Achieving higher growth and employment: Policy options for South Africa

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Abstract

Using a dynamic computable general equilibrium model, the paper provides some direction on the areas of policy reform that could generate strong growth, employment and poverty reduction in South Africa. The core requirements for more rapid and sustained growth are greater saving, investment, more productive use of capital by better skilled workers, reduction in the skill constraint and moderation in unit labour costs. Higher labour productivity growth will in its own right increase the labour intensity of the economy as a whole. We estimate that the combined impact of reducing transport and communication costs, reducing the skill constraint, and increasing foreign direct and domestic investment can increase potential growth to close to 8 per cent and create an additional 1.7 million jobs beyond the number that would be created without policy adjustments. The policy adjustments contemplated in this paper seek to enable greater diversification of production techniques and types of businesses thereby helping to achieve a full utilisation of labour across skills competencies.

1 Introduction

Unemployment, poverty and inequality remain the fundamental socio-economic challenges facing South Africa. The unemployment rate was about 25 per cent in 2011 with roughly half of all young people jobless.[1] Income inequality remains high. In 2008, the country's Gini coefficient, a measure of income inequality, was 0.7 (Leibbrandt et. al. 2010), among the highest in the world, and about half the population (25 million people) lived on less than R524 per month (or

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[1] Source: Statistics South Africa – Quarterly Labour Force Survey

about US$2 per day). To confront these challenges the country needs to achieve and sustain stronger rates of economic growth and employment creation.

For South Africa to become more inclusive, more people need to work. At any presently recorded wage rate in the South African economy, a rise in the proportion of people employed will have a significant impact on overall poverty and the distribution of income. The most obvious example of marginalisation in the economy is between those that have jobs and those that are unemployed and non-economically active. Just 40 per cent of working age South Africans has a job. We estimate that reducing unemployment to 10 per cent by 2025 requires the creation of 7.5 million jobs, assuming that labour force participation returns to its pre-crisis rate of 58 per cent. From an international perspective, this is a low participation rate. If labour force participation were to rise to an emerging market average of 65 per cent, 10 million jobs would need to be created.

Will the economy achieve this? On its current growth trajectory, it is highly unlikely. In this paper we reflect on a number of bottlenecks to growth and, using a computable general equilibrium framework, consider the impact and implications of releasing these constraints. We focus on increasing the labour intensity of growth, raising savings levels to fund higher investment in the economy, easing the skills constraint, increasing product market competition, and improving the cost and efficiency of network industries such as transport, logistics and communications. The main results are summarised as follows:

- Increasing domestic savings improves the availability of funds and lowers domestic borrowing costs. It can translate into higher levels of investment and growth provided that the market environment is supportive. More saving will have a larger impact on employment where other policies reduce the skill constraint and eliminate industrial incentives that favour capital intensive industries.

- The Growth Commission identifies Foreign Direct Investment (FDI) as an important source of growth especially through technological transfer. Our results are in-line with this finding. Reducing transport and communication costs and increasing the level of FDI raises potential growth by 1.3 percentage points relative to the baseline in the outer years. The economy creates 680 000 additional jobs.

- South Africa's product markets generate exceedingly high mark-ups over cost by international standards. Increasing competition in product markets should raise productivity and lower costs. If mark-ups are reduced across the economy to an international benchmark, South Africa's potential growth rate could increase by up to 1.5 percentage points with employment rising significantly. Extending this competition to markets dominated by State Owned Enterprises (SOEs) would result in further major gains to employment and output growth.

- All of our scenarios are limited by the skilled labour constraint. The shortage of skilled labour prevents faster economic expansion and limits

job creation for less skilled workers – the overall effect is to sharply worsen income inequality. Increasing the quality and quantity of skilled labour can generate an additional 1.5 million jobs relative to the baseline and raise potential growth to 7 per cent.

- Assuming current potential growth rates and a growth elasticity of employment of 0.3, the economy will create 2.2 million jobs by 2025. A growth elasticity of employment of 0.7 will create 6.75 million jobs and lift the potential growth rate of the economy as more people are economically active. Creating more low skilled jobs requires a set of economic policies and institutions that encourage labour intensive growth and a moderation in unit labour costs, resulting in a reversal in the decline in the wage share of value added.

- The best outcomes for South Africa are where policy interventions are combined. To give one example of thsi complementarity, South Africa needs to achieve greener growth. Raising the productivity of the workforce would increase the labour intensity of that growth, lower its capital intensity and likely reduce emission of pollutants per percentage point of GDP growth.

- Increasing growth and employment in manufacturing, a much-discussed aim in the policy debate, requires a number of supporting policy measures, including critically the moderation of growth in unit labour costs, greater competition in product markets, and lower network infrastructure costs.

- Our results indicate that the unemployment rate may not decrease by 2025 despite the many jobs being created if the labour force participation rate (LFPR) rises from current levels to an emerging market average of 65 per cent. This should not be viewed in a negative light. While unemployment may remain unchanged, there will be more people working; the economy will be growing at a faster rate with more jobs being created. Poverty and inequality will decline.

The paper is structured as follows. In the next section we assess the economy's performance and structure over the last four decades before considering some constraints to growth in Section 3. In Section 4 we outline the modelling approach and different scenarios we impose; our results and policy recommendations are presented in Section 5. Section 6 concludes.

2 South Africa's economic performance and structure

The economic policies and developments of the past have been critical in determining the structure and characteristics of today's South African economy. Here we provide a cursory treatment of these developments.

2.1 *The decline of the apartheid economy 1970 to 1994*

Eighteen years since transitioning to democracy, the structure of South Africa's economy continues to reflect colonial and Apartheid-era legacies. The direct descendants of this include the marginalisation of certain social groups and the robust insider-outsider structural dynamics and relationships that characterise present day product and labour markets.

The structure of the economy was predicated on exploiting the country's abundant natural resources and the development of industries primarily linked with commodities. State involvement in the economy was considerable, diverting resource use and impeding the free supply of labour. The major network sectors – energy, telecommunications, and transport – were dominated by public sector corporations that supported industrial production and mining with subsidised inputs. Manufacturing industries were either closely tied to upstream commodity production or fostered deliberately with the use of high tariffs and directed capital, which transferred income from consumers and other sectors of the economy.

Domestic product markets became highly concentrated as final and intermediate goods producers and factor markets were insulated from competition as a result of high levels of tariff barriers, labour market policies, and product, distribution and licensing regulations. While low levels of competition might have supported economies of scale, the marginalisation of the more rapidly growing part of the population from income growth probably worked strongly in the opposite direction – weak job creation and hence income growth limited the potential gains from expanding production. As a result, South Africa may have re-entered world markets in 1994 with industries that were too small and too inefficient to compete effectively in international or domestic markets.

Certainly the long-term data shows periods of stagnant growth in some sectors and considerable diversity of experience. The long-term production data for manufacturing industries in South Africa (1963 to 2011) show a period between 1979 (or 1980/1981 depending on the sub-sector) and roughly 1994 to 2000 where almost half (13 of 28) sub-sector production volumes were stagnant (Figure 1). Glass and non-metallic products and wood and paper largely resumed expansion in or around 1994, while food and beverages generally grew throughout the period from 1963 with some softening in growth from 1979 to 1994. Of the consumer-goods sectors, textiles and clothing grew at a slow pace between 1980 and 1994 before declining. Electrical machinery, radio, communications and professional equipment, and petroleum, chemicals, rubber and plastic products grew sustainably throughout most of the period. Basic iron and steel and transport equipment, alternatively suffered the largest declines of any sectors in the 1980 to 1994 period, before expanding very strongly up to 2011.

Vastly unequal public services, particularly in education, limited the attainment of higher skills by black South Africans and actively de-skilled workers. Society and economy were characterised by pervasive spatial dislocation and the creation of large, semiurban and urban, geographically isolated communities

with little means for selfgenerated economic development. The gross infrastructural, spatial and public service inequalities that marked the Apartheid era were reflected in the complex nature of households split between rural and urban areas, and elevated dependency ratios. Inefficient transport systems created a high cost threshold for engaging in economic activity while the various services provided (public transport, roads, sanitation and housing) were insufficient to absorb migrants from rural or farflung industrial areas. This raised the cost of supplying labour and inhibited job creation.

The high-skill labour market, by contrast, suffered from excess demand and insufficient supply, setting the foundations for the large wage premium that exists for skilled workers today and contributing to the inflationary dynamic that characterises all levels of wage determination.

Employment growth slowed dramatically in the 1980s before stagnating in the early 1990s. Formal sector wage bargaining came to reflect high labour supply costs, while wage bargaining itself increasingly focused on real rather than nominal wages as a reaction to the impact of high inflation on real incomes. As real wages grew faster than labour productivity, rising unit labour costs further reduced South Africa's international competitiveness at roughly the same time as a new class of Asian exporters were achieving global reach.

Macroeconomic policies failed to provide much stability between 1980 and 1996, undermining the economy's capacity to grow. Monetary policy generated consistent negative real interest rates (averaging -5.5% from 1985 to 1988), assisted by rigorous exchange controls to prevent capital from flowing out of the country. Over the same period, public spending rose strongly in an effort to extend social infrastructure and increase subsidies to industry. This resulted in large budget deficits, rising debt levels, and steadily rising inflation. Although the nominal exchange rate depreciated sharply (weakening by 55 per cent between the end of 1983 and the end of 1986), high inflation peaking at 21 per cent in 1986 prevented the real exchange rate from declining. On an index basis, the real effective exchange rate averaged 115 points between 1985 and 1994 (Figure 2).

The decade ending in 1994 covered South Africa's worst period of economic growth since the end of the Second World War. Potential output collapsed, falling by 30 per cent from the mid-1970s to the mid-1990s (Du Plessis et al. (2007)). The proximate causes of slowing growth were trade and financial sanctions in opposition to the Apartheid government, political instability and inappropriate macroeconomic policy decisions that attempted to propel the economy but resulted in higher inflation, increased uncertainty and declining investment. Structural constraints that built up over this period would ensure sluggish future growth after the proximate factors disappeared.

2.2 *Democracy, macroeconomic stability and growth -1994 to 2008*

Optimism and a new political dispensation spurred growth initially in 1994, but this was put at risk by large fiscal deficits and spiraling debt service costs. Sub-

sequent efforts to lower fiscal deficits, public debt levels, inflation and interest rates in the form of the Growth, Employment and Redistribution (GEAR) programme, introduced in 1996, helped to reverse the stagflationary malaise of the early 1990s and prompt the resumption of economic growth. Clarity on the fiscal and macroeconomic programme did much to stabilise investor and consumer expectations about the future trajectory of key macroeconomic variables.[2]

Improvements in fiscal metrics – reduced deficits, lower debt levels and debt service costs – contributed to a process of disinflation that helped to reduce the nominal and real cost of capital and promote investment by the private sector.[3] A redistribution of public resources was a key element of this process as it targeted the reallocation implied in the Reconstruction and Development Programme commitments but in a more sustainable way – public spending began a long-term shift towards the poor and away from inefficient subsidies. Trade liberalisation and public sector restructuring that included wage restraint also helped to contain domestic prices and lower inflation.

These structural efforts were supported by a shift to inflation targeting in 2000, which helped to improve the transparency and credibility of monetary policy, anchor inflation at a lower level, and reduce interest rates to historical lows.[4] Improved macroeconomic stability, evident in declining output and inflation variability (Figure 3) and in particular much better fiscal indicators, helped to improve the country's risk rating and country risk spread, which fell by roughly 50 per cent between the early and mid-2000s[5]

Macroeconomic stability provided a climate conducive to steadily rising growth in fixed capital formation and heightened activity in all economic sectors. Some sectors, including construction, financial services, transport and communications, and retail and wholesale trade grew robustly, in large part due to greater inclusion of the Black population in the economy, greater access to financial and other services, and growth in the middle class.[6]

Stronger economic growth supported tax revenue and a consistent rise in government expenditure on social priorities such as health and education.[7] From 2004 more emphasis was placed on public spending for economic infrastructure.

[2] The government's inaugural approach to economic policy was demand driven under the auspices of the Reconstruction and Development Programme (RDP), which prioritised social development. The RDP advocated prudent fiscal policy through tax reform, the consolidation of debt, and the cutting of debt service costs that were undermining the new government's economic and social objectives.

[3] The size of the budget deficit was lowered to 2.3 per cent of GDP in 2003/04, which helped consolidate debt and cut debt service costs to 3.6 per cent of GDP. Debt service costs reached a low of 2.3 per cent of GDP in 2009/10 following the budget surpluses run in 2006/07 and 2007/08.

[4] This was originally for CPIX inflation (CPI excluding mortgage interest repayments), but was subsequently changed to target CPI in 2008.

[5] This is illustrated by the considerable decline in the ratio of the South African Emerging Market Bond Index (EMBI) to the Emerging Market EMBI.

[6] Household consumption played an important role in increasing economic growth during this period, underpinned by higher incomes, strong employment gains, and greater access to credit that enabled households to smooth consumption over time.

[7] Government expenditure on education has risen to an estimated 6.7 per cent of GDP in 2011/12, with health spending at 3.8 per cent of GDP (National Treasury, 2012).

Public sector investment as a share of GDP almost doubled between 2005 and 2009, with the objectives of meeting FIFA World Cup needs and raising the rate of potential growth.[8]

Public sector planning and investment in infrastructure, historically low inflation and interest rates, and stronger employment and household income prompted a sharp rise in private sector investment and a sense of a sustained rise in the economy's long-term growth prospects (Figure 4). The investment ratio exceeded 20 per cent of GDP at the beginning of 2008, its highest level since the early 1980s, and peaked at 22.2 per cent at the end of that year.

Investment and consumption were further supported by a sustained increase in commodity prices during the 2000s, as China accelerated its integration into the world economy. The result was an increase in South Africa's terms of trade, which rose by about 30 per cent between 2003 and 2011 and followed a major real and nominal exchange rate depreciation of 10 and 22 per cent respectively in 2002. Over the longer term, the real exchange rate depreciated by about 20 per cent between 1994 and 2008, with considerable volatility during times of international financial uncertainty such as in 1998, 2001 and more recently with the global financial and economic crisis that began in late 2008. The 2001 depreciation of 35 per cent was followed by a gradual reversal of the overshooting.

Although South Africa achieved a marked improvement in its economic performance after 1994, it fell short of other emerging markets and was insufficient to dent overall unemployment levels. During the first decade of a democratic South Africa, unemployment increased as higher labour force participation, particularly among African youths and females, outpaced employment gains.

The unemployment rate reached a high of 27.1 per cent in 2003. This trend was reversed with considerable job gains between 2003 and 2008 as strong economic growth, which averaged almost 5 per cent per year, stimulated employment creation. Two million net new jobs were created, lowering the unemployment rate to 21.8 per cent at the end of 2008. These jobs were primarily in the formal private sector and largely in labour intensive sectors such as construction, trade and tourism, and business services (Figure 5). Many jobs went to younger people and both unskilled and high skilled employment rose rapidly. Supply and demand in non-manufacturing sectors cleared.

In many developing countries, informal employment constitutes up to 75 per cent of all employment. And yet in South Africa, despite high levels of unemployment and impediments to formal sector job creation, the informal sector remained relatively small and measured growth in the sector was low. A range of barriers to entry to informal and small business development have been identified by researchers including but not limited to the spatial legacy of the Apartheid regime and the limitations it imposed on worker mobility, regulation of business growth and employment in urban areas, and high reservation wages (Kingdon and Knight, 2001).

[8] Public sector investment is the sum of fixed capital formation by general government and public corporations. As a share of GDP, public sector investment rose from an average of 4.3 per cent of GDP in 2005 to an average of 8 per cent in 2009.

2.3 *Developments following the global economic crisis – 2008-2011*

The global financial and economic crisis caused output to contract by 2.7 per cent from its peak in September 2008 to its trough in June 2009, the first recession for 17 years. Mining and manufacturing suffered the largest declines as commodity prices and external demand collapsed.[9]

The correction in output was relatively mild compared to the considerable dislocation to the labour market. Total employment declined by more than a million, 7.5 per cent. Job losses were concentrated in the trade, manufacturing and construction sectors and among the young, less-educated and less skilled, adding significantly to the economy's job creation challenges. On the surface much of the job loss was concentrated in sectors that had grown rapidly in the 2003 to 2008 period, largely due to burgeoning property market development and strong household consumption growth. Unit labour costs rose strongly in this period despite the collapse of demand. Manufacturing employment, which had seen muted job creation in the boom, contracted significantly, declining by 14.3 per cent between 2008 and mid-2010, while mining employment was 8.8 per cent lower at the end of 2009.

3 Constraints to growth

South Africa needs stronger, sustained and inclusive economic growth to confront the challenges of high unemployment, poverty and inequality. Under the current growth trajectory, the economy may only create about four million jobs by 2025 – too few to achieve a significant fall in unemployment.[10]

Over the last five years there has been considerable analysis of the constraints to growth in South Africa. This has included the diagnostic approach of the International Growth Advisory Panel (IGAP) and assessments by the Organisation for Economic Cooperation and Development (OECD). These analyses have made recommendations on macroeconomic issues including the balance of fiscal policy and monetary policy, the potential role for fiscal rules and the volatility of the exchange rate, but have placed more emphasis on microeconomic and structural reforms in areas such as education and skills, competition and trade policy, labour market policy, industrial policy, network industries, institutional development and public administration, and black economic empowerment.[11] The diagnostics make the case for a much more robust focus of policy on creating an enabling microeconomic environment to raise the rate of potential output growth and allow job creation at the rate needed to reduce poverty permanently.

[9] Gross value added (GVA) in the mining sector was 12.2 per cent below 2007 levels in March 2009, while manufacturing GVA contracted by 15 per cent between June 2008 and June 2009.

[10] This assumes a growth elasticity of employment of 0.5 consistent with the long-term average (Hodge, 2009).

[11] A more thorough treatment of these recommendations is provided in the IGAP (Hausmann, 2008) and OECD reports (OECD 2008, 2010).

We identify five areas where the constraints to more rapid economic growth are binding and develop ways in which these constraints can be addressed. The constraints are similar to and/or overlap with those identified by others, and we claim no originality for them beyond how we think about their impact on the economy and why we combine them. We show the quantitative impact on the economy if the constraints are addressed. These are large. The size of the impact is a function of what the constraints do to the economy, the absolute size of the distortions they create, and the complementarity of beneficial effects that flow from removing the constraints together.

3.1 The dichotomy between domestic savings and investment

The experience of the Growth Commission's 13 examples of "economic miracles" finds overall investment rates equal to 25 per cent of GDP or higher are needed to achieve and sustain high growth.[12] Such high rates of investment require financing, either through domestic or foreign savings, although "there is no case of a sustained high investment path not backed up by high domestic savings".[13] Low domestic savings inhibits investment and makes the economy's growth dependent on foreign savings.[14]

Domestic savings rates have declined over the last forty years from an average of over 20 per cent in the period 1985-94 to just 14.1 per cent between 2004 and 2007. With rising investment in the last decade, the savings-investment gap has been reflected in the large current account deficit built up prior to the crisis (peaking at 7.2 per cent in 2008). The crisis-induced fall in investment reduced this to 2.8 per cent in 2010 and 3.3 per cent in 2011.

The three components of saving, household, corporate and government saving, show the same trend decline. Government dissaving rose in the years up to 1993 when it peaked, before declining as GEAR improved the fiscal balance.[15] From 2005, the fiscal stance more directly aimed at making government a net saver, which it achieved in 2006 and 2007. In contrast, household and corporate saving has declined sharply since the early 1990s (Figure 6).[16] Government's

[12] The Commission for Growth and Development focused on country examples that had sustained an average annual growth rate of 7 per cent for 25 years or more. These countries are Botswana, Brazil, China, Hong Kong, Indonesia, Japan, the Republic of Korea, Malaysia, Malta, Oman, Singapore, Taiwan, and Thailand.

[13] Commission for Growth and Development, 2008, *The Growth Report: Strategies for Sustained Growth and Inclusive Development*, pp. 54.

[14] Foreign saving can be more expensive than domestic borrowing and when it comes in the form of portfolio capital, and it is less effective in boosting economic growth than when it comes as foreign direct investment. The latter has been shown to be a critical and major source of growth and job creation for many emerging markets, in part because it embodies the transfer of skills and knowledge into recipient countries.

[15] Dissaving occurs when expenditure is greater than income (or revenue in the case of government).

[16] Financial liberalization (Aron and Muellbauer, 2000) that increased the consumption-to-income ratio, rising asset values, particularly house prices, and falling interest rates (Romm, 2005), less need for precautionary saving and the emergence of a black middle class (van der

fling as a net saver ended with the financial crisis in 2008, which saw a major deterioration in tax revenues while expenditure on social and economic priorities and the infrastructure build programme was sustained.

Savings and investment are the building blocks of economic growth over the long term. They can be increased in three not mutually exclusive ways; by greater saving and less consumption by South African households, firms and the public sector, by attracting non-resident saving to domestic portfolio investments (equities and bonds), and finally by foreign direct investment, either through the sale of an existing asset or the investment of foreign currency into a new domestic venture. The relative costs and benefits of the different approaches are important to economic growth and to the composition of saving and investment. When saving and investment are low, the economy would benefit from reducing constraints to saving and investment generally, rather than trying to discriminate between sources of saving. A more growth-oriented regional policy stance in trade, non-tariff barriers and cross-border infrastructure development; more competition and lower costs in the domestic economy including the financial sector; and a more counter-cyclical fiscal policy stance centered on government debt reduction would be useful steps toward greater saving and investment.

3.2 Low skill levels and the skills mismatch

Countries develop in part by supporting the continuous education, skilling and re-skilling of successive generations of workers as the use of capital and production technologies change over time. The same is true across all industries. Full employment is achieved, again in part, by enabling an economic environment where businesses can use various types of capital requiring equally varied skills. As an aim of policy, such a plurality of production techniques would suggest that regulations, supply conditions and pricing of inputs should increase competition between firms. The interplay between competition, full employment and productivity growth generates economic growth, incomes growth and incentives for higher skill levels in the labour force. As productivity rises, less productive firms are forced to match those increases, lower prices or shift focus, in the process creating higher skills levels in the aggregate and/or generating income. Higher skill levels and mixes of skills allow workers to perform higher value added tasks, increase efficiency and productivity, lower unit labour costs and improve the competitiveness of an economy.[17]

A critical mass of readily available skills can underpin innovation and technological dissemination within an economy. Over the period 1960-2000, around 15 per cent or 0.3 percentage points of global output growth per worker can be

Berg et al., 2005), all contributed to lower household saving. More recently, high levels of household credit extension have been reflected in household net dissaving since 2006. Despite a relatively stable corporate profit share, corporate saving also fell after 1995 as dividend distributions grew (Faulkner and Loewald, 2008).

[17] In such a situation real wages can increase without putting pressure on unit labour costs since real wage increases are supported by productivity increases.

attributed to human capital improvement (Bosworth and Collins, 2003). At an individual level, higher skills levels translate to better job prospects and higher earnings. In South Africa, the median earnings of an employee with university degree are almost three times as much as someone whose highest qualification is the senior certificate.[18]

High levels of unemployment in part reflect a skills mismatch in the economy. The structure of the economy has evolved in response to technological changes, demands of production and developments in the global economy, growing the need for higher-level skills. At the same time, South Africa's pool of skills is limited in the short term. There is an abundant supply of low skilled and medium skilled workers but relatively few high skilled workers, a situation exacerbated by the large-scale emigration of skilled labour.[19]

Although technological change often results in higher skill needs, production and the demand for labour depends on the interaction between productivity growth (the change in output per worker) and real wage growth (the change in remuneration per worker), a relationship that is summarised by unit labour costs. Prevailing wages are high and well above productivity growth when compared to wages across other countries at a similar level of development, although there is some evidence this is not uniformly the case across all sectors.[20] Labour market developments since 2008 have added significantly to the contraction in employment and sluggish job creation during the recovery.

Wage adjustments in formal labour markets that limit job growth, high labour supply costs, and extensive skills mismatches are a critically important set of constraints to a more equitable and growth-supporting labour market. Intrinsically related to the problem of skill mismatch is the failure of the educational system to generate enough human capital to support economic growth.

3.3 Poor quality of education

Human capital is the building block of endogenous growth theory, making appropriate education, training and skills development policies critical to foster technological progress and productivity improvements. The importance of human capital deepening and the quality of education and the labour force for economic growth is well-established (Hanushek and Kimko, 2001; Hanushek and Wößmann, 2007).

The education and skills development system is currently failing in this regard as illustrated in the persistent evidence of South Africa's weak educational performance. The traditional measure of learning achievement, the matric pass

[18] Statistics South Africa, Quarterly Labour Force Survey – September 2010

[19] Between 1989 and 2003, the Centre for Enterprise and Development estimates that 120 000 skilled South Africans emigrated, equal to about 7 per cent of the total stock of professionals employed in South Africa (Centre for Development and Enterprise, 2010).

[20] South Africa's unit labour costs in manufacturing over the period 1990–94 were, on average, 59 per cent higher than a sample of 11 emerging market economies including Chile; Hungary; Hong Kong, China; India; Korea; Mauritius; Mexico; Poland; Turkey; Singapore; and Zimbabwe (Golub and Edwards, 2003). Banerjee et. al. (2006) argues that the influence of unions has rather been to prevent real wages from falling since 1994.

rate, declined steadily from 73.2 per cent in 2003 to 60.6 per cent in 2009, although there has been a recent reversal in this trend. Cross-national standardised tests illustrate South Africa is not internationally competitive (Crouch and Vinjevold, 2006; van der Berg and Louw, 2007; van der Berg, 2007, and Figure 7).

There is growing evidence that outcomes in the school leaving exam are shaped by learning and the acquisition of basic literacy, numeracy, and cognitive skills early in a child's schooling life. It has been shown that "low quality education up to grade 11 ... [is] the root cause of low attainment beyond grade 11" (Social Policy Research Group, Stellenbosch, 2011). The first Annual National Assessment (ANA) of Grade 3 literacy and numeracy and Grade 6 languages and mathematics ability highlights poor learning outcomes at these stages of education. On average 31 per cent of Grade 3 learners scored higher than 50 per cent in literacy and just 17 per cent in numeracy. Results for Grade 6 were even lower with 15 per cent passing languages and 12 per cent passing mathematics with scores above 50 per cent (Department of Basic Education).[21]

Of equal concern is the composition of matric passes, with the relatively low numbers passing in the quality indicators of exemption passes and higher grade mathematics and science.[22] On average, only 20 per cent of matric graduates proceed to higher education, a very low participation rate. Out of the 20 per cent that do go on to higher education, only 17 per cent graduate (Sheppard 2009).[23] The "*articulation gap*" explains this outcome as a mismatch between requirements of higher education programmes and the actual knowledge and competencies achieved by school-leavers (Kraak 2011). Only about 5 per cent of South Africans attain 15 years of education (a university degree) and the stock of university graduates is only about 1 million or 3 per cent of the working age population. Without addressing these constraints, the economy is threatened by a persistent problem of skills shortage and greater difficulties of realising economic growth through the channel of TFP and technological progress.

3.4 Low levels of product market competition

The concept of competition is hard to quantify and difficult to measure accurately. Direct measures are not available and this results in the application of a

[21] The Department of Basic Education uses a score of 35 per cent (or *partially achieved*) to assess learners arguing that this represents that learners acquired "at least a reasonable part of the knowledge and skills they should have achieved by their Grade". Using this lower score increases the pass rate to 47 per cent and 34 per cent for Grade 3 literacy and numeracy respectively, and 30 per cent and 31 per cent for Grade 6 languages and mathematics, respectively.

[22] Higher grade mathematics and science were removed in 2008 with the introduction of the National Senior Certificate.

[23] This figure masks significant disparities between very low pass rates at Further Education and Training colleges (9.6 per cent for level two and 12.4 per cent for level three of the national vocational certificate) and much higher pass rates at universities, where 61 per cent of undergraduates pass.

range of proxies including price levels, concentration ratios or profit margins.[24] This empirical literature tends to find that industry concentration in South African manufacturing is high and increasing up to 1996 with some decrease post-1996.

Much of the literature focuses on profit mark-ups (i.e. the pricing behaviour within industries) as a proxy for the intensity of competition.[25] Mark-ups tend to be lower in manufacturing because the sector is more exposed to international competition. Services are less traded and are often subject to greater regulation and stricter standards. Evidence for South Africa suggests manufacturing mark-ups are significantly higher than in comparable industries world-wide and are not falling (Fedderke et. al. 2007, Aghion et. al. 2007, Aghion et. al. 2008).[26]

Increased competition can generate both static (one-off) and dynamic (on-going) gains in productivity. In response to greater pressure to perform, heightened competition reduces managerial inefficiency or better use of inputs – so-called "x-inefficiency" (Nickell, 1996; Griffith, 2001; Bloom and van Reenen, 2006). Static gains are also realised from resource reallocation as competition enables higher productivity firms to expand market share (Scarpetta et. al., 2002). Dynamic gains increase as firms use technology better, innovate or cause more rapid diffusion of innovation throughout a sector. New firms entering a market stimulate and encourage productivity gains among market incumbents, promote technological progress and innovation.[27] The importance of innovation and technological progress for economic growth is well-established. Using private sector R&D as a proxy for innovation activity, the OECD estimates that a 1 per cent increase in the R&D to GDP ratio raises economic activity by 1.2 per cent (Bassinani and Scarpetta, 2001). This is corroborated for South Africa, where Fedderke (2005) finds a positive relationship between R&D and total factor productivity (TFP) growth.

The high levels of market concentration shown in mark-up studies represent a serious underlying constraint to South Africa's potential for achieving sustained higher growth. Aghion et al. (2008) estimate that a 10 per cent reduction in South African mark-ups would increase productivity growth by between 2 per cent and 2.5 per cent per year. Faulkner and Makrelov (2008) find that com-

[24] South Africa's literature has used the Gini and Rosenbluth indices, the C5% index and to a lesser extent Concentration Ratios and the Herfindahl-Hirschmann index (see Fedderke and Simbanegavi (2008) for a thorough review).

[25] The OECD (Høj et. al. 2007) for example suggests that among the G7, Japan has the lowest average mark-ups in manufacturing (∼10%), with other smaller OECD economies such as Belgium, Denmark and Luxembourg also experiencing low mark-ups as they benefit from a high degree of trade openness. The highest average mark-ups are found in some continental European countries and Canada (∼15%).

[26] There are dissenting voices to this view, in particular Edwards & Van der Winkel (2005) and Du Plessis and Gilbert (2007).

[27] Minimising regulatory burdens on small firms is therefore important. The delay in waiting for telephone, water and electrical connections, construction permits, and import and operating licenses are longer and regulatory compliance cost as a percentage of turnover is much higher for smaller firms (Rankin, 2006). The compliance cost is about 8% for firms with turnover of below R1 million, but less than 1% for firms that have a turnover of more than R10 million (OECD, 2008).

pletely removing these mark ups in the manufacturing sector raises potential growth of the economy by 1.2 percentage points.

More broadly, gains to consumers from lower prices may have volume benefits and other general equilibrium benefits that far outweigh the possible losses to domestic firms from lower returns on capital and/or lower employment.

3.5 Inefficient and costly transport, logistics and communications networks

Transport, logistics and communications are network industries and important determinants of an economy's underlying cost structure and competitiveness. A lack of competition in the network industries has been identified as an important inhibitor of growth through reducing competitiveness (OECD, 2008). Both rail and port transport are expensive and inefficient (Fund for Research of Industrial Development, Growth and Equality (FRIDGE)). In 2004, Transnet's freight rail (TFR) tariffs were about nine times higher than those in the United States for coal (873 per cent), seven times higher for petroleum (708 per cent), more than four times as high for automotive and industrial commodities (431 per cent). On average, TFR's tariffs were almost five times more expensive (486 per cent) overall compared with the US Class 1 tariffs.

Rail transport, although expensive relative to other countries, remains significantly cheaper than road transport.[28] Lack of reliability and flexibility and low levels of efficiency ensures that road freight remains the primary mode of freight transport. The predominance of road use imposes additional costs on domestic producers and reduces the competitiveness of local exporters. Edwards and van der Winkel (2005) find that the average mark-up in transport services is 101 per cent between 1994 and 2002 if intermediates are excluded from costs and 47 per cent if they are included.

Underlying competitiveness issues emanating from the transport network are exacerbated by high port charges that drive up logistics costs. Domestic port charges are among the highest internationally while productivity levels are low (GPSC Local Country Team 2008).[29]

Telecommunications has become a critical sector for economic growth. Extensive coverage and low user prices are critical for an efficient and cost-effective telecommunications network. South African costs, particularly of cell phone telephony and internet connection, are again exceedingly high, primarily reflecting high termination fees and a weak competitive environment (Noll, 2007, Esselaar and Weeks 2008).[30] Broadband connection speeds are much slower and

[28] The cost of using rail in rand-per-ton was 0.11 cents compared with 0.66 cents for road transport.

[29] For example, it costs US$821.60 to dispatch a 40 foot container in domestic ports – more than twice as expensive as the most expensive of South Africa's emerging market peers, Brazil. In terms of productivity the Cape Town, Port Elizabeth and Durban ports ranked among the seven least productive ports, moving fewer than the international average of 40 containers per hour.

[30] Termination fees (also known as interconnection fees) are fees that are charged between networks, when a customer from one network makes a phone call to a person on a different

the price of internet access is higher, helping to explain South Africa's low levels of internet penetration.[31]

While there are many difficulties associated with measuring mark-ups in the telecommunications sector, Edwards and van de Winkel (2005) find average mark-ups over the period 1994-2002 of 116 per cent excluding intermediates and 33 per cent including them. Van Seventer et al. (2005) report mark-ups of at least 15 per cent in South Africa's fixed line telephone service and suggested realisable potential price reductions of about 50 per cent.

4 Assumptions and scenarios

4.1 *The Model*

We employ a recursive dynamic economy-wide computable general equilibrium (CGE) model of South Africa – the South African General Equilibrium (SAGE) model – developed by UN-WIDER (Arndt et al. 2011). CGE models simulate the functioning of a market economy, including markets for labour, capital and commodities, and contain detailed sectoral breakdowns, providing a "simulation laboratory" for quantitatively examining how different channels impact and influence the performance and structure of the economy. The structural nature of these models further permits consideration of new technologies, such as renewable energy. CGE models assure that all economy-wide constraints are respected, and provide a theoretically consistent framework for welfare and distributional analysis.

The SAGE model captures the linkages between sectoral and national economic growth on the one hand, and household incomes on the other. The general equilibrium structure allows the model to trace the contribution of sectoral production to national economic growth and its contribution to household incomes and expenditures via product and factor markets.

Production-side linkages are determined by the technologies that sectors use, including the amount or skill-levels of its workers. Backward production linkages reflect producers' demand for intermediate inputs. For example, when mining production expands it demands intermediate goods, such as petroleum, machinery and transport services, thereby stimulating production and employment in other sectors.

Consumption linkages occur when higher production and employment levels raise household incomes, which are then used to purchase goods and services in

network. Under the Caller Pays Principle (CPP), termination fees are agreed upon between service providers. Currently, termination rates range between 65 and 73 cents as specified by the regulator. South Africa's termination fees averaged US$0.16 in the 2000s, far in excess of *efficient* benchmark international prices of US$0.05 and US$0.10. There have been recent improvements following a review process that began in 2009 and interventions by the regulator, however, termination fees are still relatively high ranging between US$0.10 and US$0.13 on average.

[31] This is according to a BMI-T study for the Department of Communications. Low literacy levels are also partially responsible for the low rate of internet usage.

product markets. When mining production expands mining workers' incomes generate demand for goods produced outside of the sector in which the incomes were earned. The size of consumption linkages depends on the share of factor income distributed to households; the composition of households' consumption baskets; and the share of domestically-supplied goods in consumer demand.

The public sector in the model levies direct and indirect taxes, using revenues to pay for recurrent consumption spending, which generates demand for producers' goods and services. The government also pays for social grants and makes capital investments. The government may borrow from abroad to pay for expenditures, but this incurs subsequent interest payments. Foreign markets are included and provide a source of export demand and a supply of imports. The size of growth multiplier effects (i.e. linkages) are determined by the combined export-intensity and import penetration ratios of individual sectors.

Finally, the SAGE model is recursive dynamic. Savings are collected into a national pool and are used to finance investment. Investment is converted into capital stocks to determine the total rate of capital accumulation. New capital is allocated to individual sectors based on their relative profit rates and current share of capital stocks. Changes in factor supplies and productivity determine the overall rate of economic growth in the country.

4.2 *The baseline*

The baseline provides the business as usual scenario. Although different economic (and political) assumptions can feed into the baseline, we extrapolate the current economic environment and known changes in economic policy. We assume that the economy continues to grow at roughly 3 to 4 per cent on average with a growth elasticity of employment of 0.5. There are no major policy interventions and the structure of the economy remains unchanged. Our baseline scenario creates about 4.1 million jobs by 2025. Table 1 summarises the average growth rates over the period from 2006 to 2025 for a set of economic variables.

4.3 *The simulations*

The simulations change the underlying baseline assumptions and show how these changes affect the economy. We run several simulations:

1. *Different growth elasticities of employment* – in this scenario we model the impact on the economy if growth is either more or less labour intensive relative to the baseline, through applying elasticities of 0.3, 0.5 and 0.7.[32]

2. *Increasing the level of savings* – the growth in savings is tripled relative to the baseline, which assumes the historic growth rate, allowing the savings to GDP ratio to reach 35 per cent by 2025. This is consistent with savings rates observed in fast growing economies.

[32] The growth elasticity of employment reflects the percentage change in employment in response to 1 per cent change in GDP.

3. *Increasing the level of competition* – to illustrate the economy wide impacts from reducing mark ups, we lower mark-ups across all sectors and industries by 50 per cent. We introduce competition in sectors that are dominated by state owned enterprises by increasing the number of firms.

4. *Reducing the skill constraint* – through doubling the growth in skilled labour and simultaneously raising productivity growth by 1%.

5. *Lowering costs and improving the efficiency of transport and communication networks plus higher inward foreign direct investment flows* – transport and communication costs are reduced by 30 per cent and growth in foreign direct investment is doubled.

6. *Combined simulation* – this combines the scenarios for higher savings, releasing the skill constraint, higher FDI and lower transport and communication costs scenarios.

5 Results and Policy Recommendations

Tables 2 and 3 summarise the results for GDP growth, investment growth, and job creation by skill level in the baseline and the simulations.

5.1 Different growth elasticities of employment

Increasing the labour intensity of growth and raising employment increases income levels which translates into higher levels of consumption, savings and investment. As a result, a higher growth elasticity of employment stimulates greater economic activity and higher economic growth. Applying a growth elasticity of employment of 0.7 creates more than 6.7 million jobs and raises potential growth to 6 per cent by 2025. In comparison, a growth elasticity of employment of 0.3 translates into only 2.3 million jobs by 2025, illustrating how sensitive the economy's job creation potential is to the growth elasticity of employment.

Implicit to a more labour intensive growth path, or higher growth elasticity of employment, is that more low skilled jobs are being created. Depending on the growth elasticity of employment, between 63 per cent and 73 per cent of overall employment is in low skilled jobs.

More rapid job creation is primarily about keeping unit labour costs steady or moderating over time. This implies that productivity growth and real wage gains occur at a similar pace. This does not mean that real wages fall. Rising relative unit labour costs both destroys jobs and incentivises firms to substitute towards using labour-saving capital, therefore reducing the labour intensity of the economy. There are a number of channels through which wage moderation could be achieved. The New Growth Path places an emphasis on developing a social pact between government, business and labour. This could be complemented by adjusting the wage bargaining structure so that it provides more guidance on the macroeconomic outlook and allows the trade-offs around real

wages, productivity growth, GDP growth and jobs to be internalised by firms and unions. This internalisation could be achieved either through a move to a more centralised (economy-wide) or decentralised (firm-level) collective bargaining arrangement (Calmfors and Driffill, 1988). More centralised systems, however, tend to be detrimental to growth in employment in smaller businesses, and for that reason, their scope (what is bargained) is often quite narrow. One option for South Africa might be to support centralisation in areas where there are few firms and more decentralisation and exemptions where more competition between firms will generate greater productivity gains and employment. Whichever route is taken needs to deliver sustainable wage levels and growth for smaller firms.

South Africa's unemployment problem is concentrated among the young and the less skilled. Accelerating labour market entry for young, inexperienced, and low skill workers would also contribute to raising the labour intensity of growth. A period of incentivised employment might prove necessary for several reasons. First, a new entrant's skills might not match the requirements of a job but the mismatch will diminish with on-the-job training. Second, lowering the initial cost of hiring reduces an employer's uncertainty about the job applicant's productivity – which might be particularly high for young people who have never worked before – and thus serves as a screening instrument. Third, institutional factors such as minimum wages or collectively negotiated wages might drive a wedge between an individual's entry-level productivity and entry-level real wages[33] Government's proposed youth employment incentive, which targets net new employment and the hiring of additional workers, lowers the initial cost of employing young people, enabling work experience and on-the-job training to raise productivity levels and longer-term job prospects (National Treasury 2011). An alternative could be the introduction of age-related minimum wages (lower minimum wages for younger workers).

While there is evidence that actual hiring and firing costs are relatively low, especially in cases of large-scale retrenchments for economic reasons, reducing hiring and firing rigidities for individuals and small firms would reduce the risks associated with hiring and encourage job creation (Lazear, 1990; Siebert, 1997; Di Tella and MacCulloch, 2005). This would improve the matching of workers and firms, potentially raise firm-level productivity, encourage a higher equilibrium level of hiring and shift the economy to a more employment intensive trajectory. Reforms to labour market institutions (such as the CCMA, Labour Courts) to improve functioning of dismissal process, particularly around non-performance would support this. These could be complemented by providing additional security (and income support) for those who do lose their jobs conditional on participation in targeted activation policies.[34]

[33] Arguably this gap between entry-level real wages and productivity is growing ever wider currently within the context of high real wage growth and the unchanging productivity of school leavers.

[34] Such an approach would mirror the successful development and implementation of *flexicurity* schemes in Denmark that combine labour market flexibility in a dynamic economy with extensive security and support for those that are unemployed.

The majority of workers, including low-skilled workers (approximately two-thirds) are employed in firms with less than 50 workers.[35] Releasing small firms' potential for employment creation will be critical if South African is to achieve more labour intensive growth.[36] Relieving the regulatory burdens imposed on small enterprises (tax, licensing, zoning, labour etc.) should encourage the creation of new firms and the expansion of existing small businesses.

In terms of labour market regulation, small business should have their own Code of Good Practice to provide appropriate guidelines on substantive and procedural fairness, rather than the statutory rules. Although the dismissal for operational requirements must remain procedurally fair, the procedures appropriate to small employers should be contained in the Code (Bhorat & Cheadle, 2009).

Small firms should be provided with a blanket exemption from the legal extension of bargaining council agreements or exempted altogether.[37] Where large firms and unions agree to high standards, legal extension reduces competition and inhibits creation of new firms and their survival. It is estimated that bargaining council agreements are associated with 8-13 per cent lower employment in a particular industry, 10-21 per cent higher wages and 7-16 per cent lower employment in small firms (Magruder, 2010). Limiting the scope of extensions would also shift the distribution of employment away from commodities and towards manufacturing and increase labour intensity of production generally.,

A further constraint to new entrants finding employment and the matching process is the disjuncture between job-seeker search techniques and the hiring decisions of firms. While most low-skilled young labour market entrants search for jobs through enquiring at work places, the majority of hiring decisions are guided by networks that help in screening and monitoring young people who have no work experience.[38] Effective job readiness, job search and job matching services would assist the unemployed in finding employment while facilitating a more efficient allocation of labour and improving the incentives for firms to hire. International evaluations suggest that these programmes are among the most successful and cost effective Active Labour Market Policies (ALMP) and should be emulated in South Africa (OECD, 2000).

Even with successful interventions to raise growth and the employment elasticity, public works will continue to play a supporting role in absorbing low skilled workers. The focus within these programmes should be to achieve the most cost-effective forms of mass employment and where possible provide skills transfer that improves participants' long-term employment prospects. The community work programme has demonstrated success as a cost-effective interven-

[35] Statistics South Africa, Quarterly Labour Force Survey (December 2011).

[36] Small firms are also very important for employment creation amongst the youth with 64 per cent of young people between the ages of 15-34 employed in firms with less than 50 employees.

[37] Legal extension of bargaining council agreements extends arbitration agreements beyond the firms and unions which make them to all workers in an industry in a given political demarcation, regardless of firm size or participation in the arbitration process.

[38] African Microeconomic Research Unit, University of the Witwatersrand, Labour Market Entry Survey 2009-12.

tion providing regular work of at least two days a week.

5.2 Increasing the level of savings

In this simulation, we evaluate the impact on the economy from significantly raising the savings rate. Raising the savings rate to 35 per cent of GDP by 2025 has large positive impacts on growth. Potential GDP growth rises from about 4 per cent to 7.4 per cent by 2025. Higher saving facilitates rapid investment growth, which reaches 16 per cent in the outer years. All sectors of the economy achieve stronger growth, with capital intensive sectors benefiting the most.

The structure of the South African economy plays a critical role in determining the results. Perhaps surprisingly, employment growth disappoints in this scenario with fewer than 500 000 additional jobs created (above and beyond the 4.1 million jobs created in the baseline). Job creation is limited by the skills constraint and shortage of skilled labour. Historically low electricity prices and other incentives to capital formation have skewed the structure of the economy and relative price adjustments have been too small to correct the disincentives facing labour intensive industries. The higher investment is attracted towards those sectors of the economy that have higher returns which, in the South African case, are capital intensive.

So while higher levels of savings accelerate economic growth, on its own, it does not support inclusive growth and does not provide the jobs South Africa needs. Therefore, any policies focused at raising savings should be complemented with policies that reduce the skill constraints and the misallocation of capital in the economy. More rapid growth in income is an important cause and consequence of higher saving. And so while regulatory and other adjustments at the micro level may help to increase saving, so too will the policy interventions we identify that target constraints to economic growth. Higher household saving is needed, alongside efforts to reduce the cost of consumption items that incur debt for households such as motor vehicles.

Tax incentives and higher consumption taxes can also be used to alter households' savings decisions. Housing allowances and interest earnings exemptions are two mechanisms through which households can be incentivised to save more. The removal of current tax distortions that are ineffective and unnecessarily favour certain savings products over others could also complement these measures. Increasing competition between banks for deposits could also assist through raising the real returns from savings.

Government can also play a more direct role in altering the levels of gross domestic savings. One direct intervention is to compel households to save through compulsory retirement contributions. Government savings rates can be improved through implementing a fiscal rule or fiscal guidelines which enforce countercyclical fiscal policy. More countercyclical policy also supports savings by reducing inflation when the economy is overheating and when growth is weak.

5.3 Reducing the skills constraint

To model a reduction in the skills constraint we triple the growth rate of skilled labour. This significantly increases the pool of skilled workers and reduces their cost, as firms can expand their skills base without bidding-up wages. Relieving the skills constraint raises potential growth to 6.7 per cent by 2025, 1.3 percentage points above the baseline. In part this reflects acceleration in annual investment growth, which grows from 5 per cent in the period 2012-2016 to above 12 per cent by 2025.

For every skilled job created, the economy also creates one semi-skilled and 0.5 low skilled jobs, revealing the complementarity of different skills in the labour force (Behar, 2008). The economy creates an additional 1.5 million jobs (5.6 million jobs in total), including 290 000 additional low skilled jobs. More skilled workers also improves the distribution of wage income in the economy because it reduces the scarcity premium paid to skilled workers. Using the Gini coefficient as a measure of inequality; income inequality declines by 3 percentage points.

Releasing South Africa's skills constraint requires long-term reform across the education and training spectrum. Constraints including a shortage of high-quality teachers, governance issues within schools, and inappropriate incentives within the skills development system. A number of reforms to the basic education system have been identified as necessary to improve education outcomes. This includes rewarding effective school management, ensuring proficiency of students in core skills such as reading and writing English, mathematics and computer literacy, and improving assessment of students standardised on a national scale. Both teacher and student absenteeism needs to be reduced alongside increased learning time, complemented with expanded access to learning materials (e.g. textbooks) to improve learning outcomes and policies to encourage frequent homework. Teachers should also be enabled to cover the entire curriculum through training in subject knowledge and time management (Social Policy Research Group, 2011). Linkages between tertiary education institutions such as universities and Further Education and Training (FET) colleges and the private sector need improvement.

These types of education reform tend to be lengthy in implementation and only yield tangible results after years. More immediate progress can be made through improving workforce training, which is a crucial aspect of skills upgrading and increasing labour productivity.

The country's headline skills development programme is run by Sector Education and Training Authorities (SETAs) through a variety of short and long training courses – learnerships and apprenticeships. However, recent analysis has shown that SETA training largely fails to upgrade the skills of the unskilled and unemployed (DPRU, 2008) and is limited in reach. Inefficient bureaucracy and administrative burdens associated with accessing SETA services also appears pervasive, with a tendency for SETAs to support larger firms in training provision.[39] Reforms might include:

[39] In 2005/2006, 70% of all learners were employed by medium (50-149 employees) or large enterprises (150 and more employees) and only 30% by companies employing less than 50

- A more demand-driven and flexible training approach to change the perception of SETAs and improve SETA performance,
- bidding by private institutions for company training could push SETAs to provide better training opportunities, and
- an increased emphasis of training policies on the SME sector and micro enterprises.[40]

Long-term efforts to relieve the skills constraint should be matched with short-run responses, such as easing restrictions on job permits to boost growth and exploit the complementarities between skill types in South Africa. Major advanced economies have adopted aggressive policies to attract foreign skills and boost skilled immigration.[41] This would require adjustments to South Africa's quota-based approach to high-skill immigration, including making it easier for firms to get work permits. Entry could be freed up for high skilled individuals with four years or more of university education, where the unemployment rate is near-zero. Furthermore, South Africa's major universities could play a more central role in training skilled individuals from the region. Greater inward foreign direct investment (FDI), like immigration, relieves the skills constraint through spillover benefits including technology transfer and skills transfers.

5.4 Higher levels of product market competition

We model greater product market competition through halving the mark-ups calculated by Aghion et al (2008) and then increase competition to the network sectors that are dominated by state owned enterprises (SOE). The impact on the economy is very strong and positive. Firms become more efficient, innovative and productive, and raise investment levels. In this scenario, potential growth increases to just under 7 per cent with the investment to GDP ratio reaching 28 per cent.

Annual growth in the machinery industry averages 3.9 percentage points higher compared with the baseline for the period 2022-2025 whereas construction records growth rates which are 2.7 percentage points higher. Modest improvements in the growth of skilled labour (relative to the baseline) also contribute to the improvement in economic growth.

workers (HSRC, 2008). The World Bank/dti Investment Climate Assessment (2008) recommends that SETAs should increase support to SMEs and micro enterprises.

[40] The National Skills Development Strategy (NSDS) III effective from April 2011 attempts to rectify some of these shortcomings of the SETAs, adopting a focus on skills training and career path development while promoting the co-operation between employers, private skills training providers and FET colleges as well as SETAs.

[41] In Australia, the number of immigrants entering every year doubled between the mid-1990s and mid-2000s, reaching around 140 000 newcomers in 2005. The economic benefits associated with high-skill immigration can be very large, as in the US where in the early 2000s foreigners were responsible for 30 per cent of biotechnology inventions, generated 25 per cent of all US patents, and founded over a quarter of US companies. Foreigners were also awarded one third of all doctorates, including 48 per cent of those earned in the physical sciences and 60 per cent in engineering (Centre for Development and Enterprise, 2010).

The economy creates close to 1.5 million additional jobs, with almost 70 per cent for low skilled workers. The level of inequality declines by 5 percentage points. All sectors of the economy experience accelerated growth.

Competitive conditions in the economy can change through broad-based reforms, including further trade liberalisation, the reduction of regulatory and other barriers to entry, and more aggressive efforts to attract new entrants into key network industries.

Alongside increased competition, trade reform engenders innovation, import of knowledge, and technological progress (Commission for Growth and Development, 2008). Edwards and van de Winkel (2005) find that a 1 per cent decline in tariff rates reduces mark-ups by 10 to 14 percentage points on average. This effect occurs through pro-competitive effects of trade reform but also through the impact of new ideas, adoption of international best practice, capital deepening, learning effects and technology transfer (Arora and Bhundia, 2003). Rattso and Stokke (2008) find that the positive effect of openness on South African GDP has occurred through investment and productivity channels.

The focus of trade reform efforts should be on removing tariffs on raw materials and intermediate inputs in a phased manner so that tariffs on final products can also be reduced and exports stimulated through a competitive input base. This should be complemented with a radically simplified tariff structure using very few tariff bands (Edwards and Lawrence 2006). Where tariff protection does exist for infant industry and safeguard purposes, protection should be temporary and underpinned by sunset clauses. Market share thresholds and criteria, above which tariff protection cannot be justified, would assist in this process.

More broadly, local competition can be promoted through reducing pervasive product market regulation (policy, regulatory and administrative) that acts as a barrier to entrepreneurship, new entrants into the market, and small firm expansion. Streamlining procedures such as the granting of licenses and permits through one-stop shops or the principal of deemed clearance can help reduce red tape.[42] Regulatory Impact Assessment (RIA) would help to focus reform efforts on key microeconomic obstacles. Small firm creation might be stimulated by providing funding options through venture capital facilities at Development Finance Institutions (DFIs) and accelerated tax write-offs.

5.5 Reducing transport, logistic and communication costs and increasing the efficiency of the two sectors plus raising the level of FDI

Reducing the cost of transport, logistic and communications and improving the efficiency of these network industries will help lower the economy-wide cost of doing business, improving competitiveness and productivity. Under this scenario, where costs decline by 30 per cent, potential growth accelerates and reaches close

[42] Deemed clearance means that licences are issued automatically if the relevant office does not act by the end of a statutory response period.

to 7 per cent. Gross fixed capital formation growth rates increase to 11 per cent raising the investment rate to 26 per cent of GDP by 2025. Employment rises by 620 000 jobs compared with the baseline; however, the shortage of skilled labour limits the employment gains. All sectors of the economy experience higher growth rates.

In these sectors, the contestability of markets is limited by institutional settings and various anti-competitive practices. Incentives and responsibilities are often blurred because the State has a role as both regulator and owner, while significant horizontal and vertical integration in these sectors makes entry extremely difficult to achieve.

Introducing private sector participation coupled with effective competition in the transport, logistics and telecommunications sectors would help improve operational efficiency towards international standards, attract private investment, enable technological progress, and improve service delivery. This could be achieved through public private partnerships, through developing a bankable framework in these sectors, or providing private sector concessions.

Within the port and rail sector, private sector infrastructure investment is needed. The necessary reforms will be sector-specific. In the logistics sector adopting a port competition model that separates ownership of port infrastructure and operations would be a central intervention. Experience shows that compared with private participants, "public owners and operators are less able (and have fewer incentives) to control costs (*soft budget constraint*), are slower to adopt new technologies and management practices and are less responsive to the needs of port users" (Kessides, 2004).[43] Similarly, there should be either a vertical or horizontal unbundling of rail freight, while the telecommunications sector requires more effective regulation. More broadly, regulations should be amended to ensure cost reflective and efficient tariffs as a means to both attract foreign investment and address inefficient resource use. The entry of new players into these sectors can also be promoted through reducing regulatory barriers in each sector, for example licensing, and the fast tracking of legislation to allow private investment in these sectors.

5.6 Combined simulation

In this simulation, we combine the higher savings, higher growth in skilled labour, higher FDI and lower transport and communication costs. The results described in table 2 shows that potential growth exceeds 8 per cent by 2025 with robust growth in investment.[44] Household consumption is slightly lower as

[43] However, Kessides also points out that the benefits of private sector participation (PSP) in port activity largely result from competition. If competitive pressures are not brought to bear, either between or within ports, no gains are to be expected from PSP.

[44] It is important to note that the combined impact of the different shocks is not equal to the impact of the individual shocks done in the previous simulations. As growth increases other constraints become more binding limiting the ability of the economy to expand. For example in our work, one such constraint is the availability of electricity which is limited to the IRP 2010 calculation. There are other constraints such as regulatory barriers and infrastructure bottlenecks.

households are required to save more in order to finance investment. Investment driven sectors such as machinery and equipment see the largest expansion. The economy generates additional 1.8 million jobs to the 4.1 million generated in the baseline. Again those with low and medium skilled are the major beneficiaries of the reforms. The reduction in the skill constraint reduces the wage premium for high skill workers and alongside stronger employment growth for low and medium skilled workers reduces inequality by 6 percentage points relative to the baseline.

There are major gains for all sectors especially for manufacturing whose share in GDP rises by over 1 per cent. Machinery and Construction are among the sectors which record the highest growth rates. The expansion of Services is limited by the growth of Government services which grows on average by 4 per cent, 0.6 percentage points higher relative to the baseline.

It is important to note that the combined simulation assumes growth elasticity of employment of 0.5. Implementing the reforms outlined in the first simulation to achieve higher growth elasticity of employment will generate even higher employment gains.

5.7 How do these growth and employment scenarios affect the unemployment rate?

Through modelling the impact of these scenarios on investment rates, growth and employment we have yet to comment on the effect on unemployment. In doing so, we must be aware of how the unemployment rate depends on changes in the labour force participation rate (LFPR).[45]

Table 4 shows that if the participation rate remains at its current level (54 per cent), the unemployment rate will be more than halved, to 11.6 per cent, by 2025. In contrast, if labour force participation responds to the higher levels of job creation and rises toward the Emerging Markets average of 65 per cent, then the unemployment rate could actually increase to 26.5 per cent.

6 Conclusion

There are few simple answers to South Africa's weak economic growth rate and associated unemployment and poverty rates. The core requirements for more rapid and sustained growth are greater saving, investment, more productive use of capital by better skilled workers, and moderation in unit labour costs. Higher labour productivity growth will in its own right increase the labour intensity of the economy as a whole. Inducing stronger growth in productivity, however, requires wide-ranging changes to policies and incentives. We have provided some direction on the areas of reform that could generate the strong growth, employment and poverty reduction outcomes that computable general equilibrium modeling can help us to assign some magnitudes to. The largest

[45] The LFPR indicates the percentage of the population which is able to and wants to work.

gains to future incomes of all South Africans are to be found in the following interventions:

- Sustainably increase the employment intensity of the economy.
- Increase the level of savings and simultaneously ensure that the economy attracts higher levels of foreign direct and domestic investment into all sectors. Reduce the skill constraint and remove or redesign tax and industrial incentives that may favour capital intensive over labour intensive industries.
- Increase competition in the economy including critically in sectors dominated by SOEs. This increases productivity and lowers costs. Reducing transport and communication cost can have significant positive impact on the economy.

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Table 1: Initial shares and growth rates in the baseline

	Initial share	Growth rate
	%	%
GDP	100.0	4.08
Absorption (GDE)	101.7	4.12
Private consumption	62.8	3.70
Gross fixed capital formation	16.8	6.51
Inventories	2.2	0.00
Government consumption	20.0	3.10
Exports	24.5	4.36
Imports	26.2	4.50

Table 2: Results – Average GDP growth and investment growth rates, and job creation (000s)

		I		II		III		IV		V		VI	
	Baseline	Higher growth elasticity of employment		Increased savings		Alleviating the skills constraint		Higher competition levels		Reduced transport and logistics costs & higher FDI		Combined simulation	
GDP growth rate (%)													
2012-2016	3.6	3.8	*0.2*	4.2	*0.6*	4.3	*0.7*	4.5	*0.9*	4.1	*0.5*	4.9	*1.3*
2017-2022	4.4	4.9	*0.5*	5.7	*1.3*	5.4	*1*	5.7	*1.3*	5.2	*0.8*	6.3	*1.9*
2023-2025	5.3	6.1	*0.8*	7.4	*2.1*	6.7	*1.4*	6.8	*1.5*	6.5	*1.2*	8	*2.7*
Investment growth rate (%)													
2012-2016	5.0	5.3	*0.3*	6.9	*1.9*	6.0	*1.0*	8.1	*3.1*	6.2	*1.2*	7.3	*2.3*
2017-2022	6.3	7.0	*0.7*	9.8	*3.5*	8.0	*1.7*	9.2	*2.9*	8.0	*1.7*	10.6	*4.3*
2023-2025	8.0	9.6	*1.6*	16.1	*8.1*	12.4	*4.4*	10.3	*2.3*	11.1	*3.1*	13.2	*5.2*
Job creation (000s)													
Low	2954	4820	*1866*	3342	*388*	3243	*289*	3957	*1003*	3330	*376*	3694	*740*
Medium	907	1671	*764*	996	*89*	1523	*616*	1291	*384*	1149	*242*	1626	*719*
High	256	256	*0*	256	*0*	879	*623*	364	*108*	256	*0*	548	*292*
Total	4117	6747	*2630*	4593	*476*	5645	*1528*	5612	*1495*	4736	*619*	5867	*1750*

Note: The increase in GDP growth, investment growth and job creation under each scenario is shown in italics

Table 3: Results – Average GDP growth rates by sector

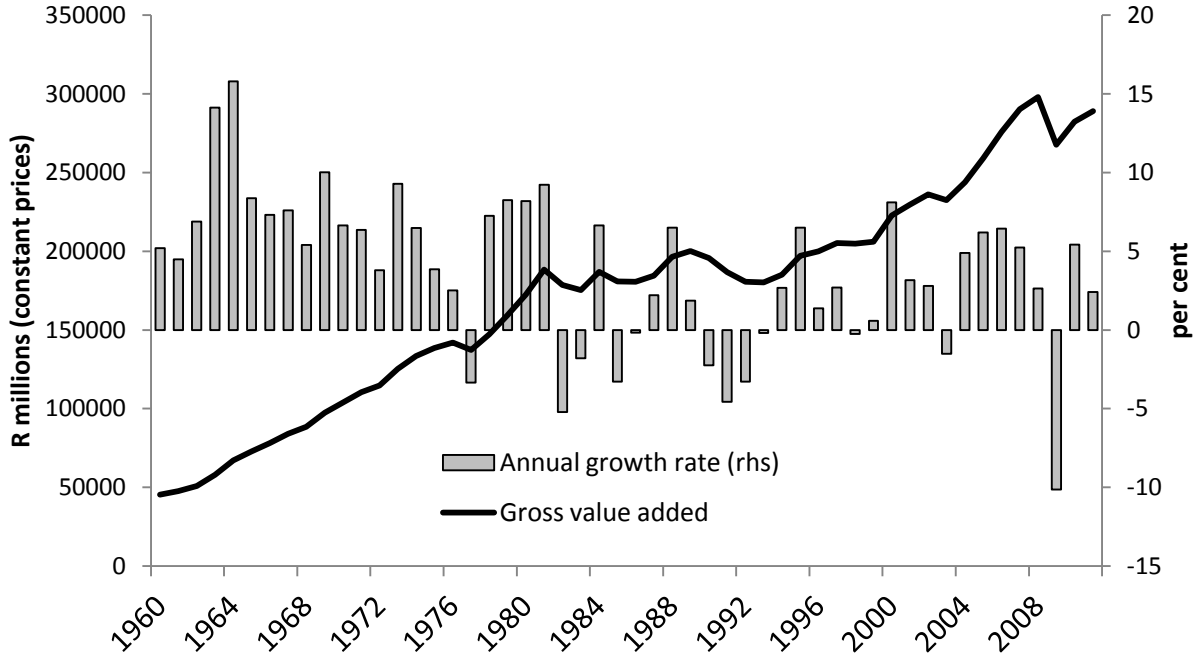
	Baseline	I Higher growth elasticity of employment		II Increased savings		III Alleviating the skills constraint		IV Higher competition levels		V Reduced transport and logistics costs & higher FDI		VI Combined simulation	
Agriculture													
2012-2016	3.0	3.2	*0.2*	3.5	*0.5*	3.6	*0.6*	3.9	*1.0*	3.5	*0.5*	4.5	*1.5*
2017-2022	3.8	4.4	*0.6*	5	*1.2*	4.9	*1.1*	5.4	*1.5*	4.6	*0.8*	5.9	*2.1*
2023-2025	4.9	5.9	*1.0*	7.1	*2.2*	6.4	*1.5*	6.7	*1.8*	6.1	*1.2*	8.6	*3.7*
Industry													
2012-2016	3.7	3.9	*0.2*	4.5	*0.8*	4.5	*0.8*	5.0	*1.3*	4.3	*0.6*	5.3	*1.6*
2017-2022	4.7	5.2	*0.5*	6.3	*1.6*	5.8	*1.1*	6.4	*1.7*	5.6	*0.9*	6.9	*2.2*
2023-2025	5.8	6.6	*0.8*	8.7	*2.9*	7.5	*1.7*	7.5	*1.7*	7.1	*1.3*	10.5	*4.7*
Services													
2012-2016	3.6	3.8	*0.2*	4.1	*0.5*	4.3	*0.7*	4.3	*0.7*	4	*0.4*	4.8	*1.2*
2017-2022	4.3	4.8	*0.5*	5.4	*1.1*	5.3	*1.0*	5.5	*1.1*	5.1	*0.8*	6.1	*1.8*
2023-2025	5.2	5.9	*0.7*	7.1	*1.9*	6.6	*1.4*	6.5	*1.3*	6.3	*1.1*	7.9	*2.7*

Note: The increase in sector GDP growth under each scenario is shown in italics

Table 4: Unemployment rate by 2025

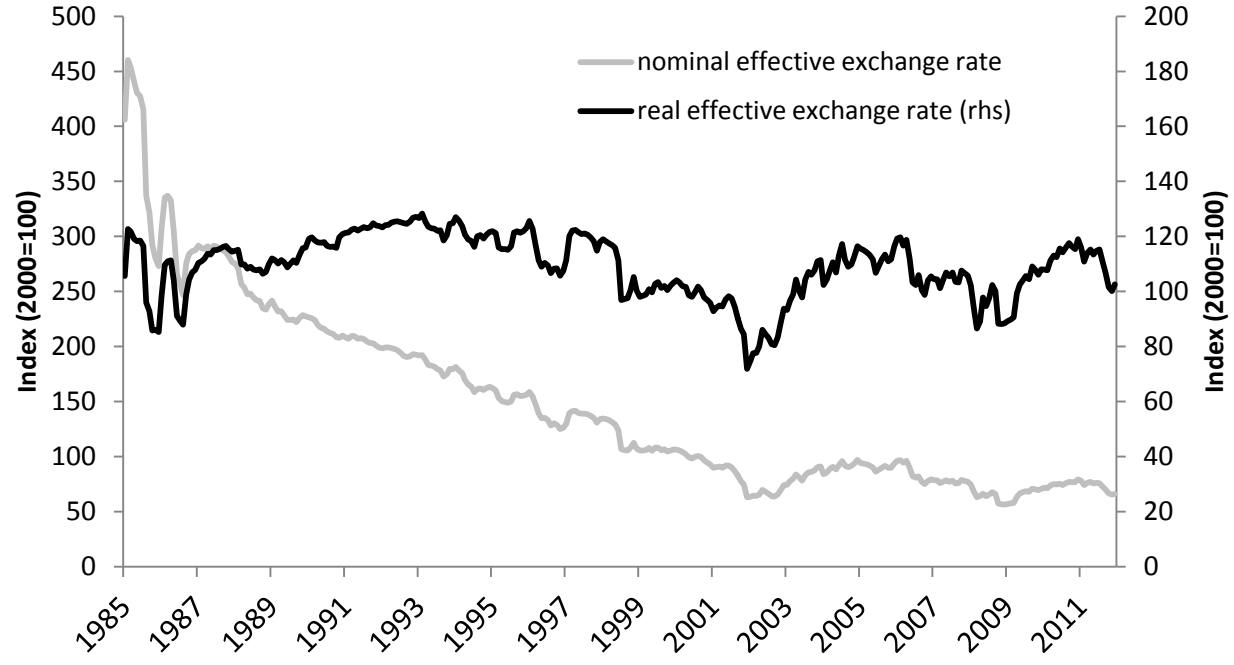
Participation rate	Unemployment rate
-LFPR=54%(current)	11.6
-LFPR=58%(pre-crisis)	17.7
-LFPR=60%(current)	20.4
-LFPR=65%(EM average)	26.5

Figure 1: Manufacturing value added and growth, 1960 – 2011



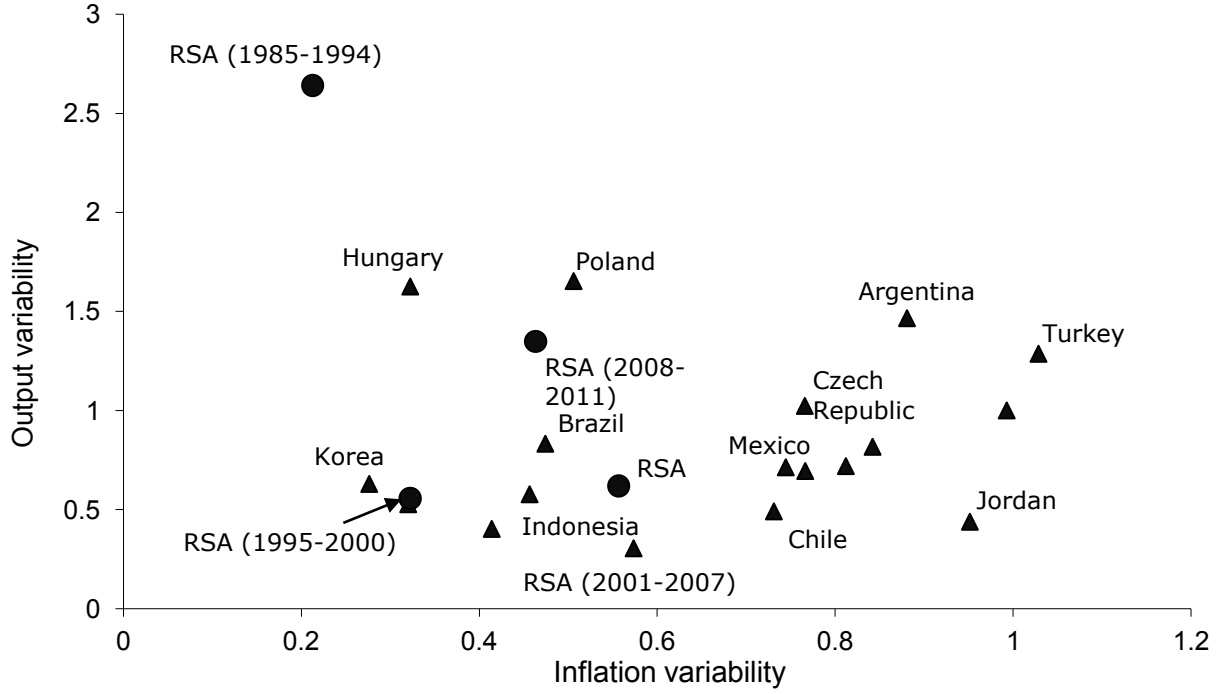
Source: South African Reserve Bank

Figure 2: Nominal and real effective exchange rates, 1985 – 2011 (2000=100)



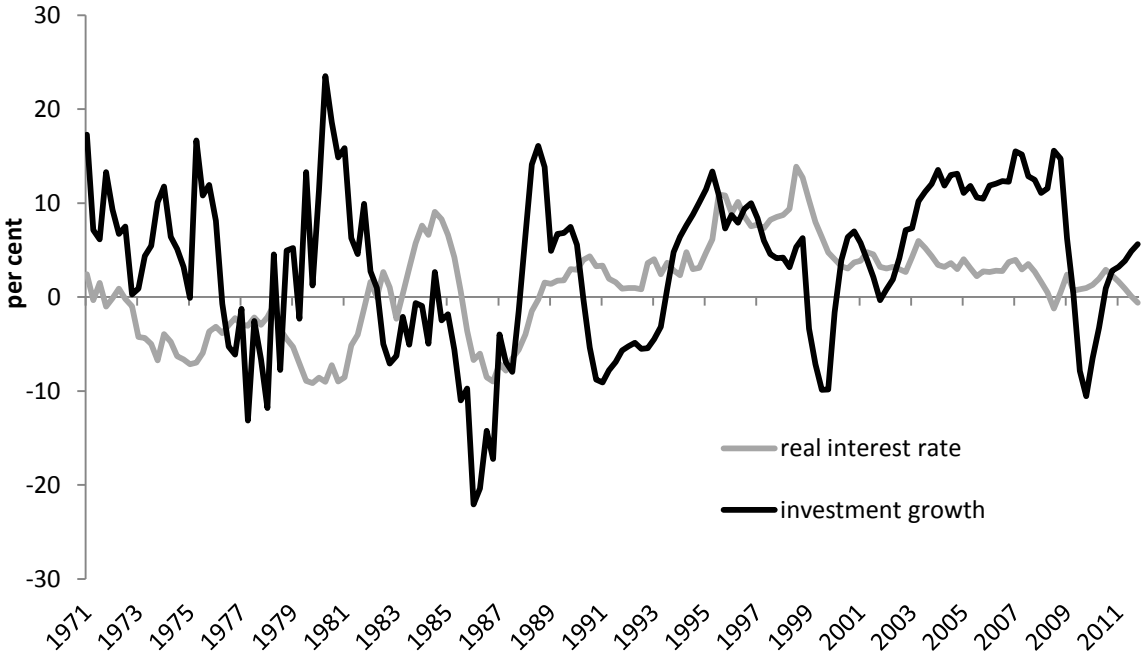
Source: South African Reserve Bank

Figure 3: Macroeconomic Stability across Emerging Markets in the Last 10 Years



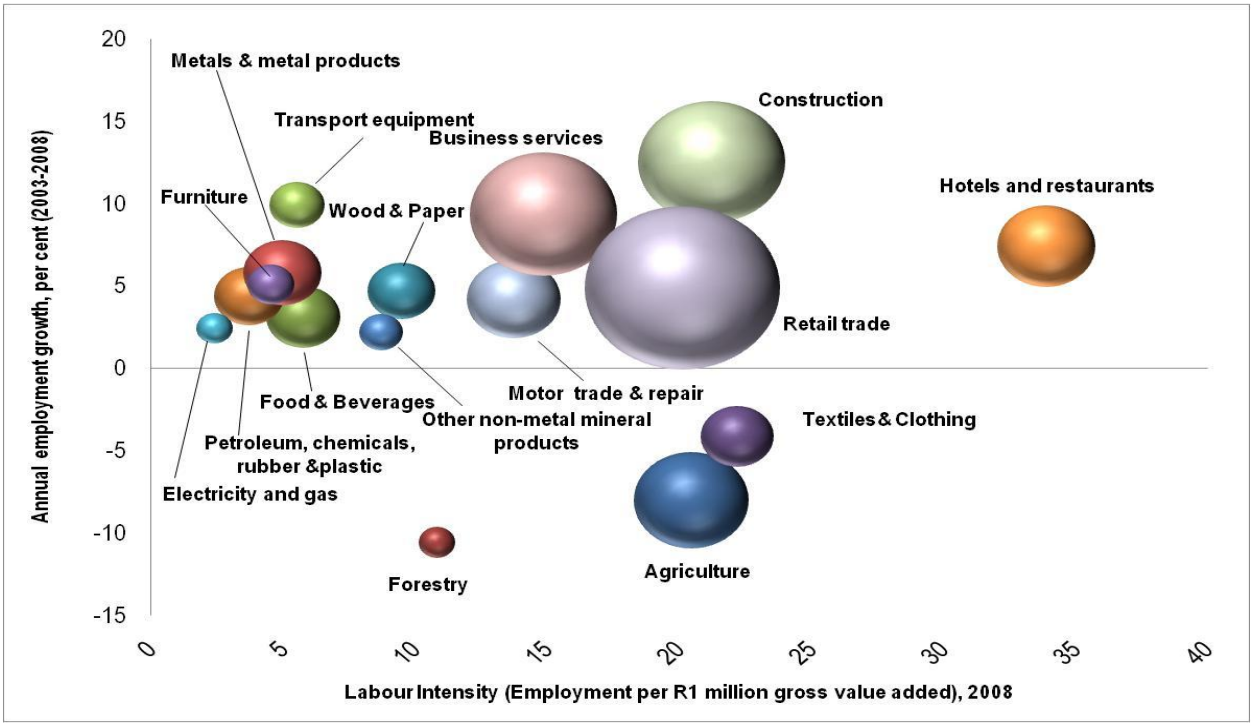
Source: Du Plessis, Smit, and Sturzenegger (2007, p.3) and authors' calculations

Figure 4: Real Interest Rates and Growth in Gross Fixed Capital Formation, 1971 – 2011



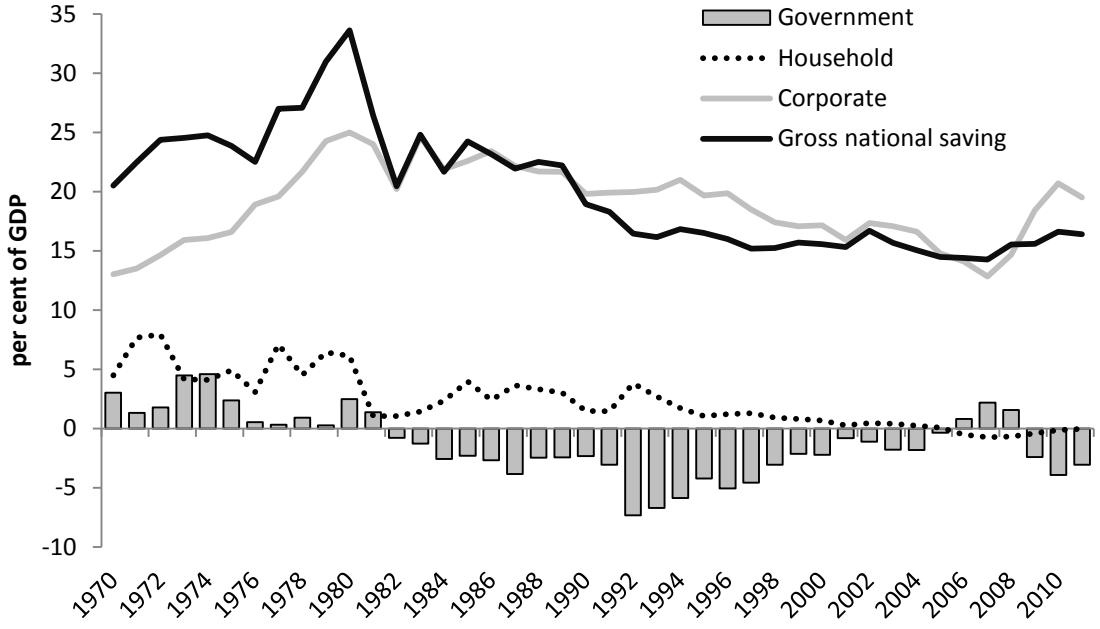
Source: South African Reserve Bank

Figure 5: Labour Intensity of Production and Private Sector Employment Growth, 2003 – 2008



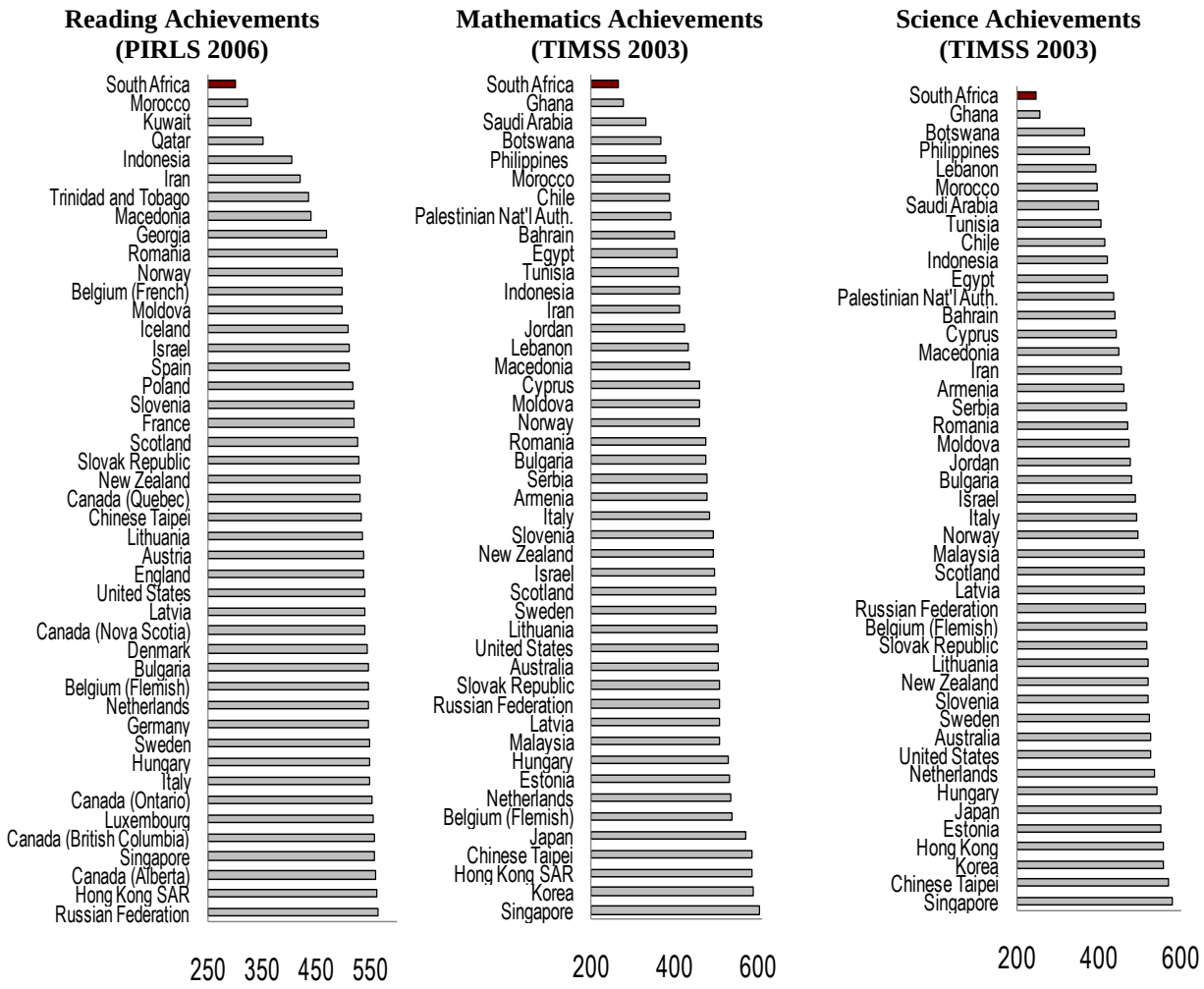
Note: The size of the bubbles reflect the relative size of sector employment
Source: Statistics South Africa

Figure 6: Composition of Gross Domestic Savings as a Percentage of GDP, 1970 – 2011



Source: South African Reserve Bank

Figure 7: South Africa's International Literacy and Science Achievements



Source: Trends in International Mathematics and Science Study (TIMSS 2003), Progress in International Literacy Study (PIRLS 2006)