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Economic Complexity and Employment Expansion:
The Case of South Africa

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Summary

The long-run growth and development literature has found that for a pattern of structural transformation and inclusive growth to assert itself in an economy, two key inter-linked ingredients are required. Firstly, the move from a low productivity agricultural sector to a high productivity, high growth and export-oriented agricultural sector. Secondly, the development of a dynamic manufacturing sector which is both employment- and export-intensive.

This brief explores the development of a more nuanced model of growth and development for South Africa. We use a novel methodology to identify agro-processing and manufacturing products that South African firms can diversify toward, and thereby ensure a productivity-enhancing, sustainable growth path. To this end, we conducted interviews with firms and industry experts in order to determine the capabilities needed to diversify into these products, and the factors constraining the process. Based on these insights, we suggest a number of general and sector-specific policy recommendations aimed at growing the manufacturing sector in order generate employment opportunities, especially for women and youth.

Introduction

The structure of South Africa's economy in 2018 is similar to that in 1994, indicating a lack of structural transformation. Arguably, South Africa has experienced premature industrialisation, with the manufacturing's contribution to GDP decreasing from 21% in 1994 to 12% in 2018. Deindustrialisation has limited the economy's ability to generate sufficient employment opportunities for a growing labour force. In order to reverse the decline of the manufacturing sector – and address South Africa's unemployment challenge – it is crucial to identify and develop targeted industries within the manufacturing sector.

This policy brief will identify targeted sectors, and the constraints that are preventing firms from expanding their business.

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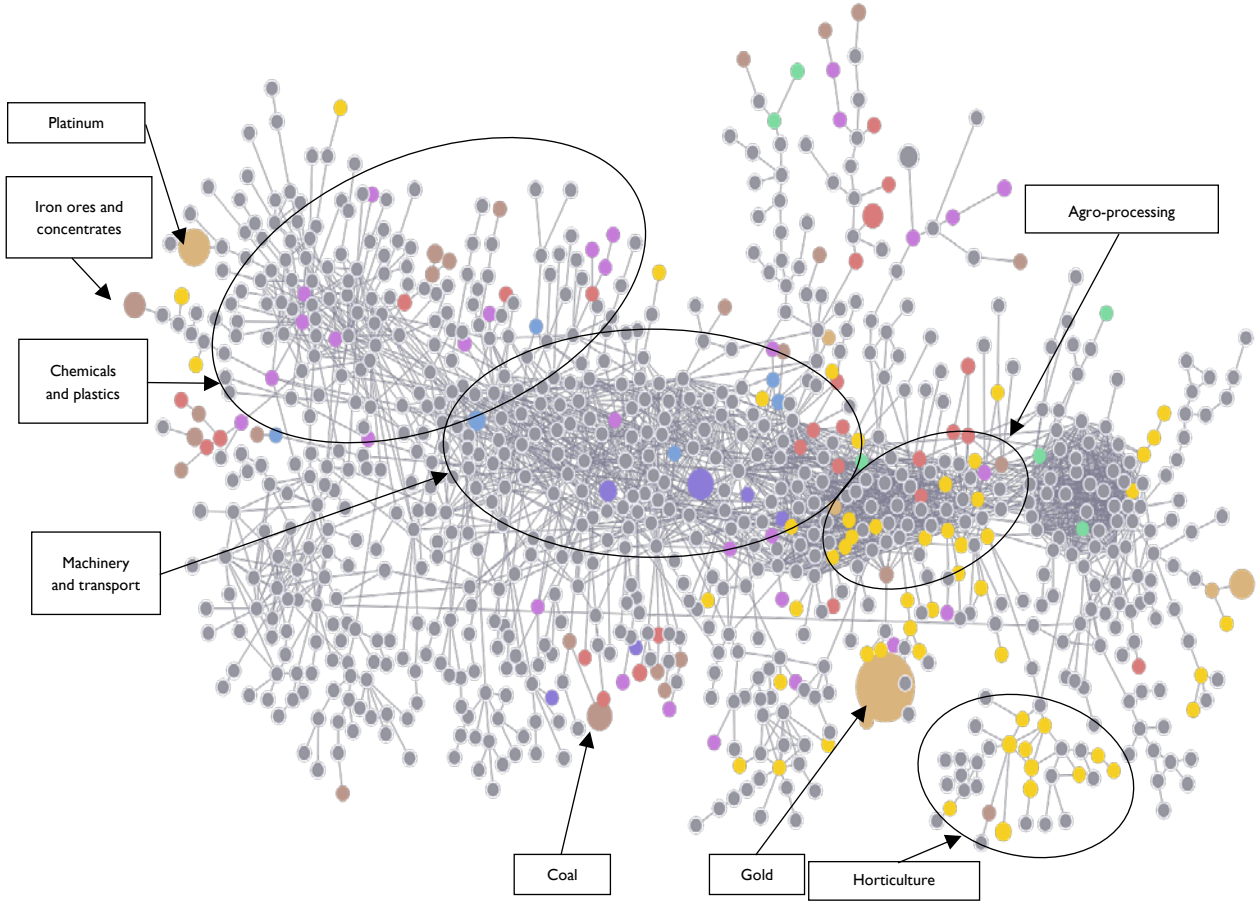
South Africa in Context

Economic complexity measures the productive know-how or capabilities inherent in an economy. In order for a country to diversify into more complex productive activities – particularly those in manufacturing – it needs to accumulate productive capabilities. More complex countries are able to produce a diversity of more complex products, such as x-ray machines, while less complex countries are typically restricted to a portfolio of resource-based products, such as gold, silver and nickel.

Building complexity, and thus producing a diverse range of increasingly complex manufacturing products, is a path dependent process. Countries shift more easily into products characterised by capabilities that are similar to those embedded in the country's productive structure. For example, it is easier to shift production from iron ore to steel than it is to shift from iron ore to pharmaceuticals.

We visualise South Africa's current productive structure by way of a product space graph.

Figure 1: South Africa's Product Space 2015



Source: CID (2018)

Notes: Product groupings or clusters are represented by the following colours: Textiles & Furniture (light green); Vegetables, Foodstuffs & Wood (yellow); Stone & Glass (light brown); Minerals (dark brown); Metals (red); Chemicals & Plastics (light purple); Transport Vehicles (dark purple); Machinery (blue); Electronics (turquoise); Other (dark blue)

South Africa's productive structure remains peripheral and rooted in commodities. It is evident that these commodities include mineral products such as platinum, coal, gold, diamonds and others. The productive structure also comprises a number of agricultural commodities, such as raw sugarcane, wheat and corn (see

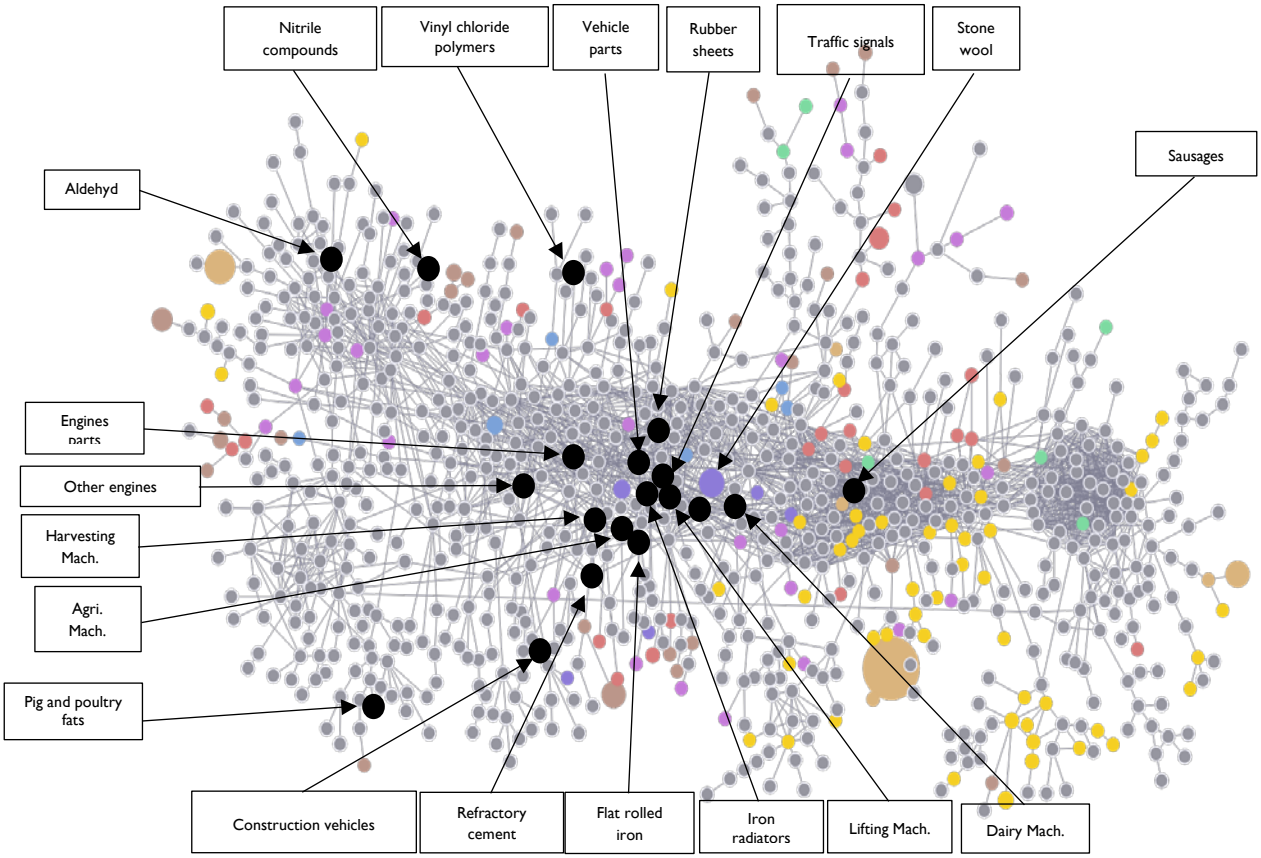
yellow nodes). In addition, there are a number of horticulture and processed agricultural products. Manufacturing activities are also typically resource-based. These productive activities include the production of paper and pulp products, metal products, and leather products.

There has been growth within the machinery industry. In particular, there has been substantial growth in the production of cars within the automotive industry, driven by industrial incentives under the Motor Industry Development Plan (MIDP), and more recently, the Automotive Production & Development Programme (APDP). The chemicals industry has also shown signs of diversification, with South Africa having a revealed comparative advantage in 29 chemical products in 2015, compared to 23 in 1995. Nevertheless, despite a degree of diversification in the machinery and chemical industries, the South African productive structure remains concentrated in commodities – and thus peripheral.

Identifying Frontier Products

In order to determine which industries in the manufacturing sector should be targeted, we aim to identify South Africa's "frontier products". Frontier products need to be: Firstly, more complex than South Africa's current export mix; secondly, feasible given South Africa's current productive structure; and thirdly, provide potential for further diversification. Figure 2 shows how South Africa's product space could potentially evolve with the addition of frontier products.

Figure 2: South Africa's Potential Product Space



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Diversification toward these products would involve a clear shift to the core of the product space, particularly toward products in the machinery, transport, chemicals and plastics, and metals clusters.

A further two points emerge regarding the relatedness of the frontier products: First, these products are related to South Africa's current productive structure. We observe a number of the products are related to the primary sector activities that dominate South Africa's export structure. For example, harvesting and other agricultural machinery all relate to South Africa's relatively robust commercial agriculture sector. Similarly, large construction vehicles and lifting machinery are related to South Africa's mining sector.

Second, it appears that the frontier products are related to one another. A number of the frontier products are likely to feature as inputs into the production of other frontier products. For example, pig and poultry fat is used in the production of sausages. Similarly, engines and engine parts are used as inputs into the production of construction vehicles and agricultural machinery. As such, we observe, at least initially, a complementarity across the list of frontier products.

Key Policy Recommendations

General Policy Recommendations

1. Develop state capacity, particularly in relation to those institutions that provide product certifications and standards (e.g. SABS).
2. Reduce the 'cost of doing business' (e.g. electricity tariffs and labour regulatory regime).
3. Reduce port, rail and road transport costs.
4. Increase the supply of skilled labour.
5. Ensure a stable macroeconomic environment.
6. Invest in research and development programmes related to the targeted industries.

Sector Specific Policy Recommendations

- *Agro-processing:* Implement bio-security measures to ensure compliance with global phytosanitary standards.
- *Horticulture:* Increase the number of cold storage facilities.
- *Transport*: Facilitate growth of Tier 2 and Tier 3 suppliers, through enhancing access to capital, technology, and tooling machinery.
- *Metals and machinery*: Facilitate growth of foundries. Align trade and industrial policy to grow entire metals value chain.
- *Chemicals:* Undertake trade facilitation measures (e.g. conduct a tariff review; design a comprehensive trade strategy; ensure successful completion of trade agreements).
- *Plastic*: Enhance certification and standard body's capacity to facilitate trade in the face of non-tariff barriers.
- *Stone wool:* Enhance capacity at standards and certification authority.

Conclusion

Building complexity is about growing a network of interconnected products and industries. The interconnectedness of these products (and hence industries) means that policy must be formulated in such a manner that facilitates the growth of the network in its entirety. Firstly, South Africa must use its primary industries to facilitate industrialisation. Many firms are producing machinery for the agriculture and mining sector because they have the productive capabilities to do so. In order for these industries to be globally competitive, these industries need to grow in a knowledge-based manner – in other words, by creating strong linkages between firms and research institutions (e.g. universities). Secondly, incentives should be designed in such a way that it is in a firm's interest to share its technological capabilities and other resources to create economies of scale. Finally, there needs to be better policy co-ordination between different government departments. Ideally, there needs to be a comprehensive economic plan, based on an excellent understanding of sectoral dynamics. In the designing of a coherent industrial strategy, a comprehensive analysis of opportunities, challenges, potential interventions and synergies with other sectors, must be undertaken in each sector.

References and useful resources

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