

Industrial Policy: Where does innovation fit in?
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Ladies and Gentlemen

1. Introduction

The starting point for our discussion is the importance of the industrial sector to achieve economic growth. History has shown us that the most successful nations in terms of economic growth and development were those that supported and contributed to growing the industrial base of their economy. Even today those developed economies that are thriving have strong industrial sectors – Germany stands out as the prime example here but is not the only one. It is also no accident that the developing countries that have thrived over the past few decades have been those that focused on building their industrial base.

However, just having some industry, while important and a necessary precondition to development, is not sufficient to achieve rapid economic growth. Having entry level technologies that manufacture basic products gives a country the entry point but that does not ensure rapid economic growth or economic development. History is also littered with those countries that became off-shore destinations for very cheap assembly only to find they lose their industrial base when conditions change or a cheaper producer with better incentives comes along. For example, our neighbours in Lesotho discovered this the hard way with the end of the multi-fibre agreement and the shift of a portion of their clothing production to South Asia.

So what takes a country from entry level assembly operations to having robust industrial capacity and stronger economic growth?

These are key features of industrial policy – from attracting the basic industry in the first place with a comprehensive incentive structure and support framework to supporting the growth and development of key industries, linkages across the economy, access to markets, etc. It is also where innovation fits in. Industrial development and innovation are inextricably linked as innovation takes us from basic industry along a journey to world class operations. There are however many steps in between and different types of industry that need to be catered for on this path of development.

Industrial policy is not a blunt instrument and increasingly given the global conditions and international agreements requires us to take a complex and sophisticated approach. The autocratic imposition of industrial policy measures are also not an option in a robust democracy like ours.

Industry policy therefore requires that we look at the context of our economy and political-economy, the nature of our industry, understanding of the markets and opportunities; and

when it comes to innovation and technology the nuance of implementing appropriate policies that fit our context and industrial structure.

These issues are recognised in the national industrial policy framework and in the industrial policy action plan (IPAP) which are important documents to look at and engage with. This conference also seeks to bring together these aspects. I will touch on a few key issues in the rest of my input.

2. Context of our economy and political-economy

I will not attempt to give a comprehensive outline of the state of our economy and I see from the programme that Jorge Maia will provide that input. I would however like to note following issues that stand out for me in the context of this discussion:

- That we are facing a protracted period of slow growth and are now regularly dipping into quarters of negative economic growth. The economy has been on a downward trajectory from 2011, coinciding with the end of the commodity boom and tracking growth across the developing world excluding China.
- The decline in the rate of investment in the economy by both the private sector and the SoEs. The rate of investment has declined from a high of 23.5% of GDP in 2008 before the financial crisis & first electricity crisis to below 20% in the last quarter.
- The declining contribution of manufacturing to the economy from approximately 20% two decades ago to approximately 13% today. Again, this tracks trends across peer economies, but it nonetheless poses hard questions about how to sustain development and grow decent work.
- That there are key sectors of our economy that have shown remarkable resilience despite the global downturn and domestic slow growth. Agro-processing for example has shown remarkable growth over the past decade and is now a key sector of the economy that is also starting to show strong export growth.
- The relatively small size of our small to medium size business sector. Recent data shows that in 2015 there were 670 000 formal small businesses, down from 707 000 in 2008; the data shows that these businesses employed 4.3 million employees.
- We have approximately 1.5 million informal businesses, with little change over the past few years
- Despite South Africa's high unemployment rate we also have a very low rate of people in self employment as a percentage of total employment.

What is clear is that our economy is not in great shape at present, and there are a number of structural barriers inhibiting small business and self-employment. An urgent stimulus is required however in the context of declining fiscal resources these are not easy times for policy makers.

The manufacturing sector does however represent significant opportunities for such stimulus measures. In that context we have noted in our recent work the stellar performance of the IDC in financing the industrial sector, however when compared to their global peers there is a strong case to be made for further resources going to them to significantly expand their lending in particular for innovative industrial firms.

Moving to the political economy, there are many issues that we are faced with ... the papers are full of them so there is no need for me to raise them here, suffice to say that these issues have an impact on the confidence levels in the economy and are one of the contributing factors to lower than desired investment rates. It is however naïve to think that it is just the political environment that impacts on the slow growth and we should not downplay the continued impact of the commodity bust not just on our economy but also our neighbours. There are also a number of very real structural factors that hold us back and require attention.

There is one issue that I would like to go into more detail on – that of the youth.

The ushering in of democracy in 1994 brought with it the promise of great opportunities and the scope for the youth to do things their parents were unable to do. Young people growing up under democracy have experienced freedom that no other generation in South Africa has had. Importantly, young people today have been growing up during a period of massive technological upheaval and they have been exposed to technologies and devices that open up a world of information and access to knowledge like never before. In a survey that I reviewed a few years ago there was a finding that almost all learners across school quintile and geographic area had access to a cellphone and that 75% were using it to access the internet.

These and other economic factors are increasingly driving changes such as greater migration from rural areas to the metro's particularly of young people who are entering the job market, the type of work they are looking for, able to do and their view on the world.

Yet that political freedom, access to information, technology and the possibilities of democracy have not yielded the employment opportunities and delivered on the expectations of the youth. This is a serious mismatch and with an increasingly youthful population is already having a disruptive impact. Through the use of technology and innovation we have the opportunity to address this mismatch, and start to draw young people into a different type of career or job, and to provide new enterprise opportunities.

Inequality is an issue that we must also continue to focus on. South Africa remains the most unequal society in the work and thought needs to be given on the role of innovation to reduce inequality and poverty.

3. Industry and innovation

3.1. Why innovation is critical as a feature of industrial policy

- **Investment:** Invest in production; this requires firm capabilities to continually be enhanced and improved; including production techniques and engineering capacity which are critical. Often NOT cutting edge, but rather about diffusion so that firms catch up in terms of production processes and product design.
- **Collaboration between industry and government.** Important role of government & public interventions to support the enhancement of productive capabilities of firms. But equally important for firms to invest in innovation as well as in their employees.

- **Spill over effects from research.** Universities, science council into the private sector – how do we get it right to link the public & private sector to collaborate on innovation & research - both in a model that works and is also to scale. But expensive for SA so also a role in how to adopt and diffuse technologies from other countries (licenses).
- **Moving up the value chain;** but that requires investment in innovation and being more productive by creating greater value; that in turn would contribute to ...
- **Better employment prospects** – types of jobs, as well as productive employment that yields better incomes.

Industrialisation in the developed countries has taken place as a result of the increasing value add, innovation and strategic use of technology; so it is where we want to be but we need to be careful here. Innovation and new technologies is a highly risky (and sometimes very expensive) activity – South Africa’s own experiences here are indicative. The PMBR and Joule Electric Vehicle are case studies of where things do not work out in this space. There is however huge scope for significant innovation in supporting existing industry with systematic and gradual innovations not only in the technologies they use but also in how production is organised. There is also a whole world of mid-tech sectors that may not be the next Sasol but can bring significant growth to the industrial structure of the economy. And there is the challenge of diffusion to marginalised producers who desperately need even basic technologies from the formal sector. For instance, township mechanics now cannot compete unless they have access to computerised technologies – that is not cutting edge technology, but for them it is a major innovation.

How then do we see innovation being effectively located in our industry? And how does government co-ordinate its effort so there is a coherent support framework that drives the kind of innovation that will result in great levels of industrial development?

3.2 Understanding Industry

The starting point is to understand the nature of the different enterprises that require policy support, as not all businesses are the same and the policy framework needs to capture that otherwise you end up aiming too high or too low instead of providing appropriate support to enterprises that require it and will contribute to growth and employment creation. Further there are specific blockages to innovation that would vary according to the type of enterprise involved and very importantly the sector.

TIPS research identifies four major groups of enterprise in this regard:

- a. Large exporting companies
- b. Small high-tech and design enterprises: High Innovators
- c. Formal sector companies where innovation is not given any attention.
- d. Small emerging and informal producers without access to innovation opportunities

3.2.1 LARGE COMPANIES

South Africa's large exporters play a crucial role as sources of innovation, providing substantial funding and sustaining international competitiveness and exports. Any effective innovation strategy for industrial policy has to build on their strengths.

Companies here include the large exporting companies in the mining value chain and the supporting enterprises in capital goods and components production. These enterprises are internationally competitive in terms of innovation. The mining value chain is the one of the few with significant domestic innovation capacity and systems as well as world-class intellectual property; which highlights the importance of support to that sector and the growth potential that exists upstream of mining (in capital equipment). We have seen over the past two years (and arising out of the mining Phakisa) significant work taking place to strengthen research and innovation capacity in the mining capital equipment sector.

The petro-chemicals and chemicals sector is also particularly important as a base for innovation. The challenge is both to enable them to compete with imports as well as to expand exports, and to strengthen spillover effects. That in turn requires, above all, making it easier for them to obtain skills. A qualitative improvement in the skills picture requires stronger measures to ensure that school leavers have the competencies required by the economy, rather than a narrow focus on post-school education and training.

3.2.2. HIGH INNOVATORS

Small high innovators are small companies, often highly skilled and creative, that mostly provide key inputs for larger companies, for instance in engineering and software production. In practice, they are crucial for innovation and play a disproportionate role in support of innovation. They are, however, hard to identify in the economy, both because they comprise a very small share of enterprises and employment, and because they act principally in support of larger private and public enterprises. A critical issue for closing the knowledge gap is how these enterprises could take advantage of broader production, marketing and diffusion systems.

Our research shows their main constraint lies in the skills shortage and lack of financing. Even more than for other enterprises, they require a broad-based skills strategy, rooted in substantial improvements in basic education.

3.2.3. Formal Sector not high end

In this category we find formal sector companies where innovation is a non-issue. They are either (a) linked to global operations and innovation takes place in other countries and they operate under licence and do basic assembly or formulation; for example pharmaceuticals and media, although increasingly there are local companies operating in these types of sectors that would be in either of the first two categories. Or (b) not engaged in the innovation space due to lack of resources or appetite for such activities. Typically they use fairly advanced technology, but they are not pushing the envelope to improve it.

Interventions could be strengthened by developing a more systematic approach with specific support measures, identify key risks and ways to mitigate them, and support

stronger cross-cutting improvements around access to information, skills and venture capital.

iv. Marginal producers

Small emerging and informal producers who have virtually no access to knowledge networks, technical support, infrastructure or funding to upgrade their technologies to the level found in the formal sector. The main obstacle to innovation for these producers is lack of market access for new or more efficiently produced goods and services as well as inadequate information on innovative options, weak skills and insufficient investment finance.

There is no comprehensive strategy or support structures for marginalised producers. While some ad hoc schemes exist there is scope to develop additional ways to support the **diffusion of** improved technologies to informal manufacturing enterprises.

Marginalised producers are, by definition, largely excluded from the knowledge flows in the National Innovation System. To innovate, they require information, technical support, financing, inputs and marketing.

Structures to support innovation and growth have to be tailored to meet the needs of specific subsectors and locations. Options include: Clusters; Incubators; Marketing agencies; Marketing coops; Extension services; and Municipal support systems.

4. Employment impacts

A core issue is how innovation in the formal sector outside of the export industries can bring about greater employment. Innovation, especially in the production process and work organisation, often aims to reduce the amount of resources required, including labour. In this case, unless the scale of production climbs at least proportionately to the growth in productivity, innovation can lead to job losses.

Something that is critical to consider with the kind of unemployment levels that exist in South Africa; however that should not result in less support for innovation, which is critical to industrial development but rather also requires a constant focus on employment creation, new enterprise development and increased levels of investment in additional capacity. The reality is that for growth to take place requires improvements in technology. The challenge is to unlock innovations that help bring people into employment and increase production, rather than just displacing them to cut costs. Any innovation strategy in the South African context must take into account impact on employment.

5. CONCLUSION: Innovation that fits with our context and industry

In order to promote innovation a more effective strategy is required for each of these groups that would build on sectoral interventions to support innovation. A significant amount of work has already been done and contained in the Industrial Policy Action Plan (IPAP). Indeed, virtually every sector strategy in IPAP includes programmes to support innovation, including:

1. Linking innovation to sector and cluster institutions that can integrate technological advances consistently with measures to improve skills development, marketing and

access to finance. This kind of institutional development encompasses, for instance, cluster and sector organisations, marketing co-operatives and incubators.

2. The provision of advice about technologies, work organisation and market demand to individual enterprises.
3. Improving access to key inputs for innovation, especially through skills development and increased industrial financing.
4. Bolstering effective demand for innovative products, among others by encouraging local procurement, supporting national and international marketing, and subsidising users (as for instance in the case of solar water heaters).
5. Developing regulatory frameworks that encourage innovation, among others by reducing the cost through tax incentives, tariff rebates, regulation of input prices and the like, or by setting standards.

Key issues to give some thought to:

- Stronger linkages between industrial and innovation policies – not just carving out areas with advanced technologies as innovation, but rather looking at how innovation can support industrialisation across all the IPAP programmes.
- Is there a synergy between youth, innovation and small business? And if so how do we unlock it in a meaningful way.
- Effective mechanisms to support collaboration between the national system of innovation and the different categories of firm in order to support industrial upgrading.

I thank you.