

Why the S in BRICS? : A Production Engineering Perspective

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Abstract

With Africa expected to be one of the world's fastest-growing regions, South Africa has positioned itself as the gateway to the continent. Though its economy is dwarfed by other members of the group, South African companies have shown capability of competing in the global arena. It has spawned multinational corporations which have managed to expand into Europe and America, produced cars and aircraft parts for the western markets. The paper shows how South Africa's advanced process technology, manufacturing capacity, high level of industrialization and role as a major economic player in Africa has earned South Africa a place in the BRICS.

Keywords

BRICS, Manufacturing, GDP

1 INTRODUCTION

After many efforts of lobbying, South Africa was formally invited to join the BRICS in December 2010 and President Jacob Zuma attended his first BRICS summit in Hainan, China in April 2011. South Africa's economy is not growing as fast as the other countries and dwarfed in the group. Many economists including Jim O'Neill who first used the term BRICs have disputed the presence of South Africa in the group as it is not expected to be a world economic powerhouse any soon. The paper discusses South Africa's strengths and the potential in its manufacturing sector which makes it to be able to compete with the other countries in the group and benefit from the structure of the group which supports value added exports. The organization of the paper is as follows. First we discuss the BRICS countries, secondly we discuss the economy of South Africa and the lastly the strength of South African industry that enables it to compete with the other countries in the group despite of its smaller economic size.

2 BRICS

The acronym BRICs was first used by O'Neill of Goldman Sachs in 2001 to refer to Brazil, Russia, India and China the economies which are expected to become the world's largest economies in the 21st century. The GDP of these economies collectively would have overtaken the six major advanced industrial economies (G6) i.e. United States, Japan, Germany, Britain, France, and Italy by 2050. By the year 2015 the BRICS's GDP is expected to be 20.7% of the world's GDP [15]. At that time the BRICS will be contributing 44% of the world's labour force and 18.8% of the world's exports. The BRICS are likely to overtake the G6 in 2039 and China will overtake United States in 2041 as the world's largest economy [23].

2.1 Next 11

After coining the BRICs in 2005, O'Neill went on to coin Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam as the Next 11 (N11). These are countries with high potential of becoming, along with the BRICS, the world's largest economies in the 21st century. He stated that only Mexico and perhaps Korea have the capacity to become as important globally as the BRICs, although many of them, South Africa included, have compelling potential. Compared with the N11 countries, South Africa's economy is growing slower than South Korea, Mexico, Turkey and Indonesia.

3 SOUTH AFRICA THE GATEWAY TO AFRICA

An analysis by the Economist [19] over the last ten years up to 2010 showed that no fewer than six of the world's ten fastest-growing economies are in sub-Saharan Africa. Though South Africa's economy is quite smaller than the other N11 countries and not one of the fastest growing nations it is the largest and most diversified economy in the region. South Africa is being used by developed and other emerging countries including the BRICS as a gateway to the African continent, and vice versa as seen by the number of multinational corporations with their headquarters for Africa in South Africa. Gordon the South Africa's minister of finance states that there are some similarities between the rise of Africa now as a priority investment destination and that of China three decades ago, when that country began opening its economy to global forces [9]. The African miracle will be distinct from China's and will need to be based on home grown formulas tailored to the continent's condition, strengths and specific needs where the key will lie in unlocking the huge entrepreneurial potential of the continent.

3.1 South Africa's Economy

Compared with the rest of the group South Africa is an economic dwarf with a GDP almost a quarter of the average of rest of the group excluding China and is growing slower than the rest of the group as shown in Figure 1. This has caused economists including O'Niell who came up with the acronym to oppose the inclusion of South Africa in the group. O'Niell's criterion for a country to become a BRICS country is that it should have a large population, high GDP (3-5% of Global GDP), have home grown companies that are world-class and globally competitive, and strong government-business relations.

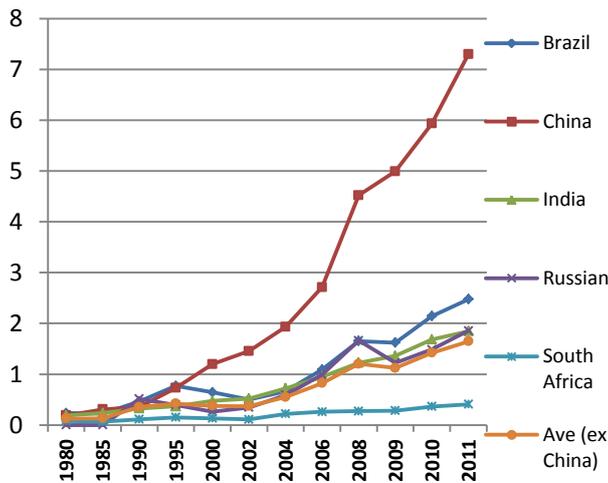


Figure 1 - GDP (Current US\$1 Trillion) for BRICS (Source World Bank [25])

South Africa's economy is expected to grow at an average rate of around 3.5% over the next 50 years [24]. This compares to the predictions for Russia and Brazil. In 2050 South Africa's economy would be significantly smaller than the rest of the BRICS with GDP around US\$1.2bn compared to US\$5.9bn for Russia (the smallest of the rest of BRICS economies). It's projected GDP *per capita* would actually be high. The 2010 – 2011 Global Competitiveness Report of the World Economic Forum ranks South Africa favourably in relation to the other BRICS countries at number 50 with China at number 26, Brazil 53, India 56 and Russia 66.

Before the global economic recession, South Africa like most of the BRICS countries experienced a period of sustained economic growth, with annual GDP growth rates averaging 5.4% from 1999 to 2008. The GDP has recovered from -1.7% in 2009

to 2.8% in 2010 though the GDP growth rate is still below potential estimated around 4% per annum. GDP is expected to grow at a rate of 3.6% in 2011 and 4.3% in 2012 [4]. At this rate the South African economy would have expanded significantly less than the other BRICS nations with China reaching 10.4%, Brazil 7.5% and Russia hit 4% in 2010.

3.2 Manufacturing sector

The manufacturing sector in South Africa is the single largest contributor to GDP with over 30% of the country's output produced in this sector from 2006 to 2008 [4]. This makes the sector to be crucial to the overall performance of the country. The sector has been shrinking as shown in Figure 2 and one of the contributing factors is the fact that the utilization of manufacturing production capacity has increased faster than the investments triggered in the manufacturing sector. The utilisation of production capacity by large manufacturers increased from 79.6% in August 2010 to 81.1% in August 2011 as shown in Table 1 [17].

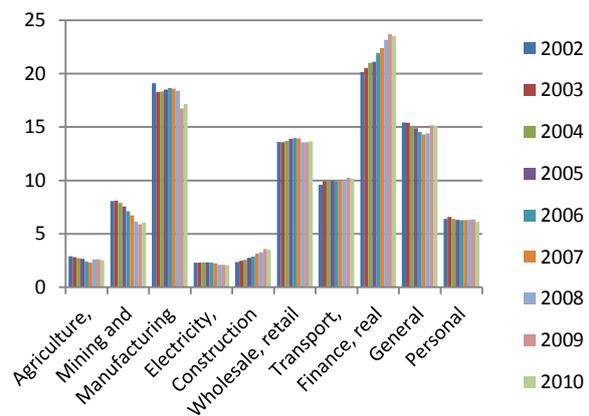


Figure 2 - Quarterly value added by industry (R million) (Source Statistic South Africa [16]).

Estimate	Aug 2010 (%)	Aug 2011 (%)	% Difference
Utilisation	79.6	81.1	0.2
Underutilisation	20.4	18.9	-0.2
Reasons for under-utilisation			
Shortage of raw materials	2.1	1.9	-0.2
Shortage of labour	1.2	1.5	0.2
Insufficient demand	12.8	11.1	-1.7
Other reasons	4.3	4.4	1.5

Table 1 - Utilisation of production capacity in the manufacturing industry (Source Statistics South Africa [17])

Even though the manufacturing sector in South Africa has been shrinking manufacturing added value as a percentage of GDP for South Africa is still more the other countries, like the OECD countries, Brazil and India as shown in Figure 3. This shows that the manufacturing industry in South Africa is still competitive world wide. The paper also discusses some of the achievements of industries in South Africa.

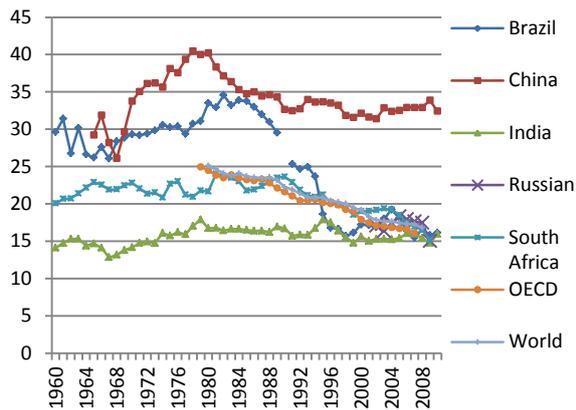


Figure 3 - Manufacturing, value added (% of GDP)
(Source WorldBank [25])

4 SOUTH AFRICA'S INDUSTRY GROWTH POLICIES

4.1 Industry Policy Action Plan

South Africa adopted the National Industry Policy Framework (NIPF) and Industry Policy Action Plan (IPAP) in August 2007. Four lead sectors were targeted for growth i.e. (i) Capital/Transport equipment and Metals, (ii) Automotives and Components (iii) Chemicals, Plastic fabrication and Pharmaceuticals, (iv) Forestry, Pulp and paper, and Furniture. Three of these sectors except Forestry, Pulp and paper, and Furniture have grown as shown in Figure 4. Motor vehicle parts and accessories has become the leading manufacturing sub-sector followed by Basic Chemicals. Though IPAP made some achievements it was recognised that the industrial policy needed to be scaled-up from 'easy-to-do' actions to 'need-to-do' interventions, to generate a new path of industrialisation. This paved way for a revised IPAP (IPAP 2). IPAP 2 focuses on manufacturing and other value-added sectors, with a combination of high employment and growth multipliers. This includes the co-ordination of

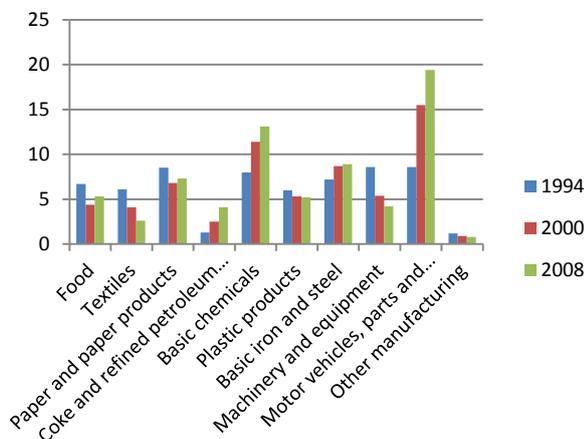


Figure 4 - Sub-sector shares of the manufacturing sector
(Source Camco and TIPS [3])

certain value chains where manufacturing mediates the progression from primary to final goods such as agro processing and bio fuels. The policy will enable South Africa to benefit from the structure of BRICS which supports value added exports.

4.2 National Advanced Manufacturing Technology Strategy for South Africa

In May 2002, National Advisory Council on Innovation (NACI) identified the need for developing a National Advanced Manufacturing Technology Strategy for South Africa (AMTS) after recognising signs that the manufacturing sector was in decline. The following Innovation Centres were identified to be strengthened: Automotive Sector, Product Development Technology and Cleaner Production Technology. New Innovation Centres were also proposed which are National Textile and Clothing Innovation Centre and Logistics Innovation Centre. The Innovation Networks that were identified are those for Advanced Materials, ICT in Manufacturing Innovation (ICTMIN), National Craft Development and Advanced Metals. The following Innovation Networks were put under review: The Aerospace Network, The Capital Goods Network, The Chemical Industry Network and The Advanced Production Innovation Network. The implementation of AMTS has resulted in the growth of the aerospace industry as is discussed in the paper.

5 SOUTH AFRICA'S COMPETITIVE INDUSTRIES

5.1 Motor vehicles, parts and accessories

The Motor vehicles, parts and accessories industry has more than doubled its operations since 1994 as shown in Figure 4. This can be attributed to the Motor Industry Development Programme (MIDP). It has moved from a negligible competitive position in terms of the global automotive industry in 1995 to a ranking of 19th in the world (0.7 per-cent of global market share) in 2005. Though the automotive industry in South Africa is still smaller than the rest of BRICS its significance can be seen by the fact that three manufacturing plants in the country have been selected among the few original equipment manufacturers (OEMs) plants to manufacture certain models. Ford's Silverton assembly plant in Pretoria has been selected as one of the three Ford plants that produce the new-generation Ranger compact pick-up. The other two are in Thailand and Argentina) [7]. BMW's South African plant, in Rosslyn Pretoria, is one of three global manufacturing hubs for the sixth-generation 3 Series, started being produced in 2012. The two other plants are in Munich and Regensburg in German [6]. Mercedes Benz's East London plant is the only plant outside Germany to manufacture the Mercedes-Benz C-Class model (W204) [13].

To increase the country's exports competitiveness Automotive Industry Development Centre (AIDC) initiated the Motor Industry Supply Chain Competitiveness Improvement Programme (MISCCIP). MISCCIP is the world's first all-in-one country standardised integration portal between suppliers and OEMs [14], [18]. Dave Coffey, president of National Association of Automotive Component and Allied Manufacturers (NAACAM) states that no other motor industry within a single country has achieved this level of collaboration between competitive parties for the benefit of the industry as a whole [5]. By 2006 MISCCIP contained 8 OEMs (BMW, DaimlerChrysler, Fiat Auto SA, Ford SA, GMSA, Nissan SA, Toyota SA and Volkswagen SA), almost 350 component suppliers and 3 Logistics Service Providers [18]. MISCCIP has been recognised by the South African government for managing to achieve co-operation on challenging issues which was failed by Covisint which was expected to be the worlds largest and most powerful automotive e-hub [10] [11], [1].

The achievements of the South African automotive industry show that it is able to compete with other automotive manufacturers worldwide and that it has the potential to implement policies that can result in economic growth. After the MIDP expires in 2012, a revised programme for the automotive sector for 2013-2020 will be implemented i.e. the Automotive Production and Development Programme (APDP). The objectives of APDP are to increase plant production volumes to 1.2 million vehicles by 2020, strengthen the automotive value chain, provide certainty for ongoing investment decisions, sustain and grow employment and improve competitiveness by training and increased research and development.

5.2 Chemicals Sector

South Africa is among the top 25 chemical-producing countries in the world [2]. Its chemicals sector is the largest in terms of value-added output and is the fourth largest employer in the manufacturing segment. It is the largest of its kind in Africa and highly complex and diversified [22]. The sector is classified into 11 sub sectors i.e. Liquid Fuels, Commodity Organics, Primary Polymers & Rubbers, Commodity Inorganic, Fine Chemicals, Pure Functional & Specialities, Bulk Formulated Chemicals, Pharmaceuticals, Consumer Formulated, Plastic Products and Rubber Products. There has been growth in all the sub-sectors in the sector except for rubber products. Basic Chemicals had the largest increase from 8% in 1994 to over 13% in 2008 as shown in Figure 4. Compared with the rest of the world liquid fuels and bulk formulated chemicals subsectors have a larger output in the global production as is shown in Figure 5. Van Zyl [22] speculates that SA has some relative advantages in these sub-sectors.

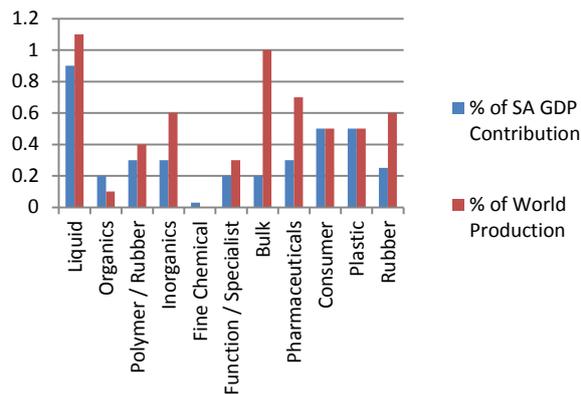


Figure 5 - Chemical sub-sector relative importance to SA GDP & world production (Source Van Zyl [22])

The coke and refined petrochemical products sector has doubled its share in the GDP as shown in Figure 4 and provided the largest percentage of world production as shown in Figure 5. The success of the sector is reflected by the achievements of Sasol the major player in the sector. Sasol's plant at Secunda is the largest synthetic fuels facility in the world [21]. According to the company's annual report for 2011 Sasol has exploration, development, production, marketing and sales operations in more than 35 countries across the world which include:

- 1) Qatar: Oryx GTL, jointly owned by Qatar Petroleum and Sasol, is one the world's largest commercial scale GTL facilities.
- 2) Germany: Construction has begun on Sasol Olefins & Surfactants' (Sasol O&S) purified tri-ethyl aluminium unit in support of its selective growth strategy.
- 3) Uzbekistan: Sasol has formed a partnership with Petronas and the oil and gas company Uzbekneftegaz, to establish a GTL plant in Uzbekistan.
- 4) India: The government of India has awarded the Sasol and Tata Group joint venture long-term access to a portion of the Talcher coalfield in the State of Orissa, the largest coal block award ever made in India to a private company.
- 5) USA: Sasol has started work on a new facility to produce octene by tetramerising ethylene at Lake Charles in Louisiana, United States.
- 6) Canada: Sasol acquired a 50% interest in Farrell Creek and Cypress A's shale gas assets in the Montney Basin.

5.3 Aerospace industry

A US report based on unofficial estimates obtained from industry sources in 2006, estimated that the market size for aerospace (excluding defence) in South African aerospace industry from 2003 was R8.5 billion (equivalent to about 1 billion US\$) [12]. The involvement of South African companies (Denel Saab Aerostructures (DSA) and Aerosud) in the Airbus A400M military transport aircraft manufacture

is proof that South African manufacturers are among the best in the world when it comes to high-end engineering. South Africa is one of only two non-European partner countries in the A400M programme, the other being Malaysia. In addition to these achievements, the Paramount Group a company which manufactures armoured vehicles, military aircraft and equipment in South Africa unveiled a low-cost yet high-performance aircraft called Advanced High-performance Reconnaissance and Surveillance Aircraft (AHLAC) and mine-protected armoured vehicle 'Marauder' which the media has named 'world's most unstoppable vehicle'. Apart from some light sports aircraft, the AHLAC is also the first all-South African manned aircraft design since the Denel Rooivalk attack helicopter. To boost the industry Blue Crane Route Municipality (BCRM) in the central Eastern Cape province has budgeted R43 Million for the establishment of BCRM region as the premier bureau of aeronautics in South Africa. A variety of aviation related projects are being carried out including the assembly of the first South African Light Sports aircraft 'SkyWake' designed by Wits University.

5.4 Foreign Direct Investments – Trans National Corporations

South Africa is in the top 12 countries which accounted for 90% or more of Outward Foreign Direct Investment (OFDI) of emerging countries [15]. It is the single largest source of OFDI from Africa and it accounted for, respectively, 95.9%, 97.3% and 90.1% of the FDI outward stock from Southern Africa in 2008, 2009 and 2010 [8]. South Africa is ranked 20th among the top priority economies for FDI in the world and has the largest number of State owned Transnational Corporations (TNCs) at 54, compared to China (50), Malaysia (45), United Arab Emirates (21) and India (20) [20]. Russia was the largest outward investor in the BRICS in 2004, closely followed by South Africa, while the shares of India and China were comparatively small (1.0% and 2.4%) [8]. Considering the average over 2000-2004, South Africa was the largest outward investor when seen relative to GDP

The success of South African TNCs can be seen from the achievements of companies like Sasol and SABMiller. According to the 2011 annual statement SABMiller now has over 200 beer brands and some 70,000 employees in over 75 countries and is the world's second largest beer producer. Other notable South African TNCs include AngloGold Ashanti (gold production), Illovo Sugar (sugar production in South Africa and neighbouring countries), Mondi (paper production) and Steinhoff (furniture manufacturing). There are also small- and medium-sized South African enterprises investing abroad such as Spanjaard Ltd., Metorex, DPI Plastics [8]

6 CONCLUSION

South Africa's economy is very small compared to the other BRICS countries and is not growing as fast as the rest of the group. In accordance with projections recently made, the country is not expected to become a leading economy very soon. Its relatively small population is also no reason to justify it being a member of the BRICS. However, despite all of these shortcomings it has a diversified world class manufacturing sector which has resulted in most emerging countries making it a gateway for investing in Africa. It has shown capability of implementing industrial policies that can transform its industry. Its car manufacturing plants are among the few plants that manufacture car models for the European market. It is among the top 25 chemical producing countries and has produced Transnational Corporations like Sasol and SABMiller that have expanded into Europe and America. The capabilities of the South African manufacturing sector enables it to compete with the other BRICS countries.

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8 BIOGRAPHY



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