Sustainable Growth in South Africa

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1 Introduction

This paper considers a range of evidence surrounding prospects of sustainable growth in South Africa. While the economic performance of South Africa during the course of the last three decades of the twentieth century was the cause of considerable concern, more recent evidence has been the source of more optimistic assessments of the prospect of future welfare improvements. Consideration of the evidence presented in Figure 1 lends support to such optimism. After the long period of deceleration in growth, between 1970 and 1995, from 1995 through to the late 2000s growth has not only returned to positive territory in both real aggregate and per capita terms, but the trend in growth has been positive. This indicates that the rising growth performance of the economy has been reasonably sustained. The impact on GDP per capita has also been such that the long-term downward trend in growth, from approximately 1980, reversed. The only countervailing evidence is the decline in growth due to the financial crisis of 2007/8.

There are thus undoubted signs that merit optimism. However, not all signs suggest that the growth performance of South Africa is unambiguously healthy in the post-1995 period. One indication of this emerges from a consideration of output per worker in the economy. Real output per worker in the economy remained essentially constant over the 1960-1990 period, rose during the course of the 1990s in response to the substantial formal sector labour shedding, but since 2000 has adopted a downward trend as soon as employment in the economy began to grow again.[1] Employment creation in the South African economy thus once again appears to have been associated with productivity losses rather than productivity gains, raising questions about the sustainability of the expansion in factor employment associated with South African growth.

It follows that there are some questions worth asking regarding the sustainability of South Africa's growth recovery.

The coverage of the paper is dictated by the potential growth drivers identified by growth theory.[2] Thus it covers capital accumulation, and to some extent its interaction with savings behaviour in the economy. Attention is paid to international capital flows, both in its portfolio and its foreign direct investment variants. A particularly important consideration from a South African growth perspective, is the role of the public sector in capital investment. As a consequence, the developments surrounding infrastructure creation receive explicit treatment.

Given the accumulated evidence on the presence of market distortions, and the absence of sufficient competitive pressure to ensure productivity growth in South Africa, we also consider evidence on output and labour markets in the economy.

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[1] Note the reported negative trend is an understatement, since it excludes agriculture.

[2] Space constraints preclude a review of relevant theory. Nevertheless, our approach is informed by classical theories of economic growth (of Solow 1956, 1957 vintage, say) as well as modern endogenous theories of economic growth (see Romer 1986, Romer 1990, Aghion and Howitt, 1992), as well as their many offshoots and extensions.

Since modern growth theory emphasizes the importance both of technological progress and of human capital in economic growth, we review the evidence that has emerged on the contribution of innovation on productivity growth, as well as the role of human capital investment. Developments in the ability of the educational system to meet the demands of an economy that appears increasingly to rely on total factor productivity (TFP) growth rather than factor accumulation are examined.

Finally, this paper is the first (to our knowledge) that begins to explore the role of the service sector in the South African economy. Since the service sector contributes more than half of total output in the South African economy, it is striking that prior studies examining the growth performance of the economy have paid little attention to the role of this sector. Partly this can be explained by a paucity of data. But here we take some first steps to examine the contribution particularly of the financial sector of the economy.

We begin our discussion with a brief review of the structure of the South African economy, its curious "two systems" characteristics, with both first-world and developing-world components, and the policy challenges that this generates. We then move on to a consideration of the drivers of growth and their implications for the sustainability of the growth performance of the economy.

We note from the outset that since there exist a number of synoptic treatments of growth in South Africa, that have covered some of the aspects also addressed by this paper, not all sections will receive the same degree of attention. For more information, we refer readers to these complementary papers.[3]

2 Setting the Context

2.1 The Industrialized Nation Characteristics of Production in South Africa

In Table 1 we report the distribution of gross value added at basic prices (GVA) across the major two-digit sectors of the economy. The primary commodity-producing sectors, Agriculture, forestry and fishing (AFF) and Mining & quarrying (Min.), have declined monotonically, from contributing 22.05% to 7.42% of GVA over the 1960-2009 period. Manufacturing (Manuf.) peaked in its contribution to GVA in the early 1980s at 17.38% and has since declined moderately to 14.73% in the 2005-09 period, while the contribution of Electricity, gas & water (EGW) and Construction (Constr.) has remained roughly constant between 4-6% of GVA.

Community, social & personal services (CSPS) and Other community, social & personal services (OCSPC) have similarly maintained a constant share of GVA between 21 and 24% over the same period, while General government (GG) has contributed between 11% and 15% of GVA.

The substantial growth in the proportional contribution to South African output has been in the private sector service sectors of the economy. Collectively, the contribution of the Wholesale & retail trade, catering & accommodation (WRTCA) Transport, storage and communication (TSC) and Finance, insurance, real estate & business service sectors (FIREBS) has increased from 25.53% to 39.86% of South African GVA over the 1960-2009 period.

Importantly, the insight compounds when considering employment creation in the South African economy. While the unemployment rate remains exceptionally high for South Africa regardless of the means by which this is computed (see the data sourced from Banerjee *et al.* 2008 reported in Table 1), reported patterns of employment distribution show a dramatic increase in employment in the service sector of the economy. In Table 1 we report the distribution of employment across the non-agricultural sectors of the economy as reported by the South African Reserve Bank. By the close of 2008, financial institutions in the South African economy were responsible for close to

[3] See Fedderke and Simkins (2009) for an account of South African growth since the nineteenth century. Fedderke (2006a) provides one account of the last three decades of the twentieth century, while Du Plessis and Smit (2009) consider the most recent time period. Eyraud (2009) provides additional insight.

30% of total employment in non-agricultural sectors, with strong rates of increase over the course of 2003:03 - 2008:04, generating a 49.8% increase in employment.[4] The impact of the international economic downturn, and its impact on financial institutions, is not yet evident in the data, though 2008:04 registers a 0.59 percentage point decrease in employment in the financial institutions sector.

The structure of the economy has thus arguably come to resemble the distribution of economic activity of industrialized nations more than that of emerging markets or developing countries. South Africa's output and employment share for industry and agriculture is lower than the immediate middle income reference group, while it is higher in the service sectors. Symmetrically, by comparison with the BRIC[5] reference group, South Africa is unusually heavily weighted toward the services sector, and has a relatively low weight in agriculture and manufacturing activities in both relative output and employment contributions. Only the relatively strong presence of mining activities raises the contribution of industry in aggregate in South Africa. In effect, while most of the BRIC countries are in the process of industrializing, South Africa's output and employment shares are more aligned to those of high-income (industrialized) countries.

This structure is mirrored in the changing structure of South African growth. As detailed in a number of studies, the source of South Africa's growth over the past three decades has shifted from a pattern characterized by factor accumulation, to one based on efficiency gains as measured by total factor productivity. Table 2 reports a selected set of growth-accounting exercises for South Africa, covering the 1970-2005 period. Results consistently show a rising proportional contribution of TFP-based growth, with declining contributions emerging from factor accumulation.[6]

Given this sectoral structure to the growth in value added, it is particularly surprising that relatively little research on the South African economy has focussed on its service sector, the internal and international competitiveness of this sector, and what the drivers of its strong growth performance have been. This is further matched by an ongoing focus by policy makers on the requirements of the mining and manufacturing sectors (particularly notable in the context of industrial policy), rather than on the sectors of the economy which have been the strongest contributors to wealth and employment creation, and may well constitute a strong source of international competitive advantage for South Africa, particularly given its location.

2.2 The Two-Economies Legacy of Apartheid

The current conventional wisdom is that South Africa, while maintaining an industrial nation-like formal sector of the economy, pairs this with a second economy in which a very large proportion of the population is excluded from the benefits of its quasi-first-world twin.

Certainly, South Africa's birth, fertility and urbanization rates are such as to align it more with low-income countries than middle income countries, let alone high income countries. See the evidence of Table 3. What is more, while South Africa had characteristics in these demographic dimensions that were close to Brazil in the 1960s, for instance, its rate of convergence with middle and high income characteristics has been slower than this comparator over the succeeding decades.

It is also a well-established characteristic that South Africa's income inequality is amongst the highest in the world, even relative to a range of Latin American countries that are similarly characterized by income inequality. Only Brazil and Chile rate similarly in terms of income inequality. The evidence of Table 3 provides confirmation. However, Table 3 also shows that income inequality in South Africa is associated with poverty rates (as measured by the World Bank's headcount ratio in terms of the $1 and $2 a day in PPP terms demarcation) that lie above those of both Brazil and

[4] Note that the jump in the proportion of employment in the financial institutions during the 2000-4 period is in part due to the inclusion of real estate and business services as of 2002:03. Nonetheless, the reported growth rates in employment in these sectors are computed after this classificatory change.

[5] Brazil, Russia, India, China.

[6] Arguably the one exception is the Eyraud (2009) study which finds a greater contribution from labour than other studies do. This is likely attributable to the improved employment creation in the South African economy during the 2000s, in contrast to the performance particularly in the first half of the 1990s.

Chile, considerably above those of other Latin American countries, and corresponds most closely to China, despite the latter's much lower per capita GDP.

The inference from this evidence is that much of South Africa's population has not had access to the payoffs from the development that has characterized the formal economy, and from which a proportion of its population has strongly benefitted in terms of incomes and living standards.

But the real concern here is less with the mere existence of these obvious disparities, as serious as they are in their own right. Instead, of arguably far greater seriousness is that the divide in its population has been the subject of concerted policy intervention, yet with relatively little consequence in important indicators of delivery.

First, as is evident from Table 4, South Africa has a very strong expenditure profile on human capital creation. The proportion of GDP spent on education lies above that of Brazil, Russia, and the average in both lower and upper middle-income countries, and lags only marginally behind that of OECD countries. The comparison becomes even more dramatic when considering the proportion of government expenditure spent on education. In this instance, with close to 20% of government expenditure devoted to human capital creation, in comparative terms South Africa has close to twice the level of commitment found in Brazil, lies above the average in middle income and OECD countries by a factor of approximately 1.5, and is directly comparable to non-OECD high-income countries.

Further, while less dramatic, the comparison of expenditure on health also shows that South Africa lies above the middle-income average, is directly comparable or above that of Brazil, and is essentially the same as the upper middle-income country average, though it lags the high-income country average by a considerable margin. Table 4 illustrates both in terms of health expenditure as a percentage of GDP, and health expenditure per capita.

In terms of some indicators, this commitment to high expenditure appears to have delivered the desired positive impact. In terms of primary and secondary school enrollment rates as well as primary school completion and progression to secondary school rates, South Africa lies either at or above upper middle-income country averages (see Table 4). In comparison to a range of Latin American countries South Africa again performs comparably in terms of enrollment and progression rates in its schooling system, while outperforming its immediate neighbours by a considerable margin.

However, in terms of a number of crucial indicators, the evidence suggests that the impact of the substantial policy interventions addressing the disparities that characterize South Africa's population have had limited or incomplete success. First, the ability of South Africa's schooling system to provide internationally competitive training in mathematics and science remains severely circumscribed. In terms of international comparative studies in mathematics and science performance (TIMSS) of eighth graders, over the 1995-2003 period. South Africa has consistently ranked bottom of the participating countries, with scores approximately half that of the TIMSS scale average of 500. What is more, South Africa's performance has declined on the TIMSS scale over the 1995-2003 period, even though the decrease is not statistically significant.[7]

Concerns regarding policy impact extend more dramatically to a range of health outcomes. In Table 5 we report mortality and death rates, as well as life expectancy for South Africa and a range of comparators. What is noticeable is not only that South Africa returns figures in these health outcome measures that are more akin to low-income countries than middle-income (certainly not high-income) countries, but also that the trends in these health outcomes indicate a worsening set of outcomes rather than improving outcomes.

Part of the reason for the poor health outcomes is the impact of the high prevalence of HIV/AIDS in South Africa.[8] However, it is not clear that this is the only reason. First, the trends in the health

[7] See the evidence reported in International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 1995, 1999, and 2003. The discussion of the quality of the South African educational system has been ongoing over the past decade. See for instance Fedderke, De Kadt and Luiz (2000, 2003) for early discussions of concerns about South African educational quality across a range of dimensions. Simkins (2005a,b) provides further evidence.

[8] See the data reported at http://www.nationmaster.com/graph/hea_hiv_aid_adu_pre_rat-hiv-aids-adult-

outcome measures were not necessarily pointing to significant gains in the periods prior to the impact of HIV/AIDS. Second, the poor performance is evident also with respect to other diseases such as tuberculosis - see Table 5. Moreover, even allowing for the fact that other diseases might be secondary infections gaining in prevalence due to the high HIV/AIDS prevalence, crucial health delivery mechanisms such as the number of physicians per 1000 of population, while showing some sign of improvement over time, by no means show the rate of improvement that is shown by the range of comparator countries reported in Table 5. Finally, Table 5 also reports that the success rate of treatment in the South African health system (for instance in tuberculosis) is not only considerably lower in South Africa than in the reported comparators, but that this has been the case for some time.

Not all of the poor health performance can be down to the impact of HIV/AIDS therefore. Moreover, the poor performance of the educational and schooling systems is not only of long standing, but shows little signs of improving.

Finally, we also note that in addition to the strong commitment to expenditure on health and education, South Africa also maintains social safety net payments that are high by international standards. In Figure 2 we report some World Bank comparative evidence, which reports South African social safety net expenditures of between 3% and 4% of GDP, placing it amongst the upper end of the distribution relative to other middle-income and developing nations. It should also be noted that South Africa finances its social safety net expenditure domestically, while countries such as Ethiopia and Malawi maintain high social safety net expenditure on the basis of international aid flows. See Weigand and Grosh (2008). The commitment to such social security payments is readily understandable given the historical legacy of Apartheid, the significant inequalities reported in Table 3, and the high rate of unemployment that characterizes South African labour markets. However, given the already high level of commitment to social security interventions, with their attendant fiscal implications, it does not seem plausible that the social imbalances of South Africa can be addressed any further though the channel of social security mechanisms. Instead, attention has to focus on ensuring delivery through efficiency improvements in existing policy interventions.

Given this range of evidence, it is therefore difficult to avoid the conclusion that South Africa faces not only challenging historical legacies - it also is faced with a public sector that delivers poor service, especially given the level of expenditure on social services that South Africa undertakes.

The immediate inference is that South Africa faces important policy challenges. To be clear: given the level of expenditure that is currently already taking place on human capital, health and social services, the problem is decidedly not only of the level of resources committed to the social equity problems South Africa faces. The problem is one of efficiency and adequacy of delivery. Before committing yet further resources to these policy challenges, it is vital that government address the questions of delivery and performance.[9] As the following subsections will argue, this consideration is not just one motivated by efficiency considerations, but is central to the question of long-term sustainable economic growth.

3 Private Capital Accumulation and its Determinants

Standard theoretical frameworks of economic growth place emphasis on factor accumulation. In this section we explore developments and constraints on one of the key factor inputs in the context of growth - the private sector capital.

The structure of investment in the South African economy shows reassuring trend developments, but also significant caveats to any inference of a recovery in capital accumulation. As was detailed in Table 2, capital accumulation has been of declining significance in South Africa since the 1970s.

prevalence-rate

[9] This policy imperative is all the more pressing, since the evidence also shows that South Africa at least in principle does have the ability to deliver on public services, at least in a range of infrastructural dimensions. See the evidence in Bogeti'c and Fedderke (2006a).

Yet since South Africa is a middle-income country, for which factor accumulation should remain a significant component of growth in real per capita GDP, this has been at least one possible limitation on the realization of sustainable growth.

What is reassuring therefore, is that the ratio of gross fixed capital formation to GDP, which fell from a peak of more than 30% in the early 1970s, to a low of approximately 15% for a protracted period of time in the 1990s and early 2000s, has shown signs of recovery. In particular, the ratio has risen from 15% in the first quarter of 2002, to close to 25% in the first quarter of 2009. There is thus evidence that capital accumulation, and an associated increase in the capital-labour ratio, is showing signs of recovery.

However, the news is not uniformly positive. The sectoral composition of the aggregate investment rate shows that the rise in the aggregate investment rate of the economy is concentrated almost exclusively in the public sector, and is attributable largely to the substantial infrastructural investment programmes in the Electricity, gas & water sector that have been initiated in the 2000s. Thus while the investment rate has not returned to the highs of the late 1970s and early 1980s, when the investment rate in Electricity, gas & water lay at about 40% of GVA, the rate has risen from approximately 5% to 26% of GVA in the sector over the 2000-2009 period.

By contrast, the investment rate of other two digit sectors in the economy has shown nothing like the same increase. Both Manufacturing and Financial services, insurance, real estate & business services have maintained investment rates well below 10% of GVA. Manufacturing records only a marginal increase from approximately 5% to 7% of GVA, the financial services sectors demonstrate no positive trend at all, with gross fixed capital formation remaining at approximately 5% of GVA.

There is some increase in the investment rate of both the Mining & quarrying and the Transport, storage and communications (TSC) sectors. In the case of the mining sector, the investment rate has risen from approximately 5% to 11.5% of GVA, while for the TSC sectors the rate has risen from 5% to 9% of GVA. Nevertheless, the increase in both sectors remains limited.

Given the likely significance of the commodity boom of the 1990s to the rising investment rate in Mining & quarrying, it also remains to be seen whether this private sector rise in investment activity will prove sustainable in the face of the international economic downturn.

Finally, the public sector in the form of general government, has reversed some of the significant decrease in its investment rate from its high of approximately 17% of GVA of the sector in the early 1970s, which declined to less than 4% in the first half of the 1990s. Since then the investment rate has returned to close to 7% of the GVA of the sector. While a limited increase, at least the trend in the investment rate has been upward for close on a decade.

Given the increase in the aggregate investment rate, it is worth noting that the gross savings rate of the economy has not increased in concert - with the investment-savings gap rising to approximately 8% of GDP by 2009. A significant component of the failure of savings to rise has been due to the declining propensity of households to save out of disposable income, such that household savings have fallen from approximately 5% of GDP in 1993, to dissavings levels from 2006 onward.[10] Moreover, the savings propensity in South Africa remains relatively low relative to that in comparator countries. Note that the savings rate in international comparative perspective is 6 percentage points below that of the average in upper middle-income countries for the 2000-2005 period, and 26.6% and 12.5% below Chinese and Indian levels. Even allowing for the fact that one possible reason for the low household savings rates in South Africa is that the rising social security payments have reduced the need for precautionary savings (in contrast to the situation in China), it remains a performance that raises specific policy challenges.

Most immediate of these arises from the consequence that the reliance of the South African economy on capital inflows has increased.

What might account for these investment trends?

The modern theory of investment expenditure has come to be focused on the impact of irre-

[10] One possible reason for this is that rising social security payments have reduced the need for precautionary savings.

versibility and uncertainty. The modern literature has been cast in terms of a stochastic dynamic environment. One of the core insights of the modern literature is that uncertainty generates a reward for waiting, and hence that increases in uncertainty will likely lower investment. Note, however, that this is not necessarily the case. A rise in uncertainty does indeed raise the threshold at which investment will be triggered, and it is this which suggests a negative link between investment and uncertainty. But since uncertainty may at least in part be due to an increased volatility of profit flows, such that the higher threshold level of profitability is satisfied more frequently than in a certain environment, more frequent bursts of investment expenditure may be generated. Crucial here is that empirical applications of irreversible investment models must control for the impact of uncertainty.

In the present discussion we examine the determinants of investment expenditure to emerge from work on the South African manufacturing industry as well as aggregate investment rates in South Africa. We summarize the results from the literature on the South African experience, which now comprises at least 11 distinct contributions.[11]

A number of consistent results emerge from the literature. First, proxies for the rate of return on capital, as well as the user cost of capital consistently show statistical significance and conform to theoretical priors in terms of the direction of impact.

Second, uncertainty exercises a statistically significant and strong effect on investment expenditure in South Africa. The effect of uncertainty on investment is unambiguously such as to lower investment rates The finding is consistently returned across studies on the aggregate investment rate,[12] as well as for the manufacturing sector specifically.[13] Both systemic and sectoral uncertainty appears to be pertinent for investment - though systemic uncertainty has a stronger impact than does sectoral uncertainty.

The core finding on investment expenditure is that the standard policy handles on investment, the marginal rates of return on and cost of investment, are significant determinants of investment. Importantly, however, the impact of uncertainty modulates this finding. Stability at a systemic level appears crucial if investment rates in South Africa are to be maintained and to rise further. But since uncertainty also raises the threshold rate of return below which investment is unlikely to occur, the implication is that any policy intervention designed to stimulate investment expenditure may face serious constraints where an industry is operating below the threshold rate of return on investment (the policy simply has no discernible effect). Thus the creation of a macroeconomic as well as microeconomic environment that is stable, predictable and devoid of sudden and arbitrary intervention is a policy goal that emerges not only because uncertainty has a direct negative impact on investment rates in manufacturing, but also because it serves to lower the threshold below which investment does not occur. In effect, lowering uncertainty carries both a direct positive stimulus to investment, and it serves to render other policy levers more effective in achieving their objective.

In considering the impact of the net rate of return on investment, and the associated growth constraint in South Africa, Eyraud (2009) considers evidence from South Africa in comparison with a panel of countries with strong economic recoveries at the turn of the century.[14] The Eyraud study confirms that the investment performance of South Africa lies below that of the comparator countries, suggesting that despite the recovery of the 2000s, there remains a substantial gap between South Africa's investment performance and other countries staging strong recoveries over the 1996-2006 period.

The Eyraud study considers the savings constraint as one of the major causes of South Africa's poor investment performance, since over the 1996-2006 period saving-to-GDP in South Africa has

[11] For a comprehensive review of findings on investment in South Africa see Fedderke (2009).

[12] See Fielding (1997,2002), Kularatne (2002), Mariotti (2002), Romm (2005), Fedderke & Luiz (2008a).

[13] See Fielding (1999, 2000), Fedderke (2004), Fedderke and Szalontai (2005) and Fedderke and Naumann (2005).

[14] Countries were selected by virtue of having recorded their highest average annual rate of real GDP per capita growth between 1996 and 2006, and reporting a population of at least 20 million people: China, Vietnam, India, Russia, Poland, Ukraine, Korea, Bangladesh, Iran and Romania.

been on average 14 percentage points lower than in the comparator panel.[15] The savings constraint is viewed as generating a higher cost of capital as measured by the real interest rate in South Africa than in the comparator countries, despite the decline in the real rate in South Africa over the period of comparison.[16] What is more, Eyraud (2009) argues that the savings constraint on investment in South Africa has become more binding over time. We have already noted the strong decline in household savings. However, Eyraud points out that corporate savings have also declined, and notes the strong increase in the tax liability of the corporate sector despite a declining tax rate. Improvements in the efficiency of tax collection and the broadening of the tax base in South Africa have served to raise the ratio of taxes to primary income by 25 points from 1996 to 2007. However, the effect on aggregate savings was negligible, since the rising tax revenue transferred savings from the corporate to the public sector, with little net effect. Increased dividend payments, and hence lower retained earnings also served to lower corporate savings rates.

Given the estimation results on the determinants of investment reported above, an important and likely inference is that the relatively high returns on investment in South Africa do not translate into a stronger investment performance, since the high returns internalize a risk premium, and that this remains high by international standards.

The measure of systemic uncertainty employed in a number of the above studies, is a measure of political instability in South Africa.[17] The inference is that the institutional environment, and its stability, are important in the South African context. But the relevant institutional context extends beyond stability of the political environment. Thus Fielding (1999) finds a positive return on a property rights measure.[18] Fedderke and Luiz (2008a) also examine the institutional determinants of investment in greater detail. While the study continues to affirm the positive impact of proxies for the rate of return on capital, and the negative impact of the user cost of capital as well as the systemic measure of political uncertainty already discussed above, the study also points to the importance of property rights in driving capital accumulation. Findings confirm not only a strong direct positive impact of property rights on investment (estimated elasticity of 3.18), but also that the evolution of property rights in South Africa led the measure of political instability, such that improving property rights served to lower the level of political instability (elasticity of -2.49). Also significantly, rising crime rates have an additional strong impact on instability and hence uncertainty (elasticity of approximately 4). Fedderke and Luiz (2008b), extend these findings further, and affirm that social, human capital, political as well as economic dimensions are densely interwoven in webs of association, with particularly human capital accumulation and crime rates being of significance in the long-term evolution of the institutional measures that impact on investment directly.

It is worth noting in this context that while the systemic risk in South Africa has improved considerably over the past 15 years, it has also not been eliminated. In Figure 3 we report a measure of the time-varying risk that is implied under the inference that the expectations hypothesis holds in the determination of the yield curve for South Africa, allowing for a time-varying risk premium. The methodology is developed and applied to the South African case in Fedderke and Pillay (2010). What is evident is that the level of the risk premium associated with long-run bonds has been declining through the 1990s. However, as the comparison of the risk measure in Figure 3 with the Freedom House Political Rights and Civil Liberties measures makes clear, the decline in the

[15] Though it should be noted that the inclusion of China in the panel serves to raise the average of the comparator set of countries significantly.

[16] Liquidity constraints, and a low return on investment are also mooted as plausible explanations by Eyraud (2009). However, given both the firm and industry-level evidence of Aghion *et al.* (2008), reporting rates of return that lie considerably above world averages, this explanation is less likely. While there may well be firms that face credit rationing - a question that is explored in greater detail in a following subsection - there also appear to be firms that face levels of profitability that render them exempt from credit rationing constraints. Aghion *et al.* (2008) report net income/sales, net income/assets and net income/equity ratios for firm-level data, all indicating South African returns above international averages by a factor of approximately 1.5, and evidence that suggests that this returns premium has not been declining over time.

[17] See Fedderke, De Kadt and Luiz (2001) on the construction of the variable.

[18] See Fedderke, De Kadt and Luiz (2001) on the construction of the index.

measurable risk implied by the yield curve has not been as dramatic as might have been suggested by the improvement of the formal political institutions of South Africa.[19]

The inference is thus not only that uncertainty is important to investment in South Africa, but that the institutional environment contributes toward the establishment of a favourable climate for investment in a number of dimensions. Property rights, political stability, and crime rates all carry relevance for investment in the South African context, as do more standard considerations surrounding macroeconomic stability and predictability of investment returns.

4 Foreign Capital Formation

Thus far the discussion has focussed on domestic private capital formation. In this section we turn to foreign investment, and consider both foreign direct investment and its determinants, as well as portfolio capital flows and their determinants. Both are crucial to South African developmental prospects, since one means by which the savings deficit of South Africa is potentially alleviated is through foreign capital inflows.

4.1 Foreign Direct Investment (FDI)

An examination of foreign liabilities of South Africa at first sight paints an apparently positive picture of a strong recovery of FDI for South Africa post-1994 - see Figure 4. Figure 4 reports total foreign direct investment liabilities as a percentage of GDP over the 1956-2001 period. Two features of the data series are evident. First, there is a long-term decline in FDI liabilities (as defined above) as a percentage of GDP from 1956-1994, from approximately 35% of GDP, to approximately 10% of GDP. Second, we note a slow rise after 1994 to 1998, from 10% to 15% of GDP, and a very sharp once-off increase in 1999 to approximately 42% of GDP. The sharp increase in 1999 reflects the effect of three JSE-listed companies moving their primary listing to the London Stock Exchange.[20]

Fedderke and Romm (2004) examines two sets of questions with respect to FDI - whether FDI has a positive growth impact in South Africa, and what might drive FDI. The paper does find that the growth impact of FDI is positive for South Africa. The finding is of complementarity of foreign and domestic capital in the long run, implying a positive technological spill-over from foreign to domestic capital. While there is a crowd-out of domestic investment from FDI, this impact is restricted to the short run. Estimation results thus confirm a positive spill-over effect of FDI on capital and labour, and hence on output in the long run for South Africa.

In identifying the determinants of foreign direct investment, the paper reports that FDI in South Africa has tended to be capital intensive, suggesting that FDI has; been horizontal rather than vertical. Market size carries a strong positive elasticity (a 1% increase in GDP generates an increase of FDI liabilities of approximately 13.56%). Increases in corporate taxation crowds out FDI liabilities, with an elasticity of 2.65, at the mean in-sample value of the effective corporate tax rate. Wage costs not only impact negatively on FDI, but do so with a strong negative elasticity of 3.62. Openness of the economy also has a strong impact on FDI. Increased imports lower, and increased exports raise FDI. The implied mean elasticities are 4.23, and 6.12 for import and export ratios respectively. Finally, political institutional structure also matters for foreign investment liabilities. Both improved property rights, as well as improved political stability serve to raise the attractiveness of South Africa as a destination of foreign investors. The impact of property rights (elasticity of 3.81) is strong, while political instability appears to have had a far weaker impact on FDI than in the case of portfolio capital flows, or in the case of domestic private sector investment performance.

[19] Use of Polity IV rights measures, as well as with the ratings of South Africa provided by S&P and Moodys provides symmetrical results. See the discussion in Fedderke and Pilay (2010).

[20] Anglo-American, Old Mutual, and South African Breweries moved their primary listing from the JSE to the LSE in 1999. DIDATA followed suit in 2000; Investec listed on the LSE in 2002; BHP Billiton obtained an Australian listing in 2001.

Given the long-term and potentially irreversible nature of FDI, the greater importance of property rights compared with political instability is not implausible.

The implication of the findings is that determinants of FDI in South Africa lie in the determinants of the net rate of return, as well as the risk profile of the FDI liabilities. There is no great mystery here - and the policy handles are both direct, as well as powerful. Reducing political risk, ensuring property rights, most importantly bolstering growth in the market size, as well as wage moderation (ideally lowering real wages), lowering corporate tax rates, and ensuring full integration of the South African economy into the world economy all follow as policy prescriptions from the empirical findings.

We note that the findings confirm for FDI what was found to be true for domestic investment also. Institutions matter in the sense of serving to render returns on investment more certain. But for foreign as well as for domestic investment, the impact of the institutional environment comes from a range of different dimensions, such as political instability, property rights, and market structure and size, which may interact with one another.

Finally, we also note that for the policy context, additional research might address the question of how FDI might come to switch from the predominance of horizontal, to increased vertical FDI.

4.2 Foreign Private Portfolio Capital Stock Formation: Portfolio Capital Flows

As already noted, a structural constraint in the South African economy has been the short-fall of savings relative to the investment needs of the economy. The implication is that South Africa has been, and remains, reliant on capital inflows in order to finance its physical capital formation.

On the basis of a portfolio theoretical model Fedderke and Liu (2002) examined the determinants of South African portfolio capital flows, employing a range of distinct measures of capital flow and flight standard to the literature. The priors are that capital flows respond positively to higher domestic returns on assets, and negatively to risk and higher returns on foreign assets.

The crucial point to emerge for purposes of the present discussion is that the estimation results conform to portfolio theoretic expectations. Thus an improved rate of return on assets, and reduced risk on assets will increase capital inflows into South Africa - though there are some differences between the various capital flow measures on the imputed magnitude of the impact the various rate of return and risk dimensions.

The second point is that capital flows in South Africa prove to be sensitive to political risk - just as investment expenditure on physical capital is. We note that both changes in the level of political rights, and the level of political instability impact on capital flows. Higher instability and political liberalization both served to stimulate capital outflows.

Estimation results thus suggest that capital flows for South Africa show strong sensitivity to risk factors, and political risk factors in particular. We note that both changes in the level of political rights, as well as the level of political instability impact on capital flows. Greater instability, and political liberalization, served to stimulate capital outflows.

The risk dimensions that proved to be crucial for investment in physical capital stock in South Africa directly, thus transfer their importance to one of the crucial enabling conditions for investment in South Africa. Given the short-fall of private savings relative to investment expenditure, we continue to rely on capital inflows into the economy. Short of achieving an increase in the social savings rate therefore, South African reliance on capital inflows strengthens the need to minimize any source of uncertainty that may detract from investment directly, or from capital inflows. Transparency, predictability and credibility of political processes will serve a crucial role in determining whether the process of democratization in South Africa brings about economic as well as political benefits for the majority of the South African population.

Further, to the extent that the aggregate growth measure contributes to the long-run determination of capital flows, the implication is that capital inflows follow on from the creation of favourable growth prospects. Capital inflows are thus potentially secondary stimuli to economic growth, in the

sense that they themselves respond to an already favourable growth performance. Of course, the additional capital inflow may further enhance the growth in output.

Capital flows and flight have become more favourable to South Africa since the early 1990s. However, lowering political uncertainties, and the need to offer healthy rates of return to potential investors should continue to be a central concern of policy makers. The policy inference reflects that for portfolio investment, as much as for FDI, and for domestic capital formation, institutional determinants of uncertainty have been found to matter, and matter strongly for South Africa. In fact, the finding constitutes a consistent thematic that has been present in the set of papers that have formed the background to this study.

4.3 Reflecting on the Composition of South Africa's Capital Inflows

Since the political transformation of 1994, South Africa has attracted relatively more portfolio investment than FDI. On average, between 1994 and 2002, FDI inflows amounted to 1.5% of GDP per year, whereas portfolio investment inflows totalled about 3.5% of GDP.[21] The current composition of South Africa's foreign capital raises important questions especially since it contrasts sharply with the country's pre-1994 composition of foreign capital. Ahmed *et al.* (2005) similarly point out that the predominance of portfolio investment inflows in South Africa deviates from the experience of other emerging middle-income countries where FDI tends to outweigh portfolio investment.

South Africa's political democratization in 1994 saw its re-integration into the world economy. This was accompanied by a surge in international capital inflows. Since the early 1990s, South Africa also experienced changes in the composition of its foreign capital inflows and stocks. Figure 4 shows the FDI and portfolio investment stocks as percentage of GDP. It is evident that prior to 1990, FDI stocks exceeded portfolio investment stocks by a sizable margin. This contrasts with most of the post-1990 period when portfolio investment stocks outweighed FDI stocks.

The only exception to the predominance of portfolio investment stocks in the post-1990 era was between 1999 and 2001, a period during which FDI stocks seem to have grown much faster than portfolio investment stocks. However, as noted above, the growth of FDI stocks was not due to new FDI inflows, but due to the fact that four of South Africa's largest multinational companies (MNCs) moved their primary listing from the Johannesburg Stock Exchange to the London Stock Exchange. The South African plants of these firms thus became part of South Africa's FDI stocks by means of book entry, inflating the growth of the FDI stocks. It follows that there is a shift in the composition of South Africa's foreign liabilities away from FDI to portfolio investment in the post-1990 period.

It has been argued that the composition of foreign capital received by a country determines whether the capital is beneficial or detrimental to the host country (Dooley and Warner, 1995). In this regard, FDI is often considered superior to portfolio flows and foreign loans as it potentially facilitates the transfer of new technology, helps improve workers' skills and market access by the recipient country (Borensztein et al. 1998). Furthermore, FDI is generally considered to be more stable and resilient during periods of financial stress than portfolio investment inflows. According to this view, a high relative share of FDI in total foreign capital inflows is a sign that the recipient country is less prone to financial crises and generally in good health.

There is, however, an alternative strand of literature, which argues that the relative share of FDI in total foreign capital inflows and stocks tends to be lower in countries that are safer, more promising and have better institutions and policies.[22] This argument is based on the notion that FDI is less subject to expropriation than other forms of foreign capital inflows because of its intangible nature (technology and brand names). Countries that have tighter financial constraints and

[21] In line with convention, the South African monetary authorities distinguish between three main sub-components of total foreign capital inflows. The first category is long-term FDI which involves investment in a firm where foreign investors have at least 10% of voting rights. The second category, namely portfolio investment, includes the purchase by foreigners of South Africa's bonds and equities with less than 10% voting rights. The third category, other investments, constitutes foreign loans and deposits between companies, banks and the government.

[22] See for example Razin *et al.* (1998), Hausman and Fernandez-Arias (2000) and Albuquerque (2003).

weak institutions will therefore be primarily reliant on FDI, which is seen as harder to expropriate. Interpreting a high relative share of FDI in total foreign capital inflows as a sign of good economic health is therefore unwarranted.

In view of these different approaches to a desirable composition of foreign capital, it is crucial to understand how the host country's institutional quality and risk influence both the absolute levels and the composition of foreign capital. The literature on the composition of foreign capital is divided on how institutional and risk factors influence the composition of foreign capital inflows and stocks. Thus models such as that of Albuquerque (2003) attempt to explain why institutional weaknesses and high domestic risk, tilt the composition of foreign capital away from non-FDI capital towards FDI capital. According to the model, FDI has a risk-sharing advantage over other capital flows, because it contains more intangible assets such as human and organizational capital that are inalienable. This makes FDI less attractive to expropriate when compared to non-FDI foreign investment. The model assumes that international investors make a decision to invest in either an inalienable project (FDI) or an alienable project (non-FDI) in a chosen host country. Only some share of the current revenues from FDI activity will be lost if the host country defaults.

In contrast to the above view, Faria and Mauro (2004) argue that the inalienability of FDI depends upon the sectoral allocation of FDI, such that the inalienability-of-FDI hypothesis applies mostly to high technology or human capital-intensive sectors where the benefits of expropriating foreign capital by the host country are very low. In most developing countries, FDI is concentrated in capital-intensive sectors and/or the primary commodities sector, where the host country can easily expropriate foreign capital. Under such conditions, the Albuquerque (2003) prediction breaks down, leading to a relationship where institutional weaknesses and high domestic risk lead to a composition of foreign capital biased towards non-FDI foreign capital.

In testing these alternatives, Fedderke and Gwenhamo (2009) report both portfolio theoretic models for the level of FDI, as well as a models which examine the composition of foreign capital flows. In both instances they allow for the impact not only of the quality of property rights in South Africa, but also for the level of property rights in Zimbabwe in order to control for the possibility of neighbourhood effects.[23]

Results show that the risk measure (defined as political instability) employed in estimation has a negative and statistically significant effect on the relative share of FDI in total foreign capital stocks with an elasticity of -0.94. Symmetrically, the property rights index with an elasticity of 0.15, suggests that an improvement of property rights in South Africa will lead to an increase in the relative share of FDI in total foreign capital stocks, though the property rights measure is only marginally statistically significant.

Since the findings thus suggest that domestic risk and institutional inefficiency reduce the relative share of FDI in total foreign capital stocks, they contradict the FDI inalienability hypothesis suggested by Albuquerque (2003), in favour of the Faria and Mauro (2004) alternative.[24] The likely explanation is that South Africa is concentrated in the natural resource and /or capital-intensive sectors where the host country can expropriate foreign investment easily. When property rights and the institutional environment weaken under such circumstances, foreign investors tend to shift their investment away from FDI to other forms of foreign capital, thus reducing the relative share of FDI in total foreign capital stocks. This serves to explain the relatively high proportion of portfolio flows in total capital flows.

As regards the impact of neighbourhood effects from Zimbabwe on South Africa, the Zimbabwean property rights measure has a negative and statistically significant effect on the share of FDI in capital flows in the long run. Thus as property rights worsen (improve) in Zimbabwe, the share of

[23] The South African property rights index is drawn from Fedderke *et al.* (2001), while that for Zimbabwe comes from Gwenhamo, Fedderke and De Kadt (2009).

[24] The results confirm those of Ahmed *et al.* (2005), who found that the institutional quality measured by the ICRG index of law and order positively affects the relative share of FDI in total foreign capital inflows for a group of 81 developing countries, including South Africa.

FDI in total foreign capital stocks in South Africa increases (decreases).[25]

The implication is that Zimbabwe and South Africa compete for FDI in similar sectors, and present two alternative investment destinations to foreign investors who are interested in investing in Southern Africa. As property rights in Zimbabwe worsen, FDI appears to switch to South Africa as an alternative. By contrast, poor property rights in Zimbabwe appear to raise the perceived risk for portfolio investment in South Africa also.

5 Infrastructure

In the present section we turn our attention to the productivity impact of infrastructure investment, and the evidence on the level of infrastructural investment in South Africa over the past three decades. We restrict our attention to economic infrastructure, rather than social infrastructure, though we remark briefly on the latter.

We begin by noting the decline in infrastructure investment in South Africa over the 1970-2000 period. The developments are extensively detailed in Perkins *et al.* (2005). The South African Reserve Bank (SARB) publishes the public sector economic infrastructure components of South Africa's gross fixed capital formation and fixed capital stock (both general government and public corporations) - both of which demonstrate a long-term deterioration: from the mid-1970s in the case of investment, and from the mid-1980s in the case of fixed capital stock. Investment per capita fell from R1 268 in 1976 to R356 in 2002 (1995 prices), a collapse of 72 per cent over the same period. Investment fell from 8.1 per cent of GDP to 2.4 per cent of GDP, which lies below the international benchmark of three to six per cent identified by Kessides (1993: ix).

In isolating the economic significance of the relationship between output and infrastructure, Fedderke, *et al.* (2006) find that a one percent increase in infrastructure increases fixed capital stock by 1.37%, while a one per cent increase in fixed capital stock increases GDP by 0.06%. Furthermore, electricity generation directly affects GDP with an elasticity of 0.2.[26] Similarly, Fedderke and Bogeti'c (2009) examine the impact of infrastructure on productivity, measured by both labour and total factor productivity, for a panel of 24 South African manufacturing sectors between 1975 and 2000. They find that aggregate infrastructure stock and investment impact positively on labour productivity, with elasticities of 0.19 and 0.2, respectively, while aggregate infrastructure investment impacts positively on total factor productivity with an elasticity of 0.04. In terms of specific measures of particular types of infrastructure, electricity (elasticity 0.05), railway (elasticities between 0.32 and 1.04), air transport (elasticities between 0.05 and 0.25) and particularly road (elasticities between 0.35 and 2.95) infrastructure, all positively impact on labour productivity. Results for total factor productivity are broadly consistent with an elasticity of 0.04 for electricity, 0.04 for air and ports, 0.07 for telecommunications and elasticities between 0.03 and 0.18 for railways.

The picture is overwhelmingly one of a positive relationship between productivity and infrastructure, which in turn suggests a positive relationship between infrastructure and growth.[27]

[25] This finding is confirmed by two separate portfolio theoretical estimations, that find that worsening (improving) property rights in Zimbabwe raises (lowers) the absolute level of FDI inflows, while lowering (raising) the absolute level of portfolio capital inflows to South Africa. Symmetrically and consistently deteriorating property rights in Zimbabwe are found to lead to an increase in the relative share of FDI in total foreign capital stocks.

[26] By way of a robustness check, Kularatne (2009) considers the impact of both economic and social infrastructure, as well as their interaction amongst each other, with private fixed capital formation and final output, testing for directions of association. Using physical measures of economic and social infrastructure (constructed from road and classroom data, respectively), he finds that social infrastructure directly drives economic infrastructure, private investment and GVA; that GVA responds to social infrastructure spending with an elasticity of 0.06, and the private investment rate responds to economic infrastructure spending with an elasticity of 0.02. Finally, the modelling tests for the presence of non-linearities, reporting no evidence in their favour.

[27] Fedderke and Wollnik (2008) in examining the spatial distribution of manufacturing activity in South Africa, report decreseasing spatial concentration of industry over time. The inference for the importance of infrastructure for economic growth in South Africa, is that it is likely to have increased in significance.

Given this background, the evidence from the 2000s regarding infrastructural investment in South Africa at first sight is reassuring. In Figure 5 we report investment in economic and social[28] infrastructure by general government, investment in economic infrastructure by public corporations, as well as the joint investment in economic infrastructure across both general government and public corporations.

The data indicates that the long-term structural decline in economic infrastructure expenditure by general government that characterized the period from the mid-1970s to the mid-1990s, first halted, and then; reversed. Note however that over the period from 1995 through 2005 the real level of economic infrastructure expenditure remained essentially constant, and a noticeable increase in expenditure on infrastructure only becomes evident after 2005. While public corporations never showed as strong a decrease in economic infrastructure investment over the 1975-95 period as did general government, nevertheless the investment remained essentially static, with little sign of any real increase over this period. However, since the early 2000s investment in economic infrastructure by public corporations has seen a strong increase - and this rise has been a significant contributing factor behind the increase in the aggregate investment rate of South Africa. Social investment expenditure by contrast has been considerably more static.

The net result is that after a twenty-year period from 1980 through 2000, during which the aggregate economic infrastructural stock remained essentially constant, there has finally been a resumption of a steady increase in the aggregate economic infrastructural capital stock in South Africa.[29] The evidence for social infrastructure is broadly symmetrical, though considerably weaker in showing an increase in the capital stock.

But of course this evidence pays no heed to the size of the population that the infrastructure is serving. In Figure 5 we also report the public capital stock figures in per capita form. Once corrected for population size, evidence for a recovery in infrastructural investment in South Africa is considerably weaker. At best, the increase in infrastructural investment has generated a per capita increase in infrastructural capital stock only after 2006/7. More compelling is the evidence suggesting that the increase in infrastructural investment after 2000 has done no more than halt the steady decline in per capita public capital stocks that has been in evidence since 1980. Certainly, the per capita level of economic infrastructure in 2008 remains below the peak achieved in the 1980s. Specifically, the per capita public economic infrastructure in 2008 still stood at only 85% of the level it attained in 1985.

A similar story emerges when considering the percentage of GDP spent on either economic or total (economic and social) infrastructure. There is a long-term decline in the proportion of GDP spent on infrastructure from 1975 through 2005, with recovery only emerging after 2006 (with a blip in 1998 due to aircraft purchases by the national air carrier), and with the recovery returning to only 6% of GDP, well below the 10% attained in the mid-1970s.[30]

It is worth emphasizing that the failure to recover a higher level of infrastructure expenditure is not attributable to profligate government consumption expenditure.[31] While rising government consumption may have contributed to falling public capital investment during the 1975-1990 period, the 1990s and 2000s have been characterized by fiscal restraint on public consumption, with government consumption remaining approximately constant at 20% of GDP over this period.

Nor has there been an upward trend in aggregate government expenditure as a proportion of

[28] Economic infrastructure includes roads, bridges, dams, electricity and water supply, etc.; social infrastructure includes schools, hospitals, etc., and administrative services.

[29] Note that in 1990 a substantial proportion of the public capital stock previously classified under general government was reclassified under public corporations.

[30] Note that this evidence is consistent with the findings of Bogetic and Fedderke (2006b), who forecast an annual expenditure requirement of 1% of GDP for power generation and telecommunications alone, for a 3% sustainable growth rate, and 2.4% of GDP under a 6% growth rate.

[31] Current expenditure on salaries and wages and on goods and services of a non-capital nature by the service departments (not business enterprises) of general government. General government includes central government, provincial governments and local governments

GDP in South Africa. Both total expenditure by national, and by consolidated government, while demonstrating fluctuations, cannot be said to have shown strong upward drift over the past two decades. Instead, government expenditure has shown a strong compositional change over time. Figure 6 reports the proportion of GDP spent on security (internal and external), on social sectors (education, health, social security and housing), and economic and other services respectively.

What is striking is the strong compositional change in government expenditure. It is social security payments which have increased most dramatically, consistently rising as a proportion of GDP, so as to more than double over the 1990-2007 period, from less than 2% of GDP to more than 4% of GDP. As already noted in conjunction with Figure 2, this now places South Africa amongst countries with the most pronounced level of expenditure on social welfare in the world. Public Order & Safety has similarly doubled as a proportion of GDP, from 1.5% to more than 3%, a reflection of the persistent and as yet unresolved level of crime in South Africa. Education expenditure, while increasing fairly strongly after 1994, rising from approximately 5% to 7% of GDP from 1990 to 1998, has since fallen in relative importance, returning to approximately 5% of GDP. Health and housing have both seen essentially constant expenditure as a proportion of GDP, at levels of 3% and 1% of GDP respectively. Finally, defence expenditure has fallen dramatically as a proportion of GDP, from 3.5% to less than 1.5% of GDP. Similarly, the period of fiscal prudence post 1994 has resulted in falling debt servicing by the public sector.

Notable therefore is that, from a growth perspective, the composition of public expenditure does not show unalloyed positive developments. While there has been some recovery in the proportion of GDP spent on infrastructure, the increasing burden of South Africa's strongly developed social welfare system has not only limited this increase, it also appears to have come at the expense of a falling proportion of GDP being spent on education, while the other dimension of human capital creation, health, has seen little improvement.

While the commitment to social welfare may be both understandable and laudable in the context of South Africa's history, it is worth asking the question whether it is being realized at the expense of long-term growth prospects. A growing body of literature has accumulated suggesting either that inequality, and potentially even poverty, has shown little sign of improvement, and may even have worsened since the mid-1990s.[32] If true,[33] given the context of sharply rising social welfare payments, this suggests either a remarkable level of policy failure, significant data problems, or levels of inefficiency in the economy that have then been significantly underestimated. Again, the question of whether public expenditure has come to be overextended toward social welfare at the expense of growth-enhancing infrastructure- or human-capital expenditure presents itself.

6 Market Distortions and Constraints

One possible explanation for the relatively poor performance of the South African economy might vest in poor or inappropriate market structure.

We treat this question under three separate headings. First, we examine the structure of output markets, and the implications of this for productivity growth in the economy. Second, we examine evidence from the South African labour market. Finally, in the following section, we examine some initial evidence on the size and the performance of the service sector, and financial services in particular.

[32] See for instance the discussion in Hoogeveen and Özler (2006), Leibbrandt *et al.* (2006), and Leibbrandt *et al.*(2009).

[33] Readers should note significant concerns about data quality here, though. For one, reported evidence of declining real earnings (see for instance Leibbrandt et al, 2005) are at immediate odds with aggregate data on output in the economy. Without resolution of this inconsistency, it is difficult to give credence to or evaluate the results on inequality and poverty.

6.1 Competitive Pressure in Output Markets

There now exists a sequence of published results that confirm that at least South African manufacturing industry appears to have non-negligible pricing power.[34]

The evidence suggests not only that the level of the mark-up is high in comparative terms, at a level approximately twice that reported for the US, for instance, but there is little evidence that the mark-up is subject to anything other than cyclical fluctuation over time, rather than a systematic downward trend.

Internationally, recent empirical studies[35] have pointed to a positive effect of product market competition on productivity growth, particularly at low levels of competition. Aghion *et al.* (2008) replicate the evidence for the South African manufacturing sector. The international empirical evidence finds replication in South Africa, across two industry and one-firm level data set. The implication for productivity growth in South African manufacturing industry is dramatic. A 10% increase in the mean margin is associated with a 1.6 or 2.4 percentage point decrease in productivity growth for the first industry-level data and firm-level evidence respectively, while for the second industry database a 0.1 unit increase in the Lerner index proxy is associated with a 1 percentage point decrease in productivity growth.

Aghion *et al.* (2009) further extend these findings to an open economy model, in which the impact of trade liberalization on innovation and growth is not only explicitly modelled, but is also controlled for in estimation. Not only is the negative impact of pricing power on productivity growth robust to controlling for trade liberalization, but its impact proves to be quantitatively larger in both statistical and economic terms.

The growth costs of the substantial pricing power of South African firms thus appears to be substantial. Further, and crucially for the policy context, we note that liberalization of the South African economy is incomplete at present, thus placing an implicit brake on growth prospects in South Africa. What is more, the negative impact of pricing power is not restricted to output growth alone. Thus Fedderke and Szalontai (2009) report both negative investment and employment impacts of industry concentration (on the presumption that there is a link between industry concentration and pricing power), while Fedderke and Naumann (2009) confirm the negative investment impact on more recent manufacturing sector data.

6.2 Constraints in the Labour Market

The often negative trends in employment by sector that were evident in the 1980s and 1990s, began to reverse in the 2000s - see Figure 7. This is particularly true for the finance sectors, but is present even in mining, source of the largest employment losses in previous decades. Manufacturing employment recovery remains sluggish at best, however.

Here we simply highlight some of the main insights to have emerged that are relevant from a growth perspective.

The price of labour is crucial in determining employment prospects. Banerjee *et al.* (2008) note that the standard mechanism to clear labour markets, of falling real wages, would require nominal wage decreases - yet the level of the real wage has not shown substantial changes over the 1995-2005 period. The reason cited for this is that wage declines are politically untenable, and are constrained by unions.[36] But this effectively ignores the possibility of addressing the problem of labour cost by

[34] The finding was first suggested by Fedderke and Schaling (2005) at a macroeconomic level, and confirmed by Fedderke, Kularatne and Mariotti (2007) at the three-digit manufacturing level, with the latter result finding further support from Edwards and van De Winkel (2005), Fedderke and Hill (2007), and Aghion *et al.* (2008).

[35] See for instance Aghion *et al.* (2005).

[36] It should be noted that the conventional view of the wage elasticity of employment in South Africa centres on 0.7, which explains why the anticipated decrease in the nominal wage required for appreciable increases in employment are viewed as potentially large. However, it is not clear that the estimated elasticity is correct. When the labour force is disaggregated by skills type, wage elasticities are often greater than 1 in absolute terms, especially for unskilled labour. For the manufacturing sector, labour usage equations which control for the relative price of capital to labour,

other policy tools - eg. wage subsidies.

It is more than wage costs which matter for labour markets. Fedderke and Hill (2007) derive a measure of the flexibility of the labour market in the manufacturing sector, from a model which interacts the labour market with rigidities in the output markets due to the pricing power of producers. The index (see Figure 7) confirms what many commentators have noted about the labour markets in South Africa, namely that the range of regulation of the labour market introduced legislatively during the course of the 1990s, was accompanied by a rising level of rigidity in the labour market (higher is more rigid on the index).

Of course other factors also matter for unemployment in South Africa. Banerjee *et al.* (2008) mention at least the ineffectiveness of job search for Africans, poor job creation in the informal sector which they attribute to the likely impact of crime and high start-up cost, and possible impacts on the reservation wage from social security and education. None of this precludes the importance of labour prices, however.

It is also useful to note at least one factor that has not impacted negatively on the labour market. Trade liberalization at least in South African manufacturing industry has been associated with Stolper-Samuelson effects, thus favouring demand increases for labour rather than capital. This is a result reported in Fedderke, Shin and Vaze (2010) on the basis of three separate empirical methodologies., The positive impact of trade liberalization on labour markets is further confirmed by Fiandeiro and Rankin (2008). Of course, this is not to deny that globalization may also be associated with technological change that is labour saving - and Fedderke, Shin and Vaze (2010) separate these out from the demand effects of globalization. But liberalization per se does not appear to have been harmful for employment in South African manufacturing.

While the suggestion of a wage subsidy[37] in order to address the unemployment constraint on the South African economy may not be ideal, at least it carries the merit of taking serious that labour cost constrain the effective functioning of the South African labour market. The question as to affordability of this intervention in fiscal terms is a separate, if important one.

6.3 Policy Implications of the Evidence

What are the policy implications that emerge from these findings for an emerging economy that has faced a history of poor industrial and labour market policy, much of which endures, combined with a high degree of natural resource dependence? For most emerging markets the domestic economy is simply too small to render feasible autonomous trajectories of development. Reliance on export markets is therefore an essential ingredient of long-term success.

Where industrial structure has been fundamentally shaped by policy intervention that favoured import substitution and the development of large national champions, domestic market structure may be such that it is dominated by firms sufficiently large to render domestic markets highly concentrated, but insufficiently large to realize the economies of scale that render competitive participation on world markets a readily attractive alternative. In the presence of additional labour market distortions, which favour relatively small labour market elites in terms of access to labour market insider status, and in terms of the wage pay-off they can anticipate, the problem compounds. Domestic markets are rendered even smaller than they might otherwise be, further raising the prospects of firms in the domestic market that approximate monopolies relative to domestic market size.

The obvious response to such a scenario is to liberalize the economy, in order to increase competitive pressure on local producers and labour market participants.

So how has South Africa fared in liberalizing its economy in order to raise competitive pressure? In nominal terms, there has been liberalization of trade policy - see the discussion of Edwards (2005). However, as yet it is not clear to what extent this has begun to limit the pricing power of South African producers. Provided that there is a link between industry concentration and industry pricing

also report price elasticities of labour usage well above unity.

[37] As proposed in the 2010 State of the Nation, and Budget, for instance.

power, as appears to be supported by the empirical evidence reported in Fedderke, Kularatne and Mariotti (2007), there are arguably positive developments for South African manufacturing industry over the course of the 2000s. Fedderke and Naumann (2009), for three-digit manufacturing sectors, reported industry concentration indices which indicated that the level of industry concentration, after a long period of steadily increasing levels from 1972 to 1996, declined across virtually all industries from 1996 to 2001. Unfortunately, however, this finding must be qualified, since the data collection methodology from 1996 to 2001 changed dramatically,[38] so that the data is not strictly comparable. For this reason we also compare the CR4 and CR10 firm concentration ratios[39] over the 2001-2005 period, in Figure 8 for output, for three digit manufacturing sectors.

The striking finding from the data is that the 2001-2005 period has seen a further strengthening of market concentration, at least as measured by the CR4 and CR10 ratios. Thus in the case of output, for 28 sectors there has been an increase in the proportion of output due to the 4 largest firms, and for only 10 sectors has the proportion shown a decrease over the 2001-2005 period. For the proportion due to the largest 10 firms, the result is even more marked, with an increased share being recorded for 31 sectors, and a decrease for only 7.[40]

Of course, industry structure is an imperfect proxy for industry conduct at best. Nevertheless, given the result reported in Fedderke, Kularatne and Mariotti (2007), of a strong association between pricing power and industry concentration, the results indicating rising industry concentration during the course of the 2000s in South Africa manufacturing are not indicative of the rising output market competitive pressures that are indicated by the results of Aghion *et al.* (2008) and Aghion *et al.* (2009) to be important contributors to productivity growth.[41]

7 Growth, Innovation and Human Capital

Modern growth theory has placed innovation and human capital at the centre of accounts of productivity growth.[42]

Certainly there is evidence to suggest that human capital carries significance for growth in the South African economy. Fedderke (2006b) presents results from an estimation of a Schumpeterian growth model, which incorporates both the impact of R&D and human capital on output growth. Results relevant to the current context suggest that R&D expenditure has a more than proportional impact on real output growth in South African manufacturing. In terms of human capital variables, it is measures of the quality of human capital rather than the absolute quantity of human capital

[38] Data up to 1996 were collected by manufacturing census (of unknown quality). From 2001 onward, data collection is by large sample survey, with declining coverage of firms of smaller sizes. Fedderke and Naumann (2009) report some sensitivity and robustness results, but comparability of data cannot be conclusively established.

[39] The CR4 and CR10 ratios compute the proportion of sales/output contributed by the 4 or 10 largest firms in the industry respectively. An important limitation of both ratios is that they do not account for the number of firms present in the industry (which the Herfindahl and Rosenbluth indexes do acocunt for), and are thus unable to account for the possibility of the presence of a competitive fringe of firms able to discipline incumbent producers. Unfortunately the presentation of the large-sample survey of 2005 precludes the computation of Rosenbluth or Herfindahl indexes.

[40] Results for sales are symmetrical. One concern with these results may be that the industry classification changed from 2001 to 2005, such that a number of three-digit sectors which were reported as a single industry classification in 2001, were disaggregated in 2005. In our reported results we computed simple unweighted averages for these sectors for 2005 to maintain comparability with 2001. Since this does not reflect the relative contribution to output by the averaged sectors, this may introduce a source of bias in the comparison. For this reason, we also computed the concentration ratios only for those sectors for which strict comparability across 2001 and 2005 is feasible. Results are symmetrical. For sales, the contribution of the 4 largest firms rose in 17, and fell in only 9 sectors. In the case of the CR10 ratio, reported concentration increases for 19 sectors, falls for only 7. Again, results for output are identical.

[41] One important caveat to the evidence in favour of liberalization, is that the evidence suggesting significant dispersion and primary commodity reliance of manufacturing in South Africa suggests that liberalization is likely to have a positive impact only if infrastructure investment accompanies the intervention, in order to lower transport and transaction costs.

[42] This is true explicitly in the central theoretical contributions to endogenous growth theory (see Romer, 1990, Aghion and Howitt, 1992), extensions of the Solow framework (see Mankiw *et al.* 1992).

that impact positively on productivity growth as measured by TFP. In addition openness to trade is found to impact productivity growth positively, and industry concentration has a negative impact on productivity growth, results which are consistent with those reported in the previous subsection.

The concern in the South African context is that in neither dimension is performance as strong as would be desirable. In Table 6 we report the number of R&D scientists per million of population and the percentage of GDP spent on R&D in South Africa as well as a number of comparator countries. While South Africa appears to have a comparable performance to other middle-income countries in terms of the proportion of GDP spent on R&D, the same is not true with respect to the number of R&D scientists per million of population. What is more, even with respect to China, with its considerably lower level of per capita GDP, the R&D performance of South Africa does not compare favourably. More recent data does indicate further improvement, particularly in terms of the proportion of GDP spent on R&D - see the data for 2005/6 and 2006/7 - but even so, the proportion of GDP spent on R&D has not yet reached the 1% mark, and is certainly far from the 2-4% of GDP that is reported by countries with strong reliance on innovation in their growth structure.[43]

Given the increasing reliance of the structure of South African growth on gains in TFP, the continued weakness of R&D expenditure remains a sign of weakness.

An equally worrying feature of the innovation structure of the South African economy is the fact that the capacity of the education system, and the schooling system in particular, continues to deliver poor performance in the mathematics and science dimensions that Fedderke (2006b) reports as being the key drivers for long-run productivity growth. The feature of concern is the universal and dramatic downward trend in both the proportion of matriculants that graduate with mathematics, and the proportion of university degrees that are in the natural, engineering and mathematical sciences.[44] What is more, the trend, despite the high level of expenditure on education already noted in preceding sections, has not shown an improvement – see for instance Simkins (2005a, 2005b) and Van Den Berg (2009).

Under such a performance of the educational sector, skills shortage are likely to continue for some time, especially since further increases in the proportional real expenditure on education, given the extent of the social security networks that have been developed, and given the levels of expenditure already undertaken on education, are likely to be constrained.

8 Starting to Address the Significance of the Service Sector

In this section we return to the role of the service sector in the South African economy. We have already seen that the structure of South African output is unusual, in that the contribution of the service sectors lies considerably above that of comparator emerging markets, and is arguably more akin to the structure of developed economies.

More research is therefore needed about the structure and performance drivers of the service sectors of the economy. This is further emphasized by the fact that in terms of the net balance of payments position of the aggregate service sector, after a long period of a fairly substantial trade deficit in services over the 1970-2000 period, exports in the service sector of the economy have been growing at a rate sufficient to essentially eliminate the deficit since 2000. Indeed, the growth is such as to raise important questions as to whether South Africa's comparative advantage in trade may not significantly lie in the service, rather than the manufacturing sectors, especially given the labour cost structure that South African producers face.

This section of the paper pays some attention to the service sectors. While all service sectors are of potential interest, our focus will be primarily on the financial sector, for three distinct reasons.

[43] he data in Table 6 for 2006/7, would not yet reflect the impact of the tax incentive introduced by government for R&D expenditure. It may well be that the upward trend in R&D will continue on the back of the government promotion programme.

[44] The point was raised in the growth context by Fedderke, De Kadt and Luiz (2000, 2003).

First, the relative size of the financial sector in South Africa is particularly noteworthy relative to international comparators.

Second, the process of international reintegration of the South African economy may well have had the most significant impact on the financial sector, making dynamic developments in this part of the economy of particular significance.

Third, the interaction between financial deepening and long-run growth performance in South Africa is not only pronounced, but also appears to assume a somewhat unusual structure. Kularatne (2002) considers both the impact of credit extension and liquidity on the stock market, in examining the interaction between financial deepening and economic growth. The finding is that both credit extension and stock market liquidity have a positive effect on per capita GDP in South Africa. Crucially, however, the impact is indirect, operating via the investment channel rather than on output directly, and it is the equities market that appears to have stimulated investment in physical capital, while credit extension appears to have fuelled the development of the equities markets in South Africa.[45] Thus credit extension in the South African financial markets appears to serve as a means of improving the liquidity of the stock market, rather than increasing investment in physical capital stock directly. One possible explanation for the absence of a direct association between financial intermediation and the real sector may be that firms find it difficult to source working capital from financial intermediaries for investment projects, indicating the presence of credit rationing within the South African economy.[46]

On all these counts, the role and impact of the financial sector in South Africa merits special consideration. Here we consider two sets of evidence. The first relates to the extent to which South Africa has been integrated into the international financial system. The second considers evidence on the efficiency of the financial sector as a means to consider the appropriateness of its size in the economy.

8.1 International Financial Integration[47]

The first question we confront is whether South Africa has become more integrated with world financial markets over time. Under the approach of Obstfeld (1994), by trading in the world capital market, agents share their idiosyncratic risks, with the consequence that consumption will come to be correlated with world consumption because trade in assets will cancel out country-specific shocks - see also Leiderman and Razin (1994).

The empirical prediction concerning the correlation of international consumption depends on the ability of agents to engage freely in the trade of assets, the completeness of markets,[48] as well as the verifiability and; nsurability of events on which an asset's returns depend.[49] Then differences in the consumption growth rate across countries are uncorrelated with any random variable on which contingent contracts can be written. All idiosyncratic or country-specific consumption risks that relate to a verifiable random event will be traded away through the appropriate insurance markets. Under these conditions ex post differences in consumption growth rates will be functions of non-verifiable events only.

The most immediate test of this hypothesis is to consider the correlation coefficient between changes in consumption in any given country, and consumption changes in some relevant aggregate

[45] A percentage increase in the ratio of total value of shares traded is found to increase the investment rate and per capita output by 0.28 percent and 0.30 percent, respectively; a percentage increase in credit extension on per capita GDP and the investment rate is estimated to be an increase of 0.08 percent and 0.07 percent, respectively.

[46] Other studies indicating the presence of credit rationing in the South African economy include Fielding (2000) and Eyraud (2009). An alternative explanation may rest in the historic role of the South African mining houses as a means of raising capital on international markets.

[47] The research assistance of Andrew Hill is acknowledged for this section.

[48] Completeness here is a measure of the number of domestic contingencies against which cross-border insurance can be taken.

[49] The existence of insurance markets will ensure that domestic events have no impact on domestic consumption as domestic risks are traded away.

(such as the world as a whole), or consumption changes associated with a financial market of relevance (such as the US), so that:

$$\Delta logC_{it} = \alpha + \beta \Delta logC_{Wt} + \varepsilon_{it} \quad \text{(E1)}$$

where C_{it} and C_{Wt} denote domestic and world consumption in period t respectively.[50]

The test for perfect financial integration tests the null of $\beta = 1$, against the alternative $\beta \neq 1$. Evidence of partial diversification of domestic consumption risk (partial financial integration) emerges if $0 < \beta < 1$.

A weaker result, still consistent with increasing financial integration, would be of $\partial\beta/\partial t > 0$ over sample subperiods. While not testing for perfect financial integration (which requires $\beta = 1$), it may be the more likely empirical manifestation of financial integration, since there remain domestic consumption risks that are uninsurable, precluding perfect risk diversification.

One problem with the interpretation of β, is that if changes in the growth rate of world output are correlated with changes in the growth rate of domestic output, and changes in the growth rate of domestic output are also correlated with changes in the growth rate of domestic consumption, β might reflect the impact of output-growth convergence rather than of rising consumption-risk diversification. This would be plausible if output growth rates were converging at a greater rate than consumption growth rates. To allow for the possibility that variation in the growth rate of consumption is being explained by external shocks to output rather than variation in the world consumption growth rate, we therefore also estimate:

$$\Delta logC_{it} = \alpha + \beta \Delta logC_{Wt} + \gamma \Delta logGDP_{Wt} + \varepsilon_{it} \quad \text{(E2)}$$

Given the impact of multicollinearity on the statistical significance of β and γ, the relevant question here is which of Δ log C_{Wt} or Δ log GDP_{Wt} has the greater impact, and hence which of $\beta > \gamma$ or $\beta < \gamma$ applies, corresponding to increasing diversification of consumption risk due to financial integration, and the impact of shocks to world output affecting domestic output, in turn affecting domestic consumption.

Modelling employs the log difference of per capita consumption. National income and population data used here come from the Penn World Table (Version 6.1), as compiled by Heston, Summers and Aten (2002). All the variables are measured at 1996 international prices and in real per capita terms. The measurement for gross domestic product (GDP), from which all the other components are derived, is a fixed base index where the reference year is 1996. Per capita consumption is weighted by population, using $C_{Wt} = \sum_{i=1}^{N} n_{it} C_{it}$, where n_{it} denotes country i's share in "world" population at time t.

Aggregates of consumption used in the study, are for "world" (World), augmented "OECD" (OECD), and "emerging market" (EM), groupings.[51]

Consideration of changes in the correlation coefficients between changes in the log of real consumption in a range of emerging markets, and changes in the log of real consumption for the various country aggregates as defined above, over the 1960-79 and 1980-99 periods, weakly supports a finding of rising financial integration for emerging markets as a whole, and South Africa in particular.[52]

[50] The disturbance term ε_{it} is assumed to follow a stationary process and incorporates taste shocks and any possible errors in the measurement of consumption. It is assumed to be uncorrelated with the explanatory variable, Δ log C_{Wt}. The advantage of the specification is that, while the likelihood is that log $C_{it} \sim$ I (1), log $C_{Wt} \sim$ I (1), it follows that Δ log $C_{it} \sim$ I (0), Δ log $C_{Wt} \sim$ I (1), rendering estimation straightforward.

[51] The "world" in this study is all countries for which data was available over the entire sample, irrespective of the quality grade it was awarded. The OECD grouping replicates the grouping used by Obstfeld (1994) to generate "world" consumption, which required data over the entire time sample and that data were awarded a certain quality grade by Summers and Heston. It is strongly dominated by OECD countries and is hence referred to as such for convenience. The "emerging markets" grouping is simply the weighted sum of: Argentina, Brazil, Chile, Hong Kong, Indonesia, South Korea, Mexico, Malaysia, the Philippines, Singapore, Thailand, Taiwan and South Africa. The list of countries employed under alternative groupings is available from the author on request.

[52] Full correlation coefficient evidence is available from the author on request.

For South Africa, correlation coefficient changes are generally positive over the two sample periods, indicating increased financial integration. Specifically, the indication is of increased integration with respect to the World (as defined for this study), emerging markets (as defined for this study), Brazil, Chile, Hong Kong, Indonesia, Malaysia, Mexico, the Philippines, Singapore and Thailand. Evidence consistent with decreased financial integration emerges with respect to the OECD, Argentina, South Korea and Taiwan.[53]

The inference for South Africa is thus consistent with rising financial reintegration into the world economy during the course of the 1990s. However, it is also important to note that the correlation coefficients between consumption changes are not yet close to unity, suggesting that while financial integration has increased, it remains incomplete.

Since there is little evidence to suggest that estimated values of $\beta = 1$ in equation (1) over the full sample period, we focus on the weaker version of the test which considers evidence of $\partial\beta/\partial t > 0$ over sample subperiods. We report results for the range of emerging markets included in this study in Table 7 Panel A, for the 1960-79 and 1980-99 sub-periods. Note immediately that most of the estimates have large standard errors and therefore are of low precision.

Evidence for perfect financial integration would emerge where the $\beta-$coefficient is close to zero in the first period and close to unity in the second period. This would indicate improved financial integration and risk-sharing. There are three countries that can arguably fit into this category: Chile, Singapore and Thailand. For these countries the hypothesis $\beta = 0$ cannot be rejected in the first period, while $\beta = 1$ cannot be rejected in the second period. By contrast, for Taiwan the $\beta = 1$ hypothesis cannot be rejected in either time period.

There are also several countries in which the coefficient on world consumption growth is significantly different from zero in the first period, but then not significantly different from zero in the second period. These include Hong Kong, Indonesia and South Korea. This finding is difficult to explain, as it is difficult to argue that these countries have experienced a substantial decrease in their international integration from the period 1960-79 to 1980-99. The result for Hong Kong could be symptomatic of an increasing financial integration with China at the expense of its financial integration with the rest of the world.

The remaining countries show no particular trend in the coefficient estimates over time, under consideration of statistical significance. However, all of Argentina, Brazil, Mexico, Malaysia, the Philippines and South Africa show an increase in the partial correlation coefficient estimated under equation (1), with only Indonesia reporting a decrease. What is more, in the case of South Africa, where the sample period is split into four decades, the estimate obtained from regressing South Africa's consumption growth on world consumption growth in the 1990s is now significantly different from zero, confirming the increased integration of South Africa into world financial markets inferred from the correlation evidence.[54]

Finally, we also report results from the estimation of equation (2), accounting for the possible impact of growth convergence on the partial correlation in equation (1) in Table 7 Panel B. Thus the possibility of a high correlation between world output growth and domestic output growth, and a subsequent high correlation between domestic output growth and domestic consumption growth is addressed.

[53] Care must be taken in intepreting this evidence, however. First, note that consideration of correlation coefficients between countries and country aggregates over four subperiods, the 1960s, 1970s, 1980s and 1990s, indicates that for South Africa the increased correlation during the 1990s is centred on the OECD and the world as a whole. This evidence is consistent with the notion that the South African economy reintegrated with its traditional trading partners in the OECD during the course of the 1990s, rather than with emerging market economies. Second, recall that OECD for this study denotes an augmented grouping of countries, defined by the original Obstfeld study.

[54] All reported estimates may suffer from some bias, since each country's consumption growth is part of the world consumption growth on which it is regressed. However, due to the fact that in almost all cases each country's consumption growth represents less than 1% of world consumption growth, we expect this bias to be small. Nevertheless regressions were repeated using rest-of-world consumption stripped of the individual country consumption. Results are consistent with those reported.

As the world consumption growth, $\Delta \log C_{Wt}$, and world output growth, $\Delta \log GDP_{Wt}$, variables are strongly collinear, the estimates of β and γ are not expected to be especially significant, and the consideration of importance is which of $\beta > \gamma$ or $\beta < \gamma$ applies.

Conditional on an abstraction from statistical significance, the results are striking. We note that in the first sample period, growth convergence for emerging markets dominates evidence of financial integration, with $\beta < \gamma$. This is found for Argentina, Brazil, Chile, Hong Kong, South Korea, Mexico, Malaysia, Thailand and South Africa. Only for Indonesia, the Philippines, Singapore and Taiwan does evidence for $\beta > \gamma$, suggesting the primacy of financial integration emerges for the 1960-79 sample period.

By contrast, over the second sample period from 1980-99, the reverse finding emerges for the majority of countries. Thus $\beta > \gamma$, suggesting the primacy of financial integration over growth convergence is found for Argentina, Brazil, Hong Kong, Mexico, Malaysia, the Philippines, Singapore, Thailand and South Africa. The primacy of growth convergence, such that $\beta < \gamma$, now applies only for Chile, Indonesia, South Korea and Taiwan.

The evidence presented here is thus consistent with that found for the developed world by Obstfeld (1994). There is evidence of improved financial integration by emerging markets, based on correlation as well as regression evidence. Controlling for the potential impact of growth convergence serves to strengthen the evidence in favour of increased financial integration, in the case of South Africa, particularly during the course of the 1990s.

Nevertheless, integration remains incomplete.

8.2 The Size of the Financial Sector

The discussion of section 2.1 has highlighted that the relative size of the financial sector in South Africa is large in world-comparative terms. In fact, even relative to developed economies, the size of the financial services industry is of surprising proportions in the economy. The proportion of total output contributed by the financial sector in the USA has never risen above 10% of GDP over the 1850 - 2007 period.[55] Recall that in terms of the data reported in section 2.1, in South Africa the size of the financial sector over the 2005-09 period averaged at approximately 18% of GVA, approximately twice the size of the sector in the USA- see Table 1. What is more, the increase in the share of financial services in GDP in South Africa has been a steady trend since the mid-1960s.

The question we ask here is what might account for this relatively large financial sector in South Africa, and what implications this account might carry for the performance of the economy in the longer run.

In developing our answer, we follow the methodology proposed by Philippon (2008). In isolating the potential drivers of the size of the financial sector, financial globalization is not regarded as a feasible explanatory variable for the US, given that the US (unlike say the UK) is not a large exporter of financial services, and since the US is a net importer of financial services.[56] Further, since financial globalization is a recent phenomenon,[57] it cannot account for the growth in the financial sector which characterizes the entire post-war period. Evidence for South Africa is symmetrical. The net trade balance in both direct and non-direct investment income has been negative over the past 15 years. Indeed, it is only in net travel receipts that South Africa has maintained a net positive trade balance. As such, South Africa continues to be a net importer of financial services, at least at this level of aggregation of the data. Further, as Section (8.1) makes clear, while there is evidence of South African reintegration into the world financial system, this is both incomplete, and predominantly a

[55] See Philippon (2008). Even allowing for potential differences in definition, such that for the US the financial services are more narrowly defined, in SA even narrow definitions of the financial sector still provide estimates of well over 10% of GDP. The comparability of the US and SA data is not clear. For the US, Philipon focuses on the finance and insurance industries. The data for South Africa includes real estate, insurance and business services.

[56] Philippon also dismisses a number of further potential explanatory candidates, such as increased trading of securities and the development of the mutual funds industry.

[57] See Obstfeld and Taylor (2002) and Bekaert, Harvey and Lumsdaine (2002).

phenomenon of the 1990s and 2000s, and therefore cannot account for the steady rise in the share of the financial sector from the mid 1960s onward.

We note specifically that financial services increased their share of total output particularly during the early 1980s and from 1995 onward. The period from 1985 through 1995, while still characterized by growth, showed a more muted rate of increase.

Standard explanations for the growth of the service industry rest on the elasticity of substitution between goods and services and rapid productivity growth in the manufacturing sector.[58] However, provided only that financial services do not enter the objective function of agents but their budget constraints instead, these theoretical explanations for growth in financial services cannot apply. Empirically this is borne out by low correlations between manufacturing sector productivity growth and the share of the financial sector for the US. For South Africa. this is also borne out by the low correlations between the share of GDP due the financial sector and real GDP (-0.22), real per capita GDP (-0.06), real output per worker (0.04) and real output per worker in the manufacturing sector (-0.02).

The overlapping generations general equilibrium model developed by Philippon (2008) has agents who choose to work either in the financial or real sector, and corporate finance and monitoring as a response to the presence of moral hazard.[59] In the non-financial sector agents face heterogeneous investment opportunities and levels of productivity, and the limits moral hazard places on borrowing, such that agents with low cash flow and good investment opportunity cannot necessarily invest, though the financial sector lowers the borrowing constraint. In equilibrium, the market for corporate financial services clears, and agents are indifferent between working in the financial and real sectors.

Core findings of the model are that on the supply side, efficiency gains in finance reduce credit rationing, increase the size of the financial sector when the sector is inefficient, and reduce the size of the financial sector when the sector is efficient.

On the demand side, demand for finance is high when young firms/industries have better investment opportunities than large/established firms/industries (and vice versa). The intuition is that it is when firms with low cash flows that have investment opportunities, that there will be significant demand for financial services (and again, vice versa). Technically, the result is driven by the joint distribution of current productivity and investment opportunities that drives the aggregate demand for financial services, such that low macro demand for financial services may emerge even when moral hazard is severe at the micro level (since firms do not face cash flow constraints).

Note that as a result efficiency gains in finance have an ambiguous effect on the size of the financial sector. The efficiency gain means that a given level of monitoring can be performed by a smaller sector; but the fall in the price of financial services raises demand for intermediation. Where the financial sector is small, the demand effect dominates the supply effect; on the other hand, if the efficiency of the financial sector becomes sufficiently large, the supply effect becomes dominant. Under balanced growth, the share of finance in output remains constant.

The issue is thus the response of the financial sector to the distribution of investment opportunities (across firms facing differential cash flow constraints).[60]

The crucial relations in the model are given by equations (21) and (22) in Philippon (2008):

$$\frac{\mu}{\pi} = \left(\frac{\bar{\alpha}}{\pi \upsilon} + 1 - F^{\emptyset}(\alpha_l)\right) m(\alpha_l) + \int_{\alpha_l}^{\alpha_h} m(\alpha) dF^{\emptyset}(\alpha) \tag{E3}$$

$$\mu(1-n) = \pi n \int_{\alpha_l}^{\alpha_h} m(\alpha) dF^{\emptyset}(\alpha) \tag{E4}$$

[58] As in Baumol (1967).

[59] Given exogenous fixed cost of trading, standard general equilibirium frameworks cannot account for a link between investment and cash flow. Philippon's contribution is in the tradition of incorporating the impact of moral hazard, and treats financial intermediation as a monitoring service in the face of the hazard.

[60] Philippon (2008) argues the interpretation plausible in the US context, since the three significant increases in the size of the financial sector in the US correspond to the financing of railroads and early heavy industry from 1880-1900, the electricity, automotive and pharmaceutical revolution of 1918-33, and finally the IT revolution from 1980-2001.

where: n denotes the mass of agents in the real sector (hence (1-n) that in the financial sector); $\pi \equiv P_r$ ($\tilde{\emptyset} = \emptyset$) denotes the probability of an agent receiving an investment opportunity $\tilde{\theta}$ in the real sector; α denotes the relative productivity shock of the agent in the first period of life, with E $[\alpha] \equiv \bar{\alpha}$ the unconditional mean of α; given that α and $\tilde{\theta}$ are correlated, $F^{\theta}(\alpha)$ denotes the cumulative distribution function of α conditional on $\tilde{\theta} = \theta$; α_h = 1 - (θ $-$ z) / (r + δ) denotes a threshold level of productivity that triggers financing without monitoring, while α_l denotes the threshold below which financing is not available, such that α_h - α_l denotes the productivity range for which financing with monitoring is profitable and under which financial constraint is present; z denotes the proportion of units of capital an agent can steal at time t+1, such that z/θ captures the severity of the moral hazard problem; r denotes the interest rate and δ the depreciation rate of capital; μ denotes the units of monitoring each agent in the financial sector generates, and m denotes the monitoring units produced by the financial sector, such that the monitoring reduces the proportion of units of capital an agent can steal to (z - m); and υ denotes the net present value of the project gross of intermediation costs.

Then μ/π can be thought of as the efficiency of the financial sector, while E $[\alpha]$ $/\pi = \bar{\alpha}/\pi$ is a technology parameter characterizing production in the real sector.

In calibrating the model to South Africa, we note that in Philippon (2008), the moral hazard intensity z/θ is estimated at 0.75. For South Africa, under the assumption of an identical ratio of market value to book value of 2, the moral hazard intensity, given the real interest rate implied by yields on 10 year government debt, averages at 0.751, only marginally above the intensity of the US. Where the market value to book ratio rises to 1.5 the level assumed by Philippon (2008) for the US, this rises to 0.833. Similarly, while Philippon (2008) employs an αh = 0.5, for South Africa the average αh over the sample period, given the real interest rate lies only marginally above 0.5.

The implied proportion of firms that has access to financial intermediation, 1 - F (α_L), is sensitive in level terms to the technology parameter of production in the real sector, $\bar{\alpha}/\pi$, though this is not true of the trend structure. Figure 9 reports the implied proportion of firms with access to financial intermediation under the assumption that South African real sector productivity lies at 1, 0.75, and 0.5 times the level of the USA respectively. The implication of the evidence is that credit rationing has been a persistent feature of the South African economy, though with differential intensity over time. While the period corresponding to the gold price boom of the early 1980s increased the proportion of firms with access to intermediation, and the trend has again increased over the late 1990s and 2000s, the 1970s and the 1980s and 1990s were characterized by relatively severe credit rationing. What is more, even under the improvement of the 2000s, under conditions where South African productivity lies at 0.75 the level in the US, at least 30% of firms remain subject to credit rationing. Where productivity lies at 0.5 the US level, this proportion rises to approximately 50%.

The trends in the proportion of firms that are intermediated, are mirrored in the implied estimate of the efficiency parameter of the financial sector, μ/π. As Figure 10 illustrates, the inference is of a rising trend in the efficiency of financial intermediation during the 2000s. But this increase emerges after a period of protracted efficiency loss during the 1980s and 1990s. However, note that the marked increase in the share of the financial services sector in the early 1980s, and the renewed rise in the share of output due to the financial services industry, both correspond to the implied efficiency increases implied by Figure 10.

One of the reasons why South Africa continues to maintain its "dual economy" structure, is that access to financial intermediation remains incomplete, such that potential investors are unable to access credit markets due to credit rationing. However, the rising efficiency of the financial sector also intimates that the relatively well-developed financial sector could be made a source of competitive strength of the economy.

The obvious policy implication is that the efficiency of the financial sector requires further improvement, and that access to finance by new firms and entrants to credit markets merits attention. On the other hand, it is also clear that the role and the impact of the financial system in the economy merits more detailed research attention than it has received hitherto.

9 Conclusion

We provide a brief conclusion.

The main findings as to potential constraints that arise for sustainable South African growth might be identified as:

- A continued impact of uncertainty surrounding investment projects, hampering both domestic capital accumulation, as well as the inflow of international capital.
- The role of institutions, particularly the security of property rights is especially important in this regard. In addition, predictability of policy direction, and clear rigorous macroeconomic stabilization policy is a further requirement.
- Infrastructure investment, while having improved over the past decade, continues to lag the requirements of capital deepening in this regard. This emerges in per capita, as well as in units of infrastructural capital per unit of output terms. The geographical dispersion of South African economic activity heightens the requirement for adequate infrastructural investment.
- Market distortions continue to be a feature of the South African economy. Productivity growth is hampered in output markets due to an absence of sufficient competitive pressure. While nominal tariff data suggest the presence of trade liberalization after 1994, the impact of this does not yet show in market structure (concentration levels), and the data both for firms and for industries continue to suggest the presence of significant pricing power.
- Labour markets are also constrained because price adjustments are inadequate in clearing the market. The consequence for the economy is a continued high unemployment rate. Inappropriate pricing of labour is coupled with rising levels of labour market rigidity.
- Human capital and R&D activity in the economy continue to constitute a limitation on the ability of the economy to fully switch to a TFP-intensive growth path.
- The role of the financial system in the South African economy merits special attention. Its reintegration into the world economy has improved, but remains incomplete. Nevertheless, the financial sector constitutes an unusually large part of the South African economy. This is in part a reflection of the continued presence of credit rationing in the economy, and the need for firms to obtain financial monitoring services in the face of moral hazard. It also reflects the presence of potential efficiency gains in financial intermediation during the 2000s.
- An aspect of South African public finances that deserves more attention in analysis and debate, is the distribution of public expenditure. South Africa has opted for the development of a strong social security system relatively early in its development. Given its history this is very understandable. The question is whether it will constrain the ability of the fiscus to sustain the level of infrastructural and human capital expenditure required for secure growth prospects.

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Table 1: Distribution of Gross Value Added at Basic Prices: 1960 – 2009, and Employment 1960-2008

Distr. of GVA:	**AFF** KBP6631D	**Min.** KBP6632D	**Manuf.** KBP6634D	**EGW** KBP6635D	**Constr.** KBP6636D	**WRTCA** KBP6638D	**TSC** KBP6639D	**FIREBS** KBP6640D	**CSPS** KBP6642D	**GG** KBP6643D	**OCSPC** KBP6647D
1960-64	3.91	18.15	11.65	1.03	2.60	9.20	4.63	11.70	18.54	13.56	5.04
1965-69	3.35	16.88	13.97	1.08	3.36	10.15	4.69	11.78	17.36	13.11	4.28
1970-74	3.03	13.38	15.53	1.26	4.36	11.39	5.25	12.43	16.68	12.73	3.97
1975-79	2.94	10.53	16.36	1.47	4.00	11.64	5.80	12.39	17.42	13.44	3.99
1980-84	2.62	9.17	17.38	1.76	3.42	11.63	5.98	12.88	17.57	13.52	4.06
1985-89	2.92	8.26	16.49	1.99	2.69	11.25	5.75	13.38	18.62	14.28	4.36
1990-94	2.83	7.59	15.42	2.18	2.42	10.87	5.87	13.64	19.58	15.04	4.54
1995-99	2.60	6.80	15.25	2.35	2.17	11.09	7.03	14.66	19.03	14.22	4.81
2000-04	2.55	5.98	15.35	2.11	2.20	12.07	8.50	16.43	17.41	12.42	4.99
2005-09	2.29	5.13	14.73	1.91	3.00	12.80	9.10	17.96	16.54	11.62	4.92

Distr. of Employment:		**Min.** KBP7003L	**Manuf.** KBP7004L	**Constr.** KBP7005L	**Trade** KBP7006L	**Fin.Inst** KBP7007L	**GG** KBP7000L	**Pub.Ent.** KBP7001L	**Unemployment Rate**		
										Narrow (ILO)	Broad
1960-64		27.14	32.73	6.04			22.31	11.78	-	-	-
1965-69		21.01	33.53	8.30	4.83	2.53	20.56	9.23	-	-	-
1970-74		18.61	33.41	10.78	4.87	2.72	21.21	8.42	-	-	-
1975-79		16.85	32.69	9.52	4.57	2.66	25.37	8.34	-	-	-
1980-84		16.89	32.66	9.00	4.21	3.06	26.57	7.61	1995	15.6	28.2
1985-89		16.73	31.54	8.42	4.02	3.43	29.66	6.20	1997	22.1	38
1990-94		14.16	32.17	7.97	4.10	3.99	32.50	5.11	1999	24.85	39.9
1995-99		11.87	32.10	6.84	4.62	4.82	35.30	4.44	2001	30.3	42.5
2000-04		9.48	28.26	5.92	6.21	14.96	32.26	2.92	2003	28.6	42.5
2005-08		7.91	20.98	7.49	6.77	28.66	26.45	1.72	2005	26.7	41.1

Source data: South African Reserve Bank. Figures are percentages. Percentages based on proportions of the sector relative to the total across all sectors. Source data quarterly over the 1960:01 – 2009:01 period. GG: includes central government, provincial governments and local governments. For employment percentages based on proportions of the sector relative to the total across all reported sectors. Given absence of agricultural sector employment – figures biased upward. Public enterprises: Transnet, Sapos, Telkom and SABC. Trade: includes catering & accommodation services. Financial institutions: Banking institutions, building societies and insurance companies; from 2002:03 inclusive of real-estate and business services. GG: National departments, local authorities, provinces and statutory bodies. Source data for unemployment rate: Banerjee et al (2008: Table 1, p718).

AFF = Agriculture, forestry & fishing; Constr. = Construction; CSPS = Community, social & personal services; EGW = Electricity, gas & water; FIREBS = Finance, insurance, real estate & business services; GG = General government; Manuf. = Manufacturing; Min. = Mining & quarrying; OCSPC = Other community, social & personal services; TSC = Transport, storage & communication; WRTCA = Wholesale & retail trade, catering & accommodation.

Table 2: Selected Growth Accounting Results for South Africa

		Real GDP Growth	Of which:		
			Capital	Labour	TFP
Fedderke (2002)	1970s	3.21	2.54	1.17	-0.49
	1980s	2.2	1.24	0.62	0.34
	1990s	0.94	0.44	-0.58	1.07
Arora & Bhundia (2003)	1980-93	1	0.9	0.1	0
	1994-2001	2.8	0.6	-0.9	3.1
	1980-2001	1.7	0.8	-0.3	1.2
Arora (2005)	1995 - 2003	2.9	0.7	0.9	1.3
Du Plessis & Smit (2009)	1985-94	0.8	0.45	0.63	-0.28
	1995-2004	3.1	0.62	0.62	1.86
Eyraud (2009)	1996 - 2006	3.5	0.6	1.8	1.1
		3.5	0.6*	1.9*	1.0*

Note: * computed under labour quality adjustment.

Table 3: Birth, Fertility Rates, Inequality and Poverty Measures in Comparative Perspective

	Birth rate, crude (per 1,000 people)					Fertility rate, total (births per woman)					Urban population (% of total)				
	1960-69	1970-79	1980-89	1990-99	2000-05	1960-69	1970-79	1980-89	1990-99	2000-05	1960-69	1970-79	1980-89	1990-99	2000-05
Brazil	40	34	29	23	20	5.9	4.7	3.6	2.6	2.3	50	61	71	78	83
China	33	24	21	18	13	5.8	3.8	2.5	2.0	1.9	17	18	23	31	38
India	46	39	33	28	25	6.4	5.5	4.6	3.5	2.9	19	21	24	26	28
Russian Federation	-	16	16	10	10	2.2	2.0	2.1	1.4	1.3	58	66	72	73	73
South Africa	**41**	**39**	**35**	**30**	**25**	**6.3**	**5.4**	**4.0**	**3.2**	**2.8**	**47**	**48**	**50**	**54**	**58**
Low income	46	42	38	34	30	6.5	6.0	5.3	4.4	3.7	17	20	24	27	29
Middle income	34	30	25	21	17	5.1	4.3	3.1	2.4	2.1	31	35	41	47	52
High income	21	17	14	13	12	2.9	2.3	1.8	1.8	1.7	64	69	72	75	77
	Gini Index					Poverty headcount ratio at $1 a day (PPP) (% of population)					Poverty headcount ratio at $2 a day (PPP) (% of population)				
	-	-	1980-89	1990-99	2000-05	-	-	1980-89	1990-99	2000-05	-	-	1980-89	1990-99	2000-05
Brazil	-	-	58	60	58	-	-	13	9	8	-	-	33	25	22
China	-	-	-	-	47	-	-	44	24	12	-	-	79	61	38
India	-	-	-	-	37	-	-	46	42	34	-	-	87	85	80
Russian Federation	-	-	24	45	43	-	-	2	4	4	-	-	2	21	18
Chile	-	-	57	56	56	-	-	6	2	2	-	-	25	11	8
South Africa	-	-	**-**	**58**	**58**	-	-	**-**	**8**	**11**	-	-	**-**	**33**	**34**

Source: World Development Indicators

Table 4: Expenditure on Education and Health, School Enrollment and Progression

	Public spending on education, total (% of GDP)		Public spending on education, total (% of govt exp)		Health expenditure, total (% of GDP)		Health expenditure per capita (current US$)	
	1990-99	2000-05	1990-99	2000-05	1990-99	2000-05	1990-99	2000-05
Brazil	4.73	4.22	11.34	11.38	-	8	-	247
China	2.00	-	12.84	-	-	5	-	56
India	3.61	4.03	12.50	11.73	-	5	-	24
Russian Federation	3.62	3.39	-	11.26	-	6	-	161
South Africa	**5.97**	**5.32**	**22.20**	**19.08**	**-**	**8**	**-**	**268**
Low income	2.87	3.09	-	-	-	5	-	19
Middle income	4.07	4.30	16.18	14.62	-	6	-	114
High income	5.12	5.57	13.39	12.95	-	11	-	3172
	School enrollment, primary (% gross)		School enrollment, secondary (% gross)		Primary completion rate, total (% of relevant age group)		Progression to secondary school (%)	
	1990-99	2000-05	1990-99	2000-05	1990-99	2000-05	1990-99	2000-05
Brazil	129	146	70	106	92	109	-	84
China	125	117	55	68	101	98	-	-
India	98	104	44	50	71	81	92	87
Russian Federation	103	115	93	93	92	94	-	-
South Africa	**113**	**105**	**82**	**89**	**83**	**94**	**92**	**93**
Low income	86	94	39	42	62	69	80	80
Middle income	111	112	70	74	94	97	-	-
High income	101	100	96	100	97	97	-	-

Source: World Development Indicators

Table 5: Mortality and Death Rates, Life Expectancy

	Mortality rate, infant (per 1,000 live births)					Life expectancy at birth, total (years)					Death rate, crude (per 1,000 people)				
	1960-69	1970-79	1980-89	1990-99	2000-05	1960-69	1970-79	1980-89	1990-99	2000-05	1960-69	1970-79	1980-89	1990-99	2000-05
Brazil	111	89	64	46	33	56	60	64	67	70	12	10	8	7	7
China	131	75	44	38	28	48	64	68	69	71	11	7	7	7	6
India	141	126	101	75	63	46	51	56	61	63	22	16	12	9	8
Russian Federation	43	29	27	22	17	-	68	68	66	65	-	11	11	14	16
South Africa	**-**	**75**	**60**	**45**	**53**	**50**	**54**	**59**	**57**	**46**	**16**	**13**	**11**	**10**	**20**
Low income	149	129	108	91	79	45	49	54	57	58	22	17	14	12	11
Middle income	126	89	55	42	32	53	62	66	68	70	14	9	8	8	8
High income	25	16	10	7	6	69	72	74	77	78	10	9	9	9	8
	Incidence of tuberculosis (per 100,000 people)					Physicians (per 1,000 people)					Tuberculosis treatment success rate (% of registered cases)				
	1960-69	1970-79	1980-89	1990-99	2000-05	1960-69	1970-79	1980-89	1990-99	2000-05	1960-69	1970-79	1980-89	1990-99	2000-05
Brazil	-	-	-	81	64	0.39	0.56	1.09	1.33	1.60	-	-	-	90.13	76.00
China	-	-	-	111	103	0.95	0.96	1.35	1.59	1.46	-	-	-	95.89	94.12
India	-	-	-	168	168	0.21	0.20	0.36	0.47	0.60	-	-	-	81.54	85.47
Russian Federation	-	-	-	79	122	-	-	3.99	4.03	4.21	-	-	-	65.55	64.35
South Africa	-	-	-	**372**	**581**	**0.49**	**0.54**	**0.61**	**0.61**	**0.73**	-	-	-	**69.10**	**67.01**
Low income	-	-	-	193	218	0.15	0.16	0.29	0.47	0.47	-	-	-	71.29	81.57
Middle income	-	-	-	118	114	0.80	0.75	1.54	1.73	1.61	-	-	-	85.68	83.89
High income	-	-	-	23	18	-	1.25	1.66	2.31	2.60	-	-	-	76.46	74.89

Source: World Development Indicators

Table 6: R&D Indicators

	Researchers in R&D (per million people)		R&D expenditure (% of GDP)	
	1990-99	2000-05	1990-99	2000-05
Brazil	-	344	0.82	0.99
China	432	625	0.70	1.21
Russian Federation	3532	3399	0.99	1.18
India	138	-	0.69	0.85
South Africa	665	307	-	0.76
Low income	-	-	0.66	0.73
Middle income	716	703	0.60	0.77
High income	3449	3741	2.33	2.46
South Africa: R&D Indicators			2005/6	2006/7
R&D Expenditure (R Million)			14149.2	16520.6
R&D Expenditure (% of GDP)			0.92	0.95
Civil R&D Expenditure (% of GDP)			0.86	0.89
Total R&D Personnel (FTE)[1]			28798	30986
Total Researchers (FTE)[2]			17303	18572
Total Researchers (Headcount)			39264	39591
R&D Personnel per 1000 workers (FTE)[3]			2.4	2.5
Researchers per 1000 workers (FTE)			1.5	1.5

Source: Comparative data from World Development Indicators. South African data Are from HSRC (2009: 4).

[1] FTE: Full time equivalent.

[2] PhD Students included.

[3] Total employment provided by ILO, based on SA Labour force Surveys of StatsSA, and is not restricted to formal non-agricultural sectors.

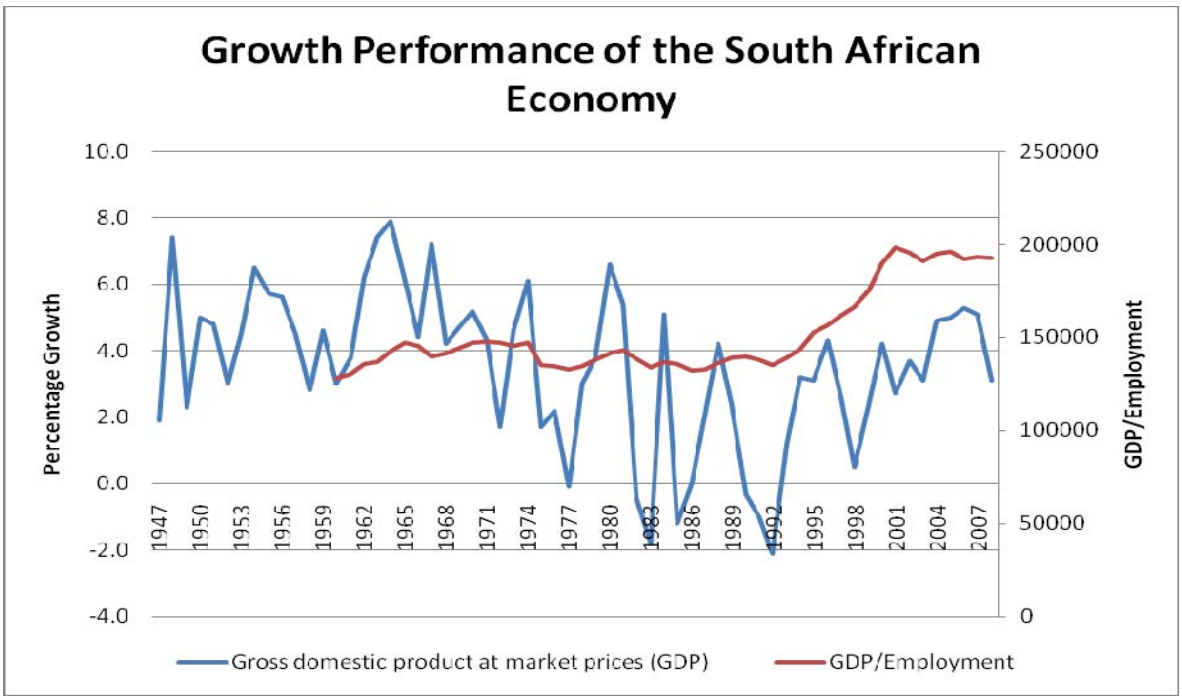
Table 7: Panel A: Domestic consumption growth regressed on world consumption growth, 1960-79 and 1980-99

		Argentina	Brazil	Chile	Hong Kong	Indonesia	South Korea	Mexico	Malaysia	Philippines	Singapore	Thailand	Taiwan	South Africa
1960-79														
	$\Delta\log(C_W)$	0.12	0.72	0.80	**1.68***	**-2.61***	**1.18***	0.25	-0.29	-0.40	3.41	0.20	**0.87***	0.10
		(0.80)	(0.88)	(2.07)	(0.91)	(1.00)	(0.54)	(0.34)	(0.45)	(0.51)	(3.46)	(0.54)	(0.29)	(0.31)
	adj R^2	-0.05	-0.02	-0.05	0.12	0.24	0.17	-0.03	-0.03	-0.02	0.00	-0.05	0.30	-0.05
1980-99														
	$\Delta\log(C_W)$	3.03	2.79	**4.13***	0.40	-3.80	0.66	0.59	2.23	0.24	**1.75***	**3.10***	**1.43***	0.58
		(1.90)	(1.70)	(2.21)	(1.36)	(2.50)	(1.52)	(1.50)	(2.43)	(1.09)	(0.98)	(1.68)	(0.70)	(0.89)
	adj R^2	0.07	0.08	0.12	-0.05	0.06	-0.04	-0.05	-0.01	-0.05	0.12	0.11	0.15	-0.03

Table 7: Panel B: Domestic consumption growth regressed on world consumption growth and world GDP growth, 1960-79 and 1980-99

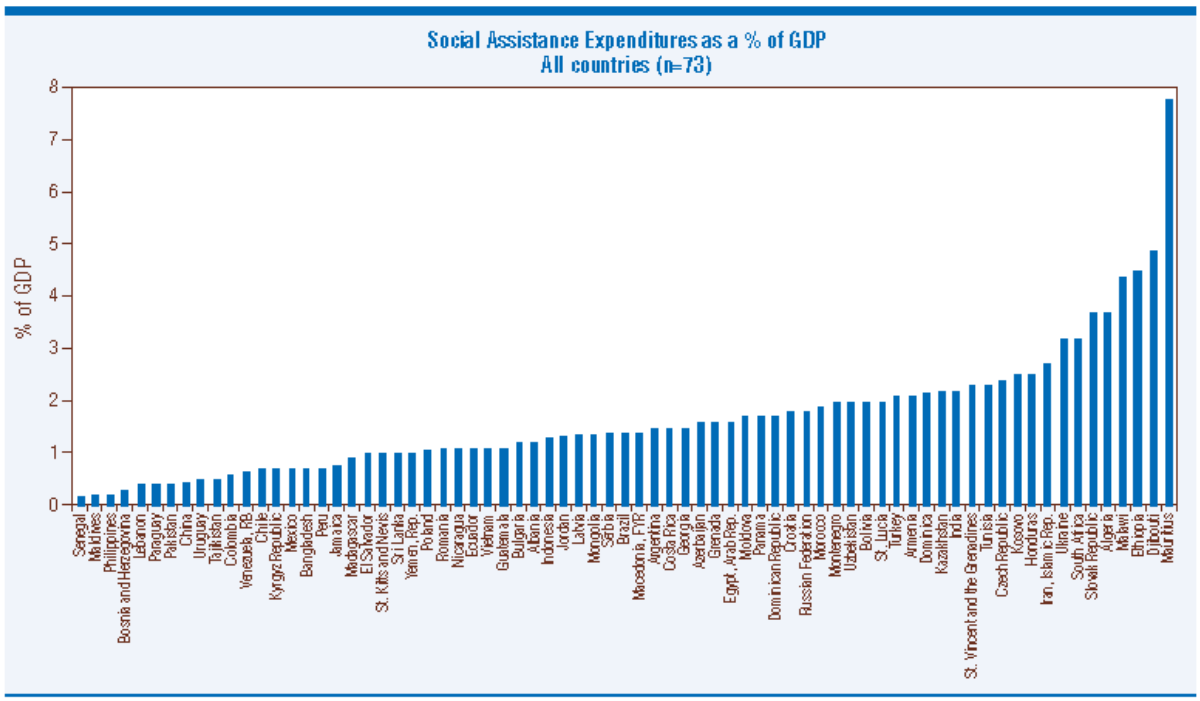
		Argentina	Brazil	Chile	Hong Kong	Indonesia	South Korea	Mexico	Malaysia	Philippines	Singapore	Thailand	Taiwan	South Africa
1960-79														
	$\Delta\log(C_W)$	-0.32	-2.81	**-9.31***	-0.74	-0.13	0.51	-0.30	-1.53	0.57	19.20	-1.13	0.61	**-1.32***
		(2.30)	(2.35)	(5.35)	(2.87)	(3.15)	(1.53)	(0.98)	(1.25)	(1.46)	(10.31)	(1.51)	(0.83)	(0.81)
	$\Delta\log(GDP_W)$	0.39	**3.14***	**8.99***	1.72	-1.76	0.59	0.49	1.10	-0.87	-11.21	1.18	0.23	**1.27***
		(1.91)	(1.95)	(4.44)	(1.93)	(2.12)	(1.27)	(0.81)	(1.03)	(1.21)	(6.93)	(1.25)	(0.69)	(0.68)
	adj R^2	-0.11	0.06	0.11	0.11	0.23	0.13	-0.06	-0.02	-0.05	0.09	-0.05	0.26	0.08
1980-99														
	$\Delta\log(C_W)$	2.17	**4.33***	1.05	2.45	-4.57	0.28	1.04	**6.10**	0.80	1.15	3.88	0.28	1.19
		(2.91)	(2.57)	(3.25)	(1.98)	(3.82)	(2.33)	(2.30)	(3.51)	(1.67)	(1.54)	(2.57)	(1.00)	(1.35)
	$\Delta\log(GDP_W)$	0.85	-1.51	3.02	-2.01	0.76	0.37	-0.43	-3.78	-0.56	0.58	-0.77	**1.13***	-0.60
		(2.12)	(1.87)	(2.37)	(1.44)	(2.79)	(1.69)	(1.68)	(2.55)	(1.21)	(1.14)	(1.87)	(0.73)	(0.98)
	adj R^2	0.03	0.06	0.15	0.00	0.01	-0.10	-0.10	0.05	-0.10	0.08	0.07	0.22	-0.07

Figure 1:



Source: South African Reserve Bank, KBP6006Z, KBP6006Y, KBP7002J, KBP7008J.

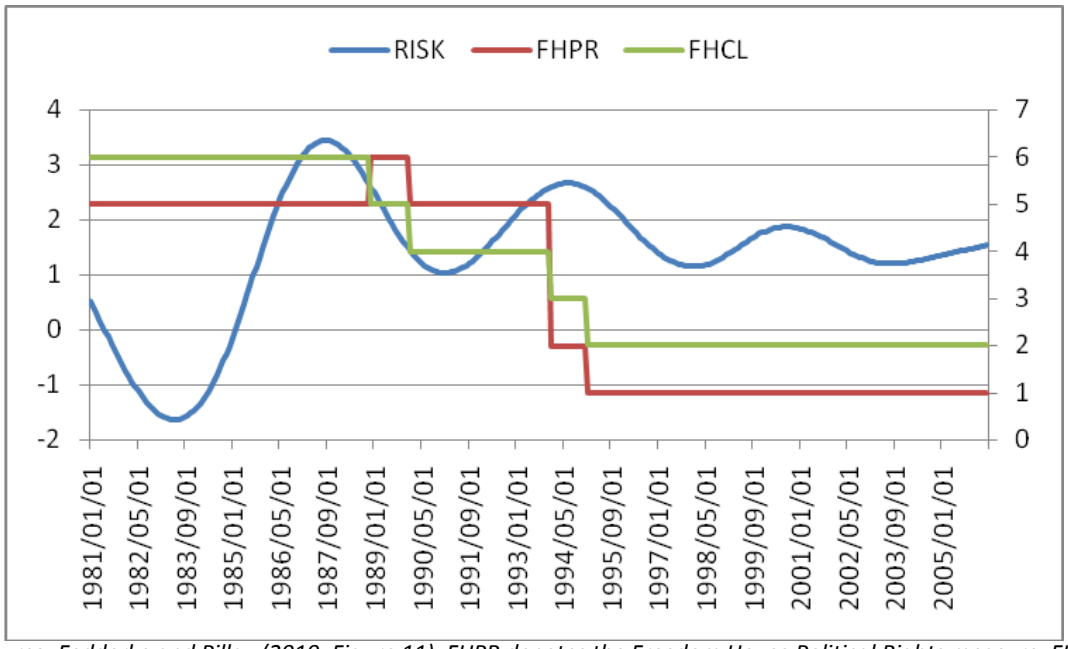
Figure 2: Social Safety Net Expenditure (% of GDP, Selected Countries and Years)



Source: World Bank (2009), Weigand and Grosh (2008).

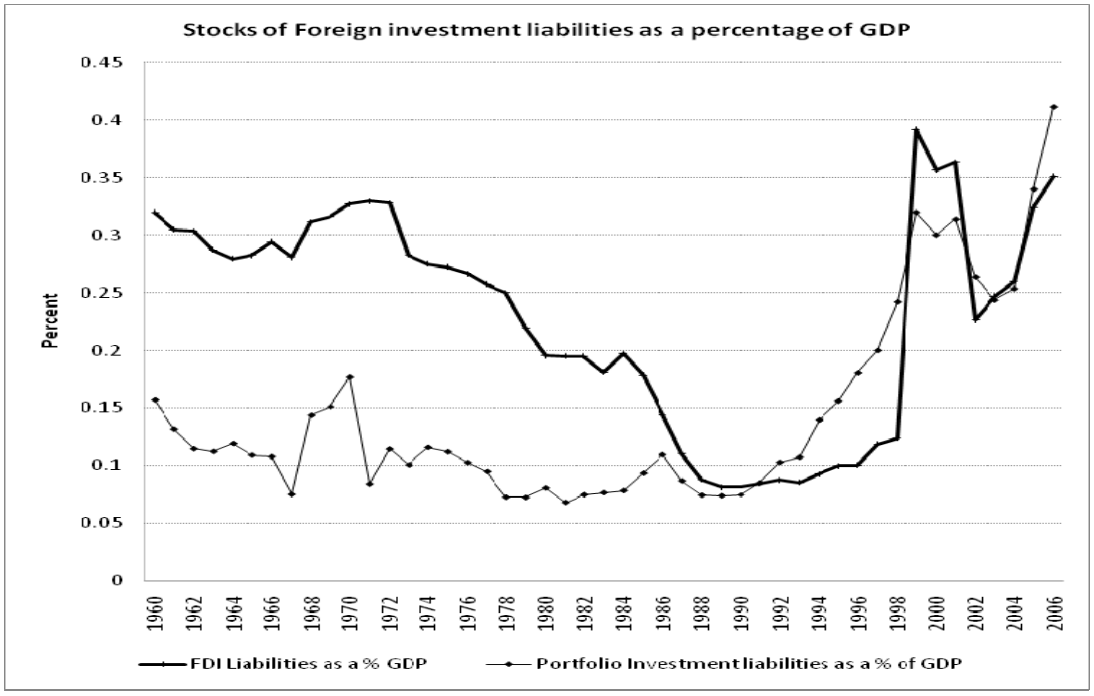
Note: Social safety net expenditure defined as sum of social insurance and social assistance payments.

Figure 3: Risk Measure and Freedom House Rights Measures



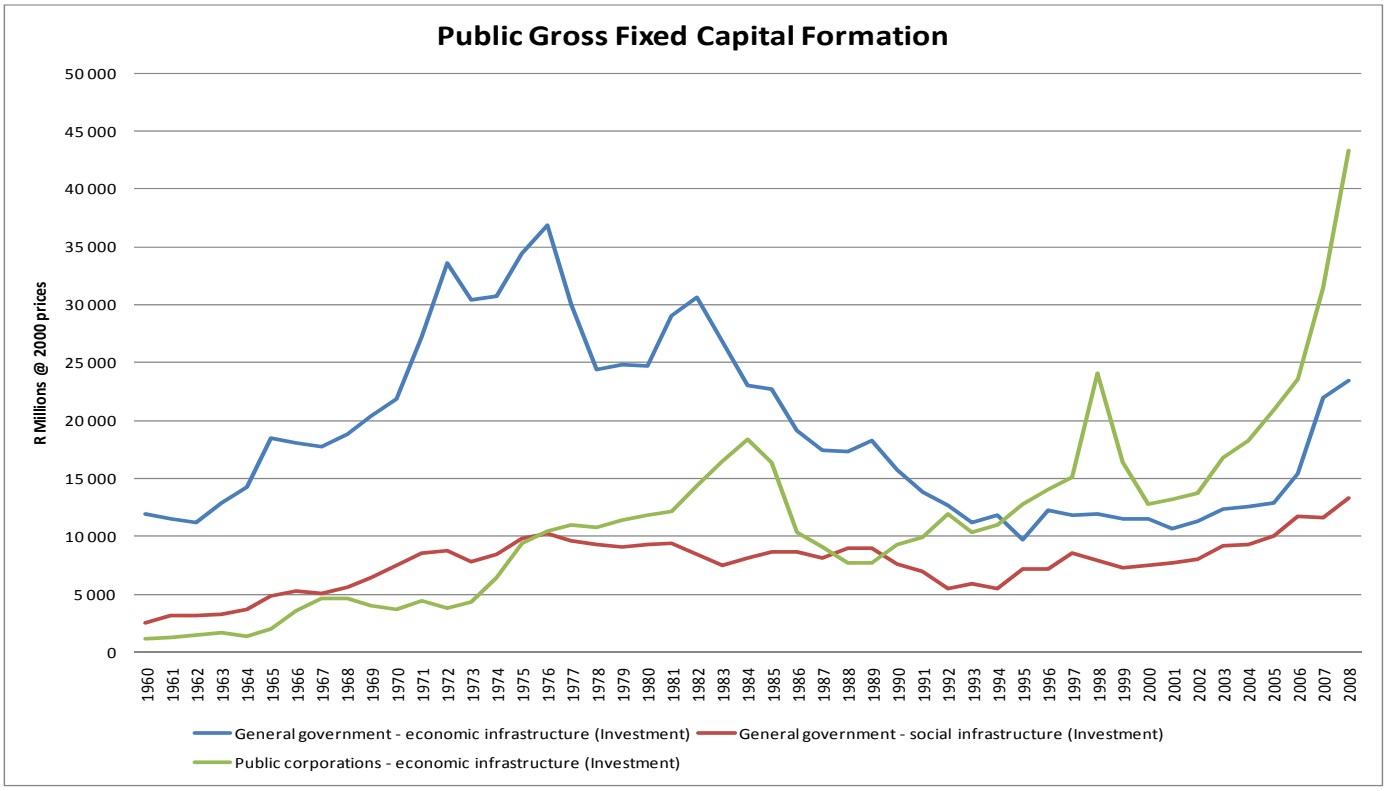
Source: Fedderke and Pillay (2010: Figure 11). FHPR denotes the Freedom House Political Rights measure. FHCL denotes the Freedom House Civil Liberties measure. Note that the Freedom House measures ae on an inverted scale: a lower score on the index denotes better rights and freedoms.

Figure 4: South Africa's FDI and portfolio Investment stocks as a percentage of GDP

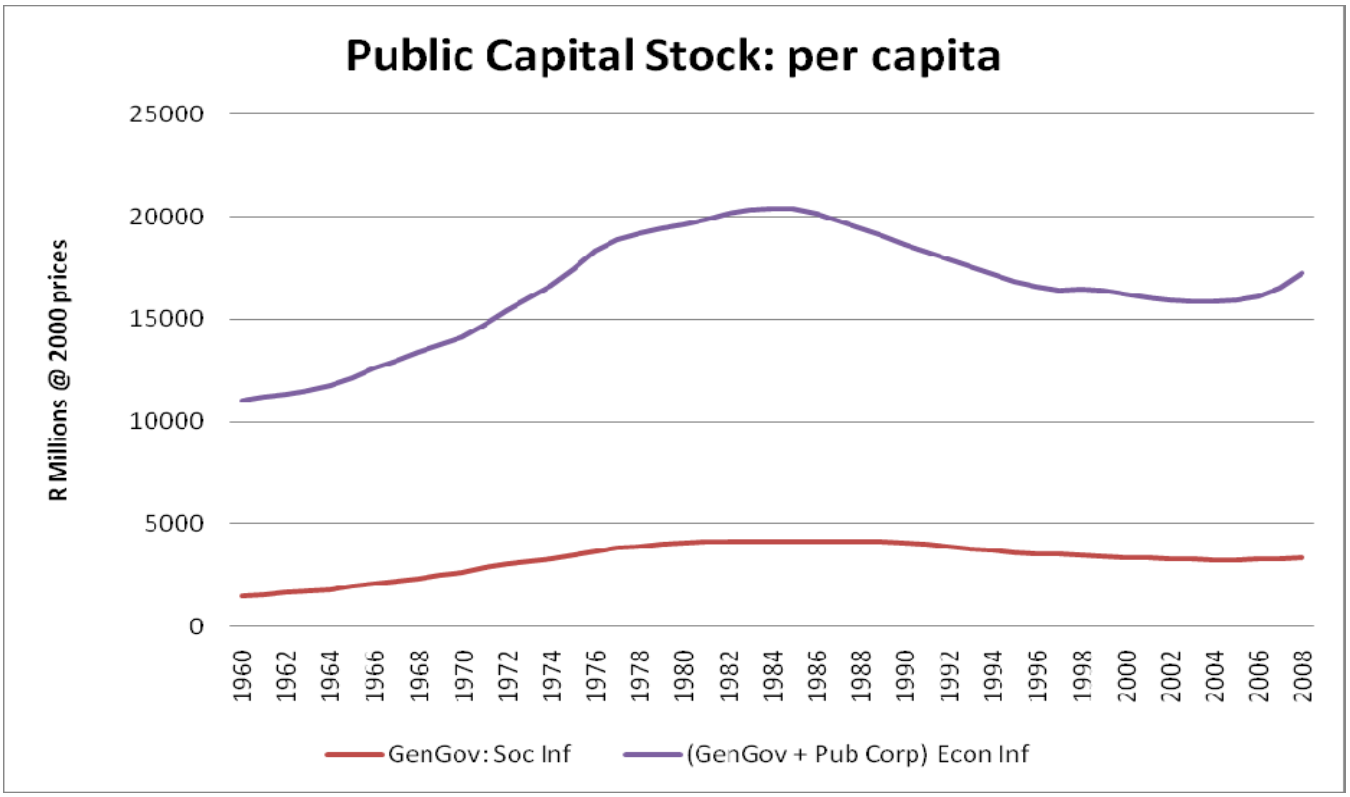


Source: Fedderke and Gwenhamo (2009)

Figure 5: Infrastructure

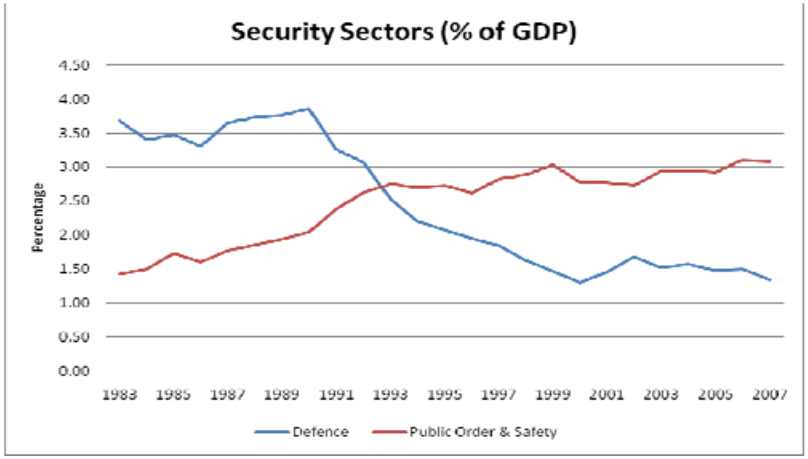


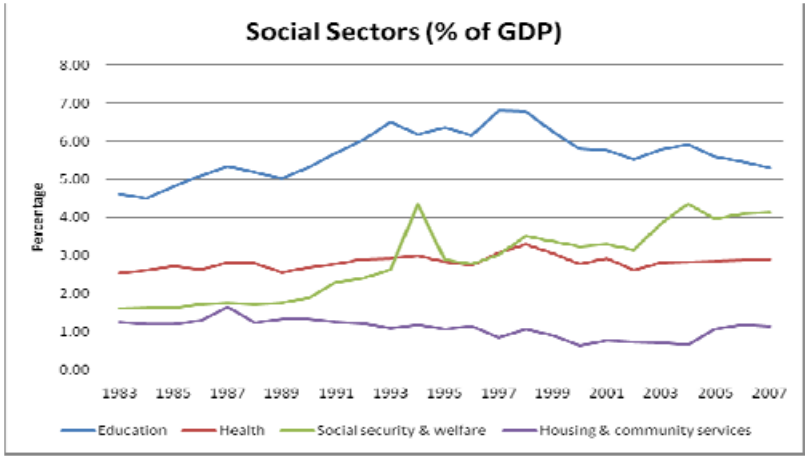
Source: South African Reserve Bank, series KBP6101Y, KBP6102Y, KBP6107Y.

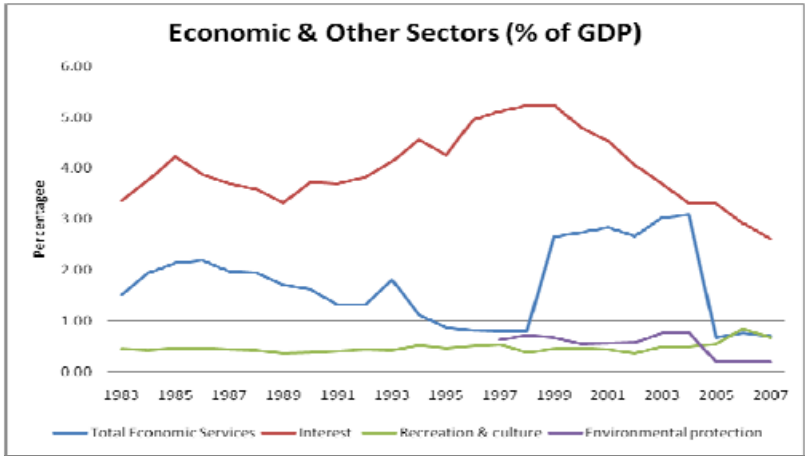


Source: South African Reserve Bank, series KBP6132Y, KBP6133Y, KBP6135Y and Statistics South Africa for population estimates: medium mid-year population estimates.

Figure 6: Government Expenditure

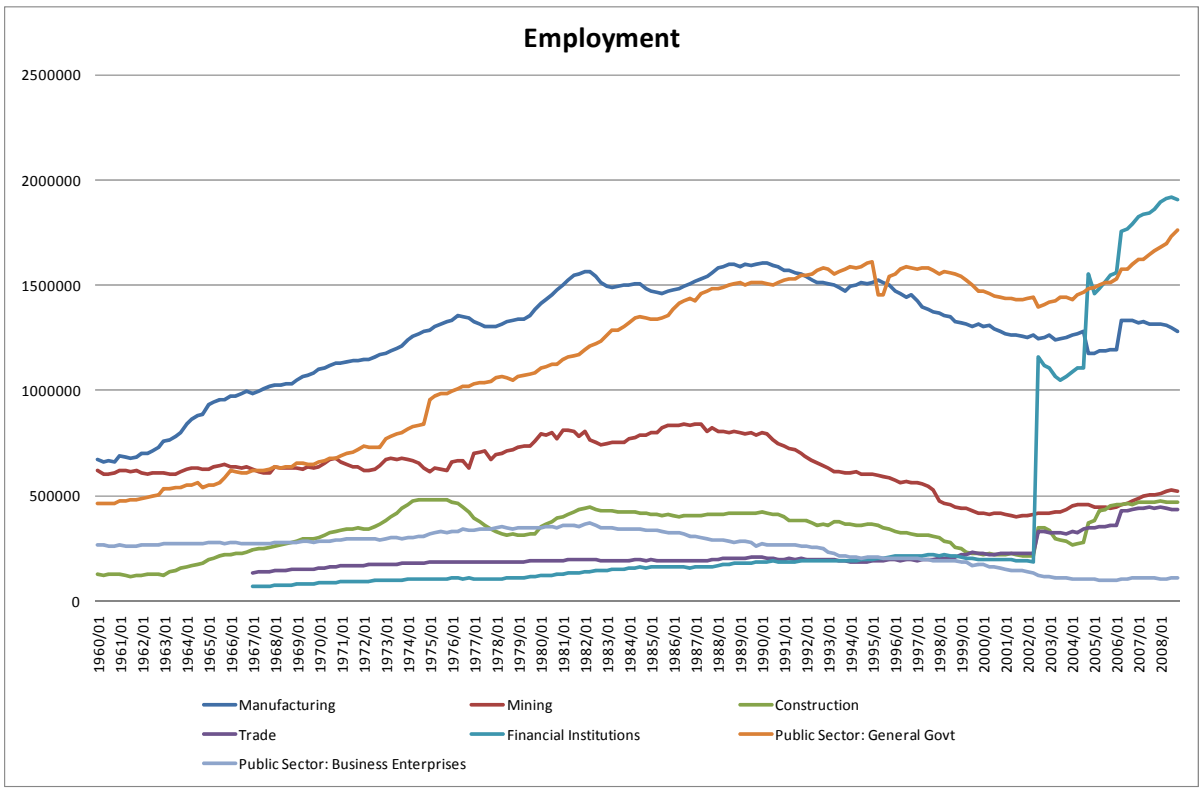




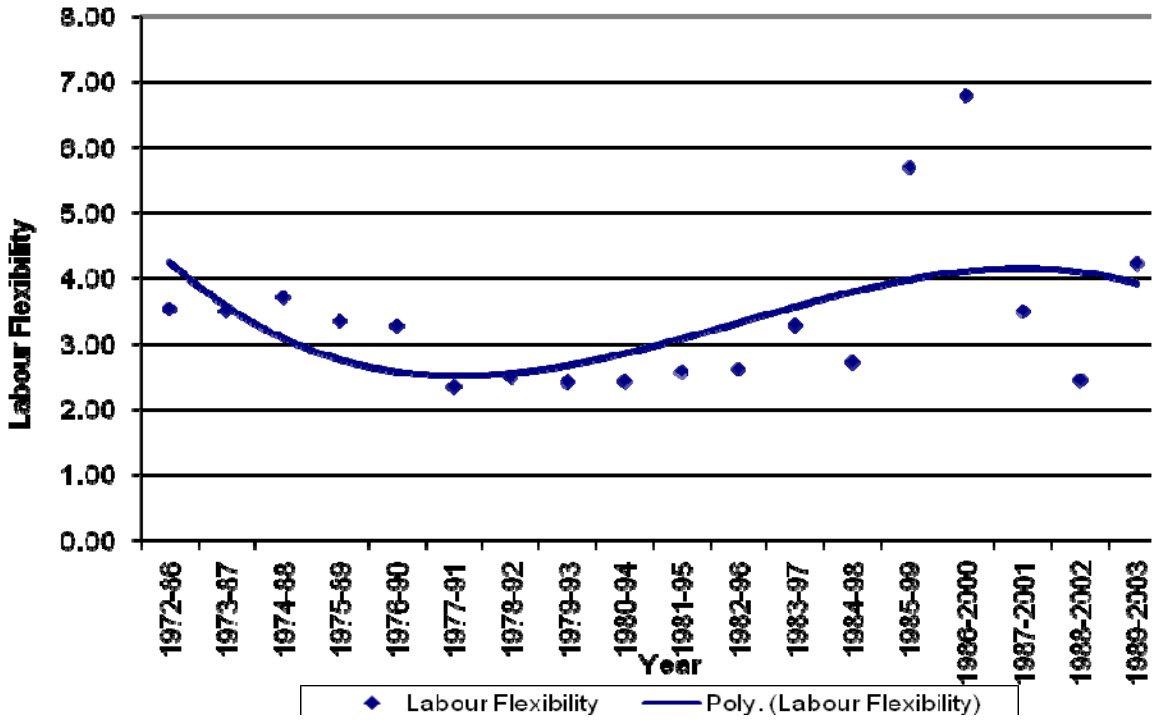


Source: South African Reserve Bank, KBP4371F, KBP4372F, KBP6006J, KBP4372F, KBP4374F, KBP4375F, KBP4376F, KBP4377F, KBP4378F, KBP4379F, KBP4380F, KBP4381F, KBP4382F, KBP4383F, KBP4384F, KBP4387F, KBP6006J.

Figure 7: Labour Market Conditions

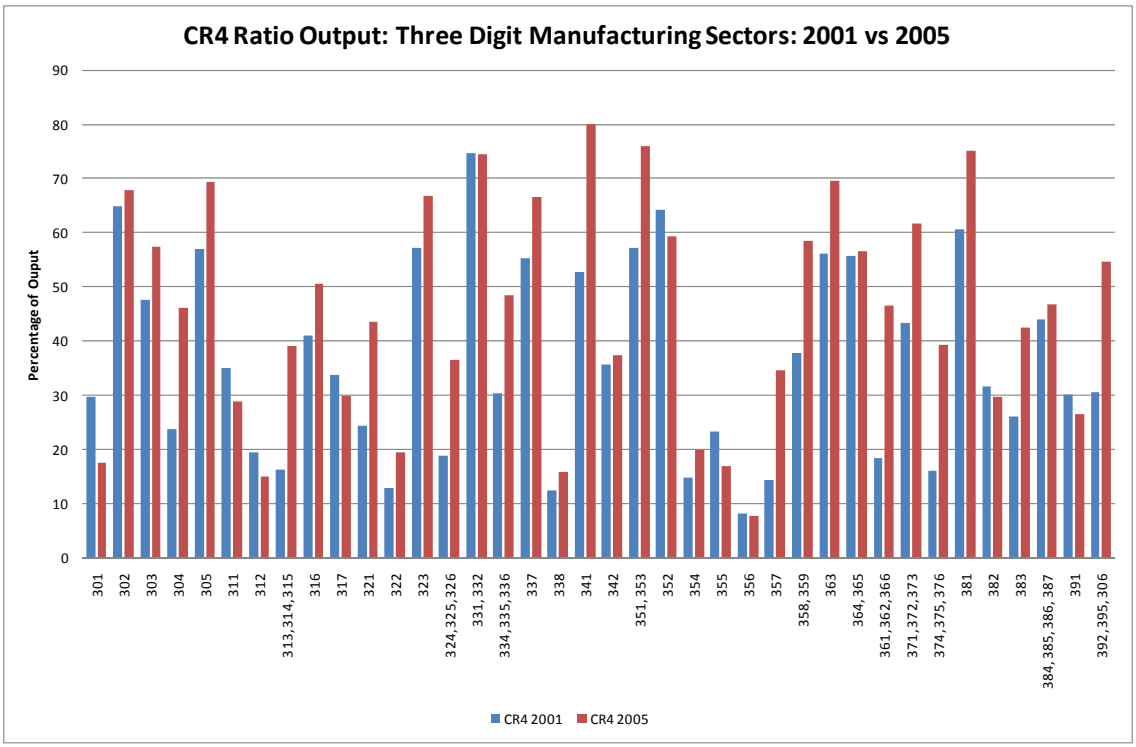


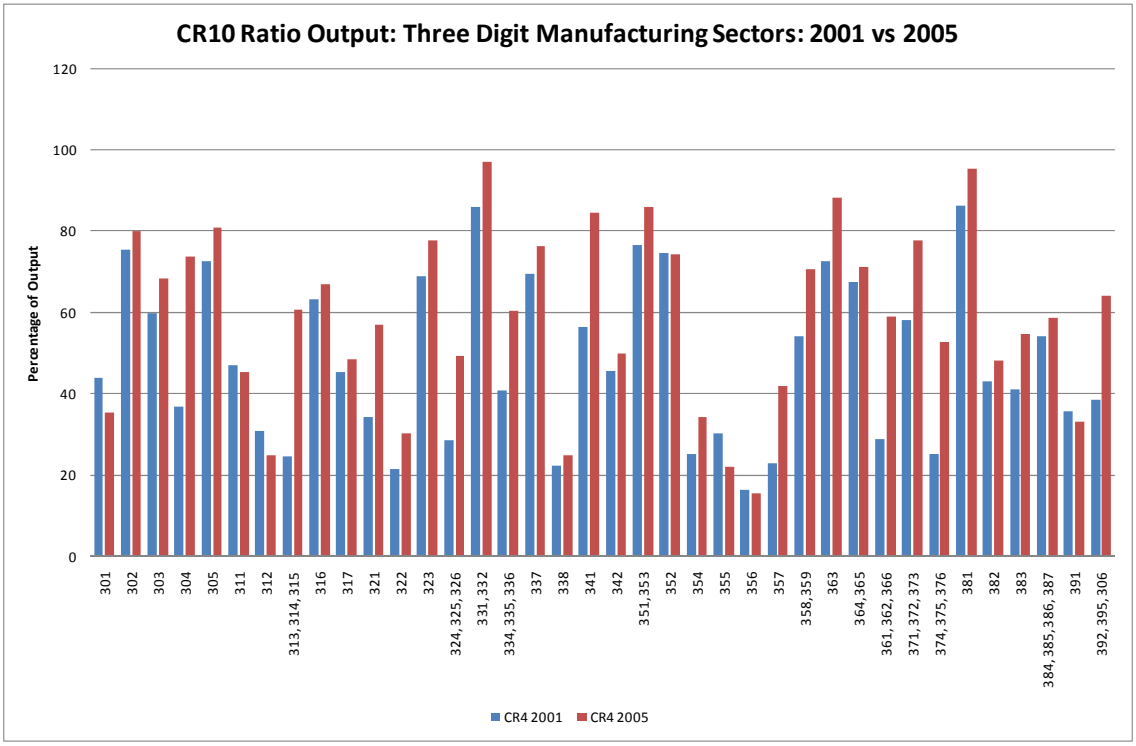
Source: South African Reserve Bank, series KBP7000L, KBP7001L, KBP7003L, KBP7004L, KBP7005L.



Source: Fedderke and Hill (2006)

Figure 8: CR4 and CR10 Ratios for Output





Source: Statistics South Africa Manufacturing Industry Large Sample Survey 2001 & 2005.

Figure 9: Proportion of Firms Intermediated

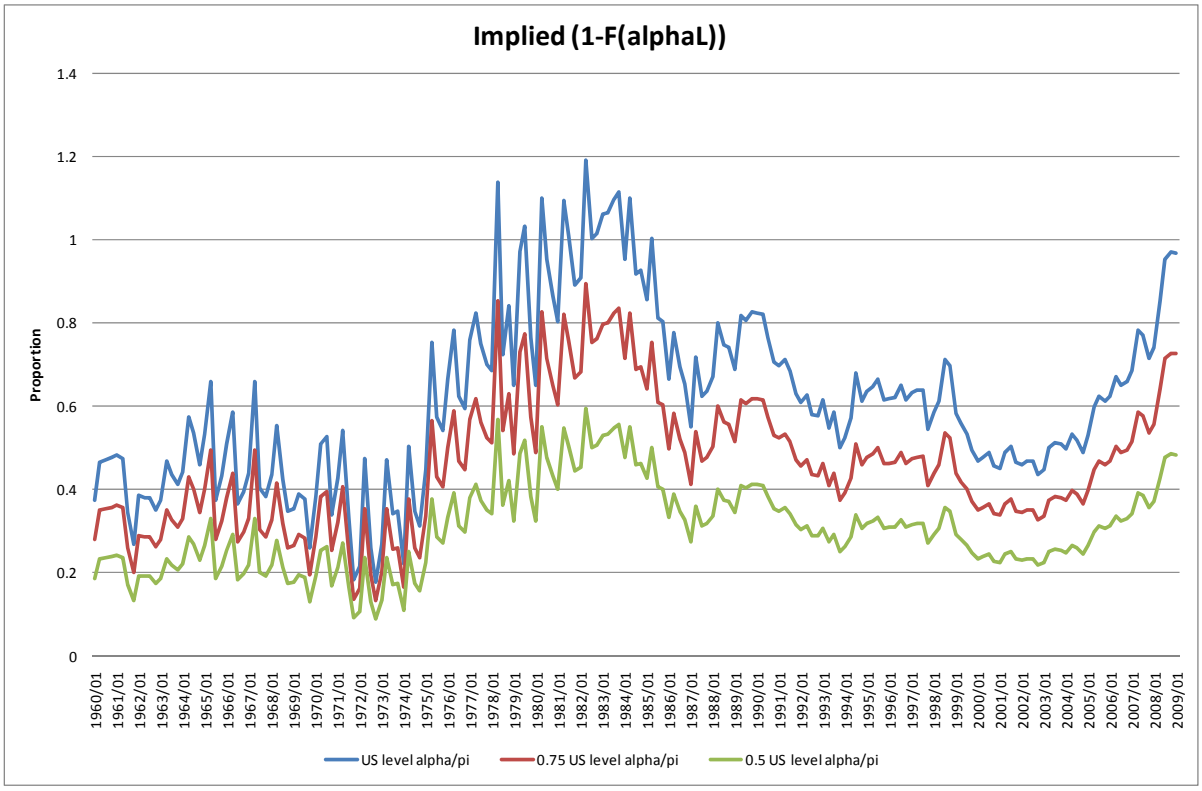


Figure 10: