusively on the domestic market. Textiles and apparel in SSA (in Lesotho, Eswatini, Mauritius and Madagascar) by contrast, is entirely export focused towards the US, EU and South African high income markets. As with the South African automotive industry, Lesotho has developed basic sewing production capacities in apparel and in wool and cotton-related products (AUC/OECD, 2019). However, by contrast with automotive, the productive capacities in textiles and apparel are far less easily redeployed into other goods.

The further industrialisation and development of South Africa and of the countries in the Southern African region will depend heavily on further developing their engagement in GVCs and simultaneously upgrading their capacities into higher valued and more skill intensive activities in these two key sectors. This paper focuses on the two case studies to elucidate key GVC themes: The South African automotive sector as an example of export oriented GVC engagement and the South African clothing and textiles sector as an example of import oriented GVC engagement. These two case studies permit a more detailed interrogation of the GVC implications for South African industrial development.

The South African automotive industry

The South African automotive industry has a long domestic history. The first local vehicles were assembled by Ford in 1924, while the first automotive component manufacturers were established around 1930 (Barnes, 2013). As demand for vehicles grew from the 1950s, the assembly of vehicles using imported kits proliferated. The low local content of the wide range of assembled vehicles limited the development of the components industry and placed substantial pressure on the country's balance of payments. In response, following an Import Substitution Industrialisation (ISI) approach, the South African government in 1961 introduced the first of its automotive local content programmes (LCPs). These LCPs were scaled up over time, but up until 1989 were exclusively focused on substituting imported vehicles with locally assembled equivalents for a growing domestic market that in the early 1980s was recognised as one of the most important developing economy markets internationally.

The intensification of the LCPs over time reduced the proliferation of locally assembled vehicles and increased levels of local content in South African vehicles, but at a substantial cost to the South African economy. South African assembled vehicle standards were low by comparative international standards, and many models were assembled for extended periods to amortise investments in a low volume, but highly protected domestic market environment (Barnes, Kaplinsky and Morris, 2004). Aside from the importation of a few ultra-luxury vehicles the domestic market was essentially closed to vehicle imports. Due to sanctions, most vehicle assembly operations were locally owned, with multinational vehicle assemblers choosing to have their vehicles assembled in South Africa under license, rather than through direct ownership. The exceptions to this were the German luxury vehicle assemblers who maintained either full (BMW, Volkswagen/Audi) or partial (Mercedes-Benz) ownership of their South African operations.

In 1989, the South African government introduced the sixth phase of the LCP. In some ways this represented the zenith of the LCPs, with local content needing to reach 60% of the value of locally assembled vehicles. However, it also represented an important shift in government policy. For the first time local vehicle assemblers could calculate the local content in vehicle and component exports as part of their 60% domestic local content requirement (Barnes et. al., 2004). The South African automotive industry was "nudged" towards an export orientation. The sixth phase of the LCP remained in place until 1995. This period coincided with two momentous historical moments – one domestic and one international.

Domestically, South Africa was slowly emerging from the sanctions era and being re-engaged internationally. The ANC government in waiting had initiated dialogues on economic policy amongst

its social partners, and the multinational vehicle assemblers had re-engaged with their licensed operations in South Africa to explore post-Apartheid production and market opportunities. Internationally, the global automotive industry was undergoing its own cathartic change. Seminal work from the Institute for Motor Vehicle Productivity (IMVP) had highlighted how uncompetitive western vehicle manufacturers were in relation to vehicle producers that had embraced lean production systems (Womack et. al., 1990). China had initiated engagements with multinational vehicle assemblers to establish Chinese operations, initiating the start of unprecedented market and production growth in the world's most populous country. Vehicle production began shifting towards being organised at regional or global levels under the control of ever-fewer and ever-larger lead vehicle assemblers (Sturgeon and Florida, 1999).

It is within this context that the new South African government terminated the LCPs in 1995 and introduced a comprehensive Trade Related Investment Measure (TRIM) in the form of the Motor Industry Development Programme. The MIDP initiated fundamental change in the South African automotive industry (Barnes and Black, 2014; Barnes et. al., 2004). It immediately reduced vehicle tariffs from 115% to 65%, reduced component tariffs, removed all local content requirements, and introduced a very generous export incentive that essentially allowed vehicle assemblers (and component manufacturers) to earn import credits for exports, thereby allowing them to import products free of duty provided they exported sufficient values of automotive products. This critical shift in government policy resulted in the lead vehicle assemblers progressively acquiring their South African licensed operations. Nissan, Toyota, Ford, and General Motors joined Mercedes Benz, Volkswagen, and BMW in taking direct control of their South African operations and strategically repositioning them to take advantage of the MIDP. After seven decades of domestic market orientation, the South African automotive industry was re-oriented to become fully part of the vehicle assembler GVCs. In accordance with the GVC framework, the number of vehicle platforms manufactured in South Africa plummeted, the average volume assembled per platform increased significantly, and both imports and exports surged (Barnes and Black, 2014).

A major challenge over the next 15 years related to the need to upgrade the South African operations in alignment with the vehicle assemblers' global standards. Driven by a relentless lean production focus, South African assembly and component operations were exhaustively benchmarked against global standards and forced to upgrade their capabilities. This has been extensively documented through the activities of the South African Automotive Benchmarking Club, with major competitiveness improvements noted within the South African automotive value chain (Barnes and Black, 2014). However, the period of GVC engagement also coincided with the gradual "thinning out" of local content in South African production (Kaplinsky, 2013). From local content of around 60% in each assembled South African vehicle in the early 1990s, the figure was only 46.6% in the final year of the MIDP in 2012.

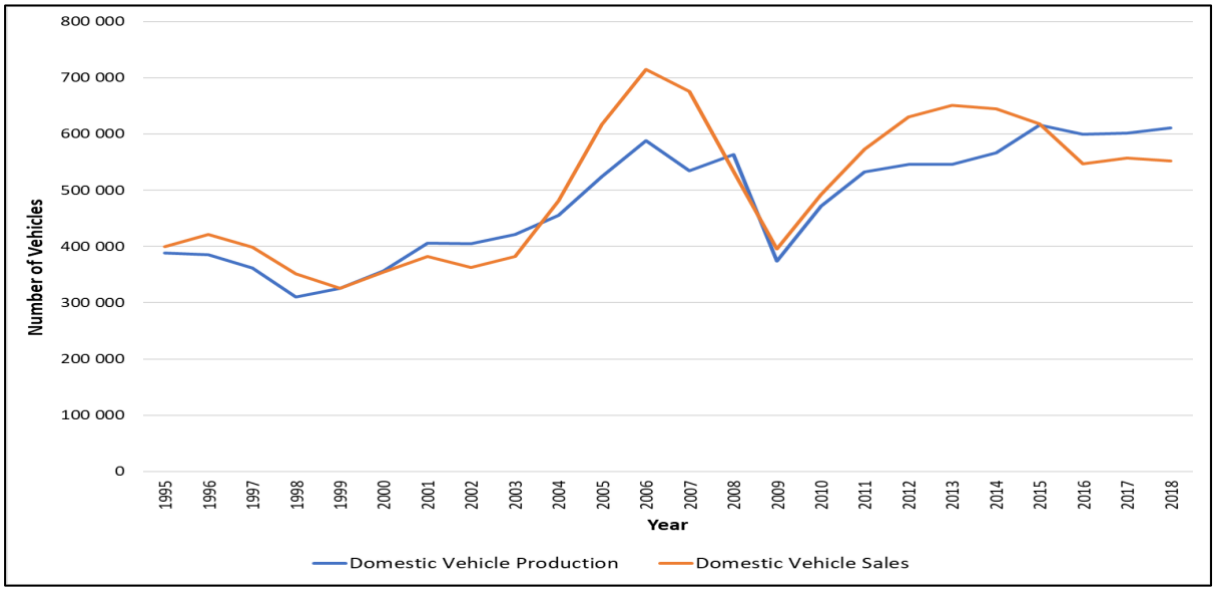
The impact of the MIDP was scrutinised throughout its lifespan, with some commenting that the programme led the automotive industry to be excessively export oriented (Black 2009), too import dependent (Barnes, 2013), or was too generous and hence too great a cost for the South African state (Flatters, 2005; Flatters and Netshitomboni, 2007). However, Barnes and Black (2014) argue that the programme was on balance a success with the economic gains associated with the automotive industry's growth and development far outweighing its fiscal costs. Moreover, the automotive industry performed substantially better than the balance of the domestic manufacturing sector and significantly improved its competitiveness, ensuring South Africans had access to modern, safe vehicles at globally comparative prices.

The MIDP was replaced by the Automotive Production and Development Programme (APDP) in 2013 and will continue until at least 2026 as part of the national government's new South African Automotive Masterplan (SAAM), which runs until 2035. The APDP replaced the MIDP because of pressure from the World Trade Organisation (WTO), and an acceptance on the part of the national government that the MIDP contravened the WTO's Agreement on Subsidies and Countervailing Measures. The APDP shifted the government's support from automotive exports to production, irrespective of market focus. However, it kept the fundamental premise of incentivising firms through the ability to earn import

rebates, and therefore essentially maintained the industry's established set of export linkages within the increasingly global automotive GVC framework.

Despite the poor performance of the South African market since the early 2010s, the APDP has been credited with maintaining South Africa's vehicle production base, while simultaneously improving the industry's trade balance. The comparatively stronger performance of vehicle production relative to domestic market vehicle sales since 2014 is presented in Figure 1. As highlighted, apart from a brief period in the early-2000s, domestic market sales have tended to be higher than local production, suggesting an important recent shift in the position of the South African automotive industry.

Figure 1: South African light vehicle domestic market performance versus production - 1995 to 2018



Source: Calculated from National Association of Automotive Manufacturers of South African (NAAMSA) annual vehicle sales and production publications

Vehicle production has remained more buoyant than domestic sales because approximately 70% of all vehicles produced in South Africa are exported. In fact, several locally assembled models such as the BMW X3 and the Mercedes Benz C-class are almost exclusively exported, and mostly to the European Union (EU). As a result, over 40% of all vehicle production in South Africa is for the EU market.

Despite the automotive industry's long-standing production in South Africa, and the comparative successes of the MIDP and APDP, the domestic industry remains a marginal player globally, contributing only 0.64% of global vehicle output in 2018 (OICA, 2019[2]). Not only is the country's total production output of around 600,000 units insignificant globally, it has increased only slightly since 2005, as highlighted in Figure 1. Vehicle production also remains highly fragmented, making it difficult for the automotive components industry to secure the scale economies required to compete with leading competitors, resulting in local content levels within SA vehicles declining to 39.2% in 2017 (Monaco et.al., 2018), from 47% in 2012 (Barnes and Black 2014).

Despite its challenges, the automotive industry remains at the forefront of the national government's industrialisation strategy. It is one of the few domestic manufacturing sectors that has recorded real growth over the last decade, and accounts for an important proportion of total manufacturing output. The industry's comparative resilience, its established foundations, employment of 112,000 South Africans, export contribution, managerial capabilities and worker skill building, and its recognized technology multipliers, have positioned it as a core, strategic domestic industrial sector (Barnes and Black, 2017). It is this position that ensures the government's continued support for the industry.

[2] Calculations derived from OICA production data for 2018 (www.oica.net).

Despite substantial government support, neither the MIDP nor the APDP has substantially shifted the position of the SA automotive industry as a second-tier player globally. While this perspective varies considerably between vehicle assemblers, there is currently no domestic plant that is the primary source for a vehicle platform globally. Even the largest volume models in South Africa, such as the Ford Ranger, Toyota Hilux, Volkswagen Polo, and Mercedes Benz C-Class (all above 80,000 units per annum), represent small production volumes relative to larger plants elsewhere. The result is the low local content exhibited amongst South African assemblers, placing substantial pressure on the automotive components industry. An important deficiency in respect of the industry's present position relates to its poor recent domestic market performance, the extent of imports into the domestic market, and deteriorating regional market conditions. Domestic vehicle sales had contracted significantly pre the Covid-19 pandemic since the record level achieved back in 2006, with imports comprising over 70% of the domestic car market in 2018. The local market is far from having sufficient demand to attract local assembly exclusively for domestic market supply. A modern assembly plant requires at least 80,000 units of a platform to justify production, and yet the top selling model in South Africa only achieves sales of around 50,000 units (the VW Polo/Vivo).

There is also limited demand for South African vehicles within Sub-Saharan African markets (Barnes et. al., 2019). The short-term prognosis for the regional market is muted, as consumers within this market have the additional choice of purchasing pre-owned vehicle imports at low prices from developed economy markets. These vehicles are moreover sold at highly discounted rates, essentially escaping end of life vehicle scrapping costs in advanced economies. Coupled with negative domestic market conditions, the local automotive industry is consequently in a difficult strategic position, with vehicle production tied to exports into distant developed economies, most notably the European Union (EU) and the United States (US). These exports are supported by AGOA, the EU-South African Economic Partnership Agreement, and incentives such as the APDP that compensate for the industry's substantial cost disadvantages relative to competitors such as Thailand (Barnes et. al., 2017). South African automotive production is, therefore, being driven less by local or regional market factors, which underpin the competitive advantage being secured by almost all the country's more successful competitor economies.

Notwithstanding the competitive pressures confronting the domestic industry, the base vehicle ownership profile of South Africa (and regionally) suggests major growth opportunities through to 2035 - provided economic growth increases (to above 3% per annum) and the industry's base competitiveness continues to improve (Barnes and Black, 2017). The SAAM has the central objective of ensuring the local automotive industry increases its production to 1% of global output by 2035 (or potentially 1.4 million units of production) and increases local content in domestically assembled vehicles to 60% (from a 38% base). This would double total employment in the automotive value chain (to 224,000 jobs) even after factoring in major productivity improvements over the period. In doing so, the industry would substantially increase its contribution to the South African economy through to 2035 (Barnes and Black, 2017).

The automotive GVC is however undergoing a pronounced set of changes, which could fundamentally disrupt global production and markets for vehicles. The challenges facing the industry and the development of appropriate development policy is being driven by established GVC pressures relating to efficiencies and competitive factor costs; and the simultaneous emergence of a set of major technological and socio-economic changes which are transforming the global automotive industry. Three major emerging GVC drivers appear to be shaping the potential of the South African automotive industry and need to be considered.

First, developed country vehicle fleet fuel economy requirements are becoming increasingly onerous. The EU has, for example, significantly tightened the fuel efficiency standards that need to be achieved in its market. From 2021, the new vehicle fleets sold into the EU by vehicle assemblers need to achieve an average carbon emission per kilometre level of 95 grams (from 130 grams). This translates into an average fuel efficiency requirement of 4.1 litres per 100 kilometres for a petrol car and 3.6 litres for a diesel equivalent[3]. This is a level which most South African assembled vehicles cannot attain. This type

[3] https://ec.europa.eu/clima/policies/transport/vehicles/cars_en, accessed 13/11/19.

of legislation is driving the development of high technology, smaller displacement internal combustion engines (ICEs) requiring extremely clean diesel and petrol that is presently unavailable in South Africa. It is simultaneously driving the rapid evolution of alternative, competing engine technologies, such as Battery Electric Vehicles (BEVs) and hydrogen fuel cell-based vehicles. These new technologies are likely to substantially increase their market share in major developed economies over the next set of model changes, which take place on a six to eight-year cycle. Many major cities and several countries have also announced the imminent banning of ICE vehicles, and along with other environmental legislation, the EU, US, and Chinese markets are likely to look fundamentally different over the next two model changes (12-16 years). A Bloomberg report has predicted that 5% of global vehicle sales would be comprise BEVs by 2022, and then rising rapidly to 35% by 2040 (Bloomberg New Energy Finance, 2016). How the South African market will be directly affected is unclear with hardly any alternative energy vehicles sold domestically, while sub-1,000cc ICE vehicles also remain only a small (albeit growing) part of the domestic market. What is clear is that the ability of South African vehicle assemblers to sell larger ICE vehicles into developed economy markets such as the EU will come under significant pressure.

Second, the development of new materials has the potential to displace standard automotive materials, such as steel and plastics, which presently comprise the majority of a vehicle's material base. This may fundamentally shift the profile of local production. As vehicles become lighter, and functionally more advanced, what new materials will dominate vehicle production? Will these be sourced in South Africa? What role will material composites and nano-technology play in respect of automotive materials use, and could this displace ladder-chassis technologies that presently underpin the production of light commercial vehicles in South Africa? As rapidly advancing green manufacturing requirements shape what vehicles and components are produced, as well as what materials and manufacturing processes are used, it is unclear whether these requirements will open or close off production opportunities in South Africa. What green production capabilities will South African manufacturers need to master to ensure continued supply into increasingly environmentally conscious developed economy markets?

Third, infotainment, vehicle connectivity, and passive and active vehicle safety developments are fundamentally altering the nature of the vehicle driving experience, and the associated functionality of vehicles. How will this change the nature and cost profile of vehicle production? As additional safety features are developed, with the ultimate objective of dramatically reducing road deaths, what are the consequences for vehicle production? How will SA manufacturers adjust to these emerging requirements, particularly if EU and US market safety requirements diverge dramatically from South African and other developing economy requirements?

Tied to this is the profoundly disruptive potential of autonomous vehicles and their consequences for vehicle use and ownership. Forecasts vary but according to the Black Rock Institute (2017), fully Autonomous Vehicles (AVs) will take off rapidly from 2025 with 75% adoption by 2035. This forecast may be too optimistic, but even a 20% to 30% adoption rate will profoundly affect South African production. How will South African automotive production be impacted by the emergence of autonomous vehicles? How will global, regional, and local vehicle use change? Will vehicle demand contract? Will it support the transition away from private vehicle ownership to IOT-enabled mobility services? What happens to local production if major developed economies evolve into mass mobility markets serviced by AVs controlled by ride-hailing service providers, as opposed to the present model of private vehicle ownership? For example, the Boston Consulting Group (2017) suggests four possibilities: the first being private ownership of AVs alongside conventional vehicles; and the second being a takeover by AVs. In the third scenario, urban transport is dominated by 'robo-taxis'; and in the fourth scenario urban transport becomes dominated by the 'ride sharing revolution'. The first scenario has a negligible effect on the number of vehicles sold but the third and fourth scenarios have dramatic effects with the number of vehicles sold reduced by 46% and 59% respectively.

These emerging GVC drivers could fundamentally re-shape the future of the South African automotive industry. It has already led to one casualty, with General Motors (GM) exiting the country in 2017 and selling off its domestic assets to Isuzu. The reasons for GM's exit were directly tied to its parent company's decision to exit all markets dominated by legacy (i.e. ICE) technologies requiring new

capital investment, and to concentrate global resources on the development of BEVs and autonomous vehicles.

These emerging GVC drivers do not yet feature in the domestic or regional market. While the MIDP (1995 to 2012) and APDP (2013 to present) have clearly built on the preceding LCPs and supported the development of a substantially more competitive automotive industry through participation in the automotive GVC, the industry remains vulnerable. The increasingly export oriented industry is facing major structural change within the automotive GVC and is likely to face major export headwinds in future, at the same time as the domestic and regional markets regress. These export headwinds are recognised in the SAAM, with increasing policy support from 2021 for emerging green and autonomous vehicle technologies. The SAAM also recognises the associated need for technology reskilling and digital infrastructure development as the GVC drivers impact the industry.

The South African clothing and textiles industry

As in many other sectors, production and trade in the apparel sector is organized in GVCs where production and assembly into final products is carried out via inter-firm networks on a global scale. A large part of apparel production remains labour intensive, has low start-up and fixed costs and requires simple technology. These characteristics encouraged the move to low-cost locations in developing countries exporting into high income markets and driven by intense inter firm/country competition. The "intangible" GVC activities (product development, design, textile input sourcing, logistics and distribution, branding, and retail) are controlled by a combination of lead firms, intermediaries and large transnational suppliers.

Upgrading strategies are extremely important for suppliers to sustain and improve their positions in apparel value chains. Sourcing decisions are frequently motivated by labour cost differentials but in addition to the classic criteria of costs, quality and reliability, other criteria are increasingly shaping sourcing decisions (Gereffi and Frederick 2010; Staritz 2011). For example, lead times and flexibility which is related to the shift to lean retailing and quick response production where buyers defray the inventory risks associated with supplying apparel to fast-changing, volatile and uncertain consumer markets by replenishing items on their shelves in very short cycles and minimizing inventories (Abernathy et al. 2006). This ensures more cost-effective forms of supply chain management and reduces the complexity of their supply chains. Price is still an important market requirement, but new dynamics favour additional factors such as speed to market, and flexibility through small volume runs to achieve this.

Until the mid-1990s, the South African garment and textile sector was locked into import substituting industrialisation (ISI), with firms protected by an almost impenetrable thicket of targeted import quotas and high, product-specific tariffs. In 1994 the government initiated a radical garment tariff phase-down agreement which saw the elimination of import quotas, a movement to a more uniform tariff structure, and a major reduction in nominal tariffs. By 2001, tariffs on textiles were down to 28% and tariffs on garments down to 40%, both from over 100%.

In 2001 the U.S. Africa Growth and Opportunity Act (AGOA), allowed South African apparel producers duty and quota free access to the US market which met particular rules of origin and US retailer buyers flew in to seek potential new sites for orders. Simultaneously there was a rapid depreciation of the exchange rate from R6,94 per $1 in 2000 to R11.61 in January 2002. Local apparel manufacturers used this to sign numerous export orders to US retailers, seeking larger profits than supplying the domestic market. Total exports of apparel at nominal prices jumped dramatically from R471m in 1995 to R1,901m in 2001 and R2,590m in 2002 (Morris and Einhorn 2008, Morris and Levy 2014). Many manufacturers did not have sufficient capacity to supply both export and domestic markets, and reneged on their domestic orders. Hence South African retailers went offshore to import Chinese apparel.

By 2004, the appreciation of the Rand/US$ exchange rate (to R5.73) turned the entire scenario around, creating easier import access, crippling exports, and forcing many local manufacturers to renege on their US export orders. In dollar terms exports collapsed from $231.8m in 2003 to $24m in 2007, and then even further to only $6m by 2012. Local apparel manufacturers sought in vain to return to supplying the South African domestic retailers, but the market configuration had irretrievably altered. Apparel

imports (mainly from China) grew from $192m in 2000 to $755m by 2005 and $1,534m in 2011. Large scale imports of apparel from China (and later from other apparel producing countries) into South Africa and the value of apparel imports and that of local apparel production for the domestic market diverged radically. Local apparel production decreased from 76% of domestic demand in 2005 to 60% in 2011, whilst the share accorded to imports increased from 25% to 40% respectively (Morris and Barnes 2014).

As a result of these dynamics, employment in firms registered with the national bargaining council dropped dramatically - from 97,960 in 2003 to 52,656 in 2013 and then by 2016 rose again to 68,757. Although the bargaining council data base provides the only reliable available quantitative data on firm and employment numbers, it also underestimated the actual number of firms and employees working in the industry[4]. There were, and remain in existence, many small unregistered firms intersecting into the apparel value chain as informal suppliers. These informal enterprises are highly differentiated in scale, scope and performance, run by ex-formal sector skilled workers, mostly competing on price, and feeding into design houses, larger apparel firms, and thereby indirectly into the retail chains. Their exact number, levels of differentiation, and workers employed is unknown.

These GVC dynamics continued to shape the apparel and textile sector for the following decade. The industry was caught in a set of contradictions between the strategic positions of its import substituting industrialisation and the globalisation requirements of the future which paralyzed its ability to respond consistently. South African domestic apparel enterprises were caught in a contradiction between being inefficiently and ineffectively set up for import substituting industrialisation, but having to play on the field of globalization which was characterised by import threats from rising Asian producers operating under entirely different competitive production platforms. The South African government was itself locked into a contradictory policy response - radically reducing the sector's protective barriers but unable to do significantly enough to assist domestic firms to raise their systemic competitiveness and align with the demands of retail buyers driving their value chains. Finally, the unions were caught by their historic successful strategy of maintaining high wages, blocking piece rate wage systems, restricting shift work which hamstrung productivity in the face of globally competitive countries.

What followed was a series of sometimes contradictory policy responses trying to restrict Chinese imports and force retail chains to procure locally, rather than tackle the underlying problems of weak competitiveness and dysfunctional value chain alignment. When these had palpably failed, after 2010 the Department of Trade and Industry put in place a narrow but focused set of industrial policy interventions under the Clothing and Textiles Competitiveness Programme (CTCP) which comprised two components, the Production Incentive (PI) and the Clothing and Textiles Competitiveness Improvement Programmes (CIP), to assist firms become more competitive. The CIP also offers incentives to National Clusters, with South African registered firms receiving financial support on a yearly graduated basis. CIP grants are targeted at interventions that improve competitiveness, including upgrades and expansion of capital equipment, increasing productivity, enhancing employee skills, improving products and processes, and reducing costs.

The industry was also caught in an industrial relations bargaining trap based on a process of rigidifying labour markets and the introduction of a nationally centralised bargaining council system. This drove a strategy of raising wages and closing the gap between the metro and non-metro wage levels, resisting management attempts to dilute historically inherited operational systems, and pursuing firms deemed to be non-compliant in terms of wage and other benefits requirements. The latter included government rendering firms deemed to be non-compliant ineligible for various industry support and training schemes.

By the second decade of the 21st century the industry displayed very divergent pathways. On the trade front this divergence in retail market supply between domestic suppliers and imports has become a permanent feature of the apparel trade landscape. The government's attempt to control Chinese imports not only failed but it also led to import divergence as retail buyers discovered other supply sources. By 2017 South Africa imported over 54% of it apparel from China, followed by Mauritius, Madagascar and Lesotho with contributions of 7.5%, 6.2% and 6.2% respectively (Trade Map, 2017). South African

[4] See Edwards and Morris 2007 for the methodological problems in the official apparel employment statistics.

apparel imports have fluctuated over the period but averaged high annual growth rates of 6.8% from 2007 to 2016. Data from 2017 estimate South African retail purchases for clothing at R43.0 billion. Import purchases are substantially greater than local purchases, with the import estimates for clothing calculated at 53.9% (Barnes and Hartogh 2018).

The most striking aspect of this process of import divergence was the rapid growth of imports from the rest of Southern Africa – Lesotho, Eswatini, Mauritius and Madagascar – using the duty free preferential access protocols of the South African Customs Union (SACU) and South African Development Community (SADC) to enter the domestic market. This has given rise to the growth of regional value chains from Lesotho, Eswatini, Mauritius and Madagascar feeding into the South African end market starting tentatively in 2006 and accelerating after 2010 (Table 1). Tariff-free access via SACU has been crucial in Lesotho and Eswatini, whilst Mauritius and Madagascar have used SADC protocols to enter the South African market on favourable tariff terms. Imports from Lesotho and Eswatini have been a direct result of South African clothing manufacturers relocating entire plants to the neighbouring countries. In the case of Eswatini by 2017 apparel exports to South Africa have completely supplanted its relationship to US buyers.

Table 1: SSA Apparel Exports to South Africa (in 1000´ USD)

	2006	2008	2010	2012	2014	2016	2017	Share
Eswatini		0	57 178	100 173	133 186	152 085	189 289	35%
Lesotho		15	44 464	63 305	93 359	114 556	128 519	24%
Mauritius	21 253	47 251	69 249	147 724	130 186	108 605	115 173	21%
Madagascar	72	7 046	18 238	62 182	84 812	91 600	85 592	16%
Tanzania	382	545	2 281	2 257	8 724	6 659	8 371	2%
SSA	**51 975**	**79 677**	**234 084**	**394 340**	**460 511**	**484 213**	**540 533**	**100%**

Source: UN COMTRADE, South African SARS data.

It is also important to note that officially recorded imports do not capture the *de facto* impact of foreign apparel circulating in the domestic economy. The borders are porous, customs officials insufficiently trained to monitor false product declarations, and organised crime syndicates operate freely. Hence the actual quality and value of imports seeping into South Africa from illegal operators and sources is anecdotally recognised as being much higher than the official data reveals.

Calculating the opportunity costs associated with the very high levels of importing into the South African clothing and textile value chain is extremely difficult. First, many imported products cannot be manufactured in South Africa. Second, the pricing of imports into South Africa is a major area of dispute. Industry stakeholders, and previous industry research, strongly suggest that the value of such imports are substantially lowered to reduce ad valorem-based tariff payments. Third, a sizable amount of imports into South Africa may not be declared at all. Barnes and Hartogh (2018) attempted to calculate the gross value added (GVA) and employment loss impacts on the local industry of clothing and textile imports destined for South African retail consumption, providing two estimations: a narrow loss based on declared import values, and a broader loss based on the assumption that under-invoicing results in a 33.33% (1/3) discounting of imports. Both calculations assume that all imports can be manufactured in South Africa, which is obviously problematic. Leaving aside the problems with the assumptions they estimate for the clothing industry GVA losses of between R10.7 billion (assuming import values are correct) to R16 billion (assuming significant under-invoicing is occurring), and lost employment opportunities ranging from 80,519 to 120,779 sectoral jobs. However, given the problematic assumptions that have had to be made, the point is not to focus on the estimates, but rather to see them as displaying the major GVC trends manifested in the relationship between clothing imports and domestic production which has created a bifurcated clothing and textile industry landscape.

This bifurcated value chain landscape has had a divergent impact on firm level growth paths. Most of the average firms meandered along in a fairly uncompetitive manner. However, those firms that

qualified and received CTCP support have seen major improvements in economic, efficiency, and competitiveness performance indicators. The IDC surveyed a population of 516 CTCP beneficiary companies in 2017, and secured data from 148 recipients who were able to provide data for the period 2011 to 2016 (Table 2).

Table 2: Clothing and Textiles Key Performance Indicator Data

Indicator	Units	2011	2016	Change
MVA	Rm	4 793	7 706	60.8%
Employment	Jobs	27 239	31 810	16.8%
Sales	Rm	10 683	19 846	85.8%
Production	Units	778m	962m	23.7%
MVA as a % of sales	%	49.0	47.7	-2.7%
MVA per Employee	R'000	214.5	262.3	22.3%
Absenteeism rates	%	5.4%	4.7%	12.0%
Customer return rates	%	3.6	2.2	38.2%
On Time and In Full delivery to customers	%	88.1	94.4	7.2%
Internal rework rates	%	5.1	3.4	34.4%

Source: Barnes and Hartogh 2018

At the top end of the clothing industry production spectrum there have been a small number of firms that have utilised the support measures in conjunction with a couple of the clothing retail lead firms to achieve value chain alignment. They have created individually driven retail supply chain clusters, with suppliers and buyers working closely together to embrace upgrading challenges. The aim has been to support the adoption of Quick Response (QR) platforms in order to compete with cheaper imports. QR leveraged off the main geographical advantage local apparel manufacturers had in taking advantage of their localness and introducing short production cycles to provide retailers with speed and flexibility of supply. It also required retailers shifting from buying cheap goods on long lead times, maintaining large stocks and having massive sales at season end, to moving to a new retailing model based on minimising inventories and increasing their returns through repeatedly turning over stock at full price within the year.

At the other end of the production spectrum, those apparel manufacturers operating at the bottom to lower-middle end of the market have responded in a different manner. Some relocated to Lesotho and Eswatini to escape the restrictive labour market conditions and wage systems, and exported back into the South African market (Morris et al 2011, Morris et al 2016). In Newcastle and Ladysmith, a number of Chinese owned firms, caught by the tendency to close the gap between metro and non-metro wages, simply ignored the bargaining council wages and paid a wage local workers would accept to secure employment (Nattrass and Seekings 2014). Whilst other small firms simply hid beneath the radar in the informal economy.

A strength and weakness analysis undertaken in 2017 of firms all along the clothing and textile value chain reveal the following. Strengths include quick response retailing developments; labour availability; institutional support for the supply chain; and local market size and potential. Weaknesses encompass weak human capital and associated skills; outdated production processes and equipment; local supply chain capability deficiencies; labour market issues; management deficiencies; inappropriate government policies and interventions; and corruption (Barnes and Hartogh, 2018).

Although this summarises the strengths and weaknesses of the aggregate of firms in the clothing and textile industry, it does not take into account the divergent nature of the growth paths prevalent in the industry. In many respects its highly bifurcated nature is shaped by the fact that it is inserted in a domestically driven GVC which is heavily impacted on, and influenced by, global imports.

Conclusion

The two case studies highlight the inescapable impact of GVCs on South Africa's manufacturing sector. Whether exporting into advanced developed economy markets, as per the automotive industry, or supplying primarily into the South African market, as per the clothing and textiles industry, the specialist capabilities developed within GVCs are clearly framing the operating space for locally based operations. This has partly been driven by the country's reduction of import tariffs over the last two decades, and partly by the continued growth and development of multinational-led business models that have extended and deepened the reach of GVCs.

Manufacturers in South Africa no longer have the space to develop their capabilities in a domestic market providing some level of protection from the cold winds of international competition. Firms essentially need to be born export competitive, as this is the operating standard that needs to be attained whether supplying the domestic or export markets. The consequence of this for established manufacturers has been profound, as evident from the two case studies. Firms have upgraded their capabilities and succeeded in competing against their international counterparts, upgraded and still failed, re-located their operations regionally, or simply wound their operations down over time. While the pockets of firms in the first category have continued to provide government and other industry stakeholders hope of a manufacturing renaissance in South Africa, the reality is that far more firms have fallen into the latter three categories. This is evident in the capital investment data and gross fixed capital formation data for South African manufacturers. These firms have moreover signalled to foreign investors and local entrepreneurs alike the challenges of manufacturing in South Africa, leading to reduced FDI and the limited establishment of new locally owned firms.

It is perhaps unsurprising then that it is the South African automotive industry that has led the competitiveness drive within the broader manufacturing sector. The local subsidiaries of the vehicle assembly lead firms were forced into upgrading their capabilities to compete, and as heads of supply chains they have similarly driven their suppliers to improve their competitiveness. Coupled with supportive policy from government, these firms were largely able to craft out positions for their South African operations within their GVCs. They secured export contracts and invested in their capabilities. Fundamentally, however, they did so because of their sunk investments in South Africa and the initial scale and sophistication of their local operations. This gave them a base to upgrade and to develop their capabilities – as they were integrated into GVCs.

The clothing and textiles industry did not receive the same type of support from the lead firms in their GVC, the domestic retailers, and as such, typically decided not to invest in upgrading their capabilities. Consequently, most ceased operating, or slowly reduced their operating footprint in accordance with their diminishing product and production capabilities. This perpetuated a cycle of diminishing capabilities, firm closures and increasing imports. However, more recently this has begun to change. As South African retailers respond to the entry of international retailers in the domestic market, and expand internationally, they have increasingly recognised the benefits of having agile, flexible local supply chains, and have begun investing in their supply chains. While this may not completely reverse the decline of the clothing and textiles industry and shift most retail purchasing back on shore, it does suggest the emergence of a new lead firm-led business model that holds considerable potential in rebuilding at least a part of the domestic clothing and textiles value chain. This potential is recognised in the national government's recently announced South African Retail-Clothing, Textiles, Footwear and Leather Value Chain Masterplan, which focuses on the competitive advantage domestic retailers receive when purchasing from local manufacturers on short lead times. The masterplan includes a commitment from South African retailers to increase their local purchases to 65% of total procurement. There is however a proviso that the government supports the development of competitiveness capabilities within the domestic supply chain and that there is a demonstrable improvement in the competitiveness capabilities of local manufacturers (encompassing their cost, quality, speed, and flexibility capabilities).

How do regional value chains fit into the complex intersection of domestic and global value chain drivers? Again, this appears to be context specific. The automotive GVC is dominated by multinational vehicle assemblers that organise their global production footprint on the basis of a global strategy, while the clothing and textiles value chain is dominated by JSE-listed retailers looking to optimise their

sourcing models to compete more effectively domestically. How do regional value chains support the effectiveness of their primary strategies? Thus far regional purchasing by South African retailers has opened up substantial opportunities for suppliers in Lesotho, Eswatini, Mauritius and Madagascar to further extend and build their capabilities. It is still too early to predict how these regional value chains will develop and whether local clothing firms will take advantage of backward linkages into the region. As regards the automotive industry the operational demands and requirements of lead firms would appear to open only limited opportunities for regional suppliers, except in particular niche operations. Ultimately it lies in the hands of the lead automotive firms in terms of locating some of the assembly operations and sales activities as they attempt to spread into other key countries in Sub Saharan Africa.

How an economy like South Africa positions itself within these opportunities is dependent on the strategic positioning of lead firms within GVCs (and the role they articulate for their South African operations and suppliers); the strength of the domestic economy; narrow sector-specific industrial policies that frame the development of the country's leading value chains; and the broader transversal government policies that either enhance or undermine South Africa's industrialisation potential and hence its position as the "natural gateway into Africa".

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