A FISCAL RULE TO PRODUCE COUNTER-CYCLICAL FISCAL POLICY IN SOUTH AFRICA

STAN DU PLESSIS AND WIMPIE BOSHOFF

Stellenbosch Economic Working Papers: 13/07

STAN DU PLESSIS
DEPARTMENT OF ECONOMICS
UNIVERSITY OF STELLENBOSCH
PRIVATE BAG X1, 7602
MATIELAND, SOUTH AFRICA
E-MAIL: STAN@SUN.AC.ZA

WIMPIE BOSHOFF
DEPARTMENT OF ECONOMICS
UNIVERSITY OF STELLENBOSCH
PRIVATE BAG X1, 7602
MATIELAND, SOUTH AFRICA
E-MAIL: WIMPIE2@SUN.AC.ZA

A FISCAL RULE TO PRODUCE COUNTER-CYCLICAL FISCAL POLICY IN SOUTH AFRICA

STAN DU PLESSIS AND WIMPIE BOSHOFF[1]

ABSTRACT

This paper considers the role of fiscal policy as a component of stabilisation policy in South Africa. The South African economy – like many others, most notably the United States – has experienced considerable economic stability over the last decade. At stake in this paper is whether fiscal policy had intentionally or unintentionally contributed to this favourable outcome. A number of techniques are used to investigate the cyclicality of fiscal outcomes since the early 1990s in South Africa and the evidence does not support claims that South African fiscal policy had been pro-cyclical (and hence destabilising) overt this period. But to prevent potential fiscal pro-cyclicality from becoming a reality in South Africa a package of reforms is derived that is consistent with the empirical evidence presented. The recommended reform includes: firstly, a fiscal rule that includes the following features: a numerical limit on the ratio of government expenditure to GDP and a commitment to a balanced budget (adjusted for the economic cycle), which would allow automatic revenue stabilisers to ensure a counter-cyclical policy. Secondly, a procedural rule that requires an independent business cycle commission to calculate potential GDP, the output gap and the adjustments required to calculate the structural budget balance. This depoliticised commission will enhance fiscal transparency and prevent the temptation by fiscal authorities to adjust these estimates, which have undermined some fiscal rules in practice.

Keywords: Fiscal policy, Stabilisation policy, Structural budget balance, Fiscal stance, Fiscal rules

JEL codes: E320, E610, E620, E630

A FISCAL RULE TO PRODUCE COUNTER-CYCLICAL FISCAL POLICY IN SOUTH AFRICA

Introduction

Stabilisation policy is a collection of macroeconomic measures with the aim of dampening fluctuations in total economic output and other macroeconomic aggregates associated with the business cycle[2]. The goal of stabilisation and the assumed ability to implement successful stabilisation policy in the post-War era contributed significantly to the expanded role of the State in most developed countries, but also in a number of developing economies (Tanzi, 1997, 2005b). This expanded role for the State manifested, *inter alia*, in active monetary policy by politically controlled Central Banks and vastly expanded powers of expenditure and taxation, as well as unprecedented accumulation of peacetime debt by fiscal authorities.

More than fifty years of stabilisation policies in market economies have seen the ebb and flow of enthusiasm for monetary and fiscal policies as preferred instruments of stabilisation (Friedman, 1968; Modigliani, 1977; Mundell, 2000). These efforts have not been without success, as stabilisation policy receives at least a part of the credit for the improved stability of these economies since the War (Lucas, 2003). However the role of discretionary stabilisation policy in this favourable outcome has been controversial. Early enthusiasm for active discretionary interventions has largely been replaced by consensus on a rule-based framework whereby a monetary policy rule shoulders much of the stabilising burden (Taylor, 1997, 2000).

Important factors that contributed to this consensus include: the comparative advantage of monetary policy in stabilisation given the shorter decision lag and wide reach of the monetary policy transmission mechanism; the success in formulating a systematic decision strategy (or rule) by Central Banks that encompassed the goals of economic stability; the considerable uncertainty about the state of the economy when fiscal policy is formulated, long decision lags in the formulation of fiscal policy and the relatively poor track record of discretionary fiscal policy in the service of stabilisation goals (Romer, 1999; Taylor, 2000; Fatás and Mihov, 2003; Manasse, 2005; Blinder, 2006).

In his Nobel acceptance lecture Robert Mundell (2000) argued that it is in the book-ends of the twentieth century – the liberal world order prior to World War I and the neo-liberal world following the collapse of communism – that we should look for the key to the practical policy insights behind the consensus on stabilisation policy. While Mundell emphasised the success of early monetary policy rules, the disruptive effect of their abandonment, and the success of the return to such rules, fiscal scholars such as Vito Tanzi have told analogous versions of fiscal policy history: during the course of the last century many countries abandoned their early fiscal rules, only to return to versions of the same at the century's end (Tanzi, 2005a). South Africa is not an exception to this pattern.

---

[2] Stabilisation policy is premised on the assumption of a welfare cost to economic fluctuations. This assumption is not uncontroversial and the real business cycle literature has demonstrated that fluctuations, per se, cannot be regarded as entailing welfare costs (Prescott, 1986; Plosser, 1989). This theoretical perspective remains a minority view in macroeconomics literature though.

This paper presents case for a return to a fiscal rule in South Africa. The starting point is an introduction to the stabilisation experience of South Africa. This is followed by a consideration of the cyclicality of the stance of fiscal policy, using a number of different methods. Finally a third section proposes a fiscal rule that builds on the results in the first two sections to enhance the counter-cyclical outcomes of fiscal policy in South Africa.

1. Fiscal policy in an increasingly stable South African economy: 1994-2006

1.1 South Africa's "great moderation"

The South African economy has experienced remarkable stabilisation in the course of the last decade, and since 1999 the economy has been expanding in what is now by far the longest business cycle expansion in the country's history. But this lengthy and lately strong expansion has not been accompanied by accelerating inflation. Indeed South Africa seems to be enjoying the same happy combination of stable output growth and low inflation that has been called the "great moderation" in the developed country literature (for example, Blanchard and Simon, 2001; Stock and Watson, 2003). This era of stability in South Africa has been characterised by: lower and stable inflation, lower and stable real interest rates, positive and steady GDP growth and stable fiscal deficits and debt (see, for example, Aron and Muellbauer, 2005: 134-138).

The "great moderation" in South Africa is noteworthy when compared wit the country's own history and with the international experience. Figure 1 shows a measure of the stabilisation in decades since the middle 1960s. The particular measure of stabilisation is a loss function, which combines the two dimensions of output variability and inflation variability into a single value at every point time. Such a loss function requires the assignment of relative weights to output and inflation variability and figure 1 plots the outcome of three different combinations of such weights. The striking feature of the graph is that regardless of the relative weights assigned to inflation and output variability for the last decade the loss function shows that the last decade was the was the most stable decade since the 1960s for the South African economy.

Figure 1 about here

The international perspective is provided by figure 2 which plots the mean-adjusted variance of inflation and real GDP growth for all countries in Morgan Stanley Capital International (MSCI) Emerging Markets Index for the period 1996-2006. Values closer to the origin indicate a more stable economy and the South African economy has, evidently, been amongst the most stable of the emerging market economies over this period.

Figure 2 about here

The factors associated with "great moderations" internationally have also been at work in South Africa. Firstly,

the economic environment has been less disruptive domestically and internationally[3]. Secondly, stabilisation policy also contributed, and in a manner similar to the international consensus on the relative strength of fiscal and monetary policy: Du Plessis (2006) showed that monetary policy has been more successfully anti-cyclical and forward-looking since the early nineties in South Africa, and Du Plessis and Smit (2003) used the Bureau of Economic Research's model to quantify the contribution made by monetary policy to South Africa's "great moderation". Their answer of approximately 50% is comparable to similar calculations for developed economies (Cecchetti, Flores-Lagunes and Krause, 2001)

To what extent could we add fiscal policy to the list of factors that contributed to South Africa's "great moderation"? This question is taken up in the remainder of this section by a historical narrative and in the next section through the calculation of fiscal indicators.

1.2 A brief history of fiscal policy in South Africa since 1994

The history of fiscal policy in South Africa since 1994 is a remarkable story[4]: the fiscal situation had deteriorated sharply in the run-up to the 1994 elections and the political transition it entailed. Government debt was rising fast, as is shown in figure 3, and the associated interest burden had risen to more than 5% of GDP. So serious was the situation that all parties to the political negotiations of 1993 countersigned a standby facility for the government with the IMF, with the hope that policy credibility might be acquired in this way with a view to stabilising domestic and international markets dealing in South African assets. Not just politicians, but scholars too, were concerned over the sustainability of South African fiscal policy at that time (Cronje, 1998; Fourie and Burger, 2000).

Figure 3 about here

In the just more than a decade since the political transition the fiscal authorities have steered beyond the crisis to yield the benign fiscal position reported by Finance Minister Manuel in his latest budget (Manuel, 2007). The process of fiscal consolidation through which National Treasury achieved this traced along the revenue and expenditure paths shown in figure 4. This achievement is even more remarkable when considered in the context of the time, including the very poor macroeconomic performance of the preceding two decades and what Calitz and Siebrits called the "dilemma" of the post-apartheid government, i.e. "reconciling the imperative of fiscal discipline with the growing demand for governmental expenditure resulting from political democratization" (Calitz and Siebrits, 2003: 55).

---

[3] This last observation is qualified by reference to the considerable external shocks to which this economy had been exposed in the wake of the Mexican, Asian, Russian-Brazilian and Argentine capital market crises. While these were unquestionably disruptive it is difficult to quantify how disruptive, and the evidence in Du Plessis and Smit (2003) does not suggest that the effect of these crises outweighed the stabilising forces within this country and in its main trading partners.

[4] Calitz and Siebrits (2003) and Ajam (2007) are amongst the excellent accounts of this period of fiscal history.

Figure 4 about here

A few trends stand out from this graph. Firstly, non-interest government expenditure was successfully contained relative to output growth until 2000/01, but have since been allowed to expand faster than output. Secondly, interest payments remained stubbornly high relative to total expenditure (figure 4) until late 1990s following which the debt:GDP ratio started on a sustained downward trend in the year 2000 (figure 3). Total (domestic and foreign) debt declined from a maximum of 50% of GDP in 1995 to 35% in 2006. Finally, government revenue has been growing even more rapidly than the accelerated GDP growth of recent years.

Behind the fiscal consolidation lies a series of admirable fiscal reforms: tax reform and revenue collection, reform in expenditure control and financial policy and in budget procedure[5]. An important milestone of fiscal reform was the Public Finance Management Act of 1999, which legislated the need for regular financial reporting, sound expenditure controls and a strengthened system of supervision and audit (Siebrits and Calitz, 2004: 780).

Together with the multi-year budgeting approach adopted from December 1997 onwards with the publication of the *Medium Term Budget Policy Statement* (MTBPS) and the *Medium Term Expenditure Framework* (MTEF) the South African fiscal authorities have taken considerable strides towards the use of targets, monitoring and the transparency often associated with modern fiscal rules (Kopits, 2001: 5). But it would not be right to conclude that these reforms amount to de facto fiscal rules in South Africa; indeed Siebrits and Calitz (2004: 780) rejected that implication outright. Instead they refer to South African fiscal policy as "target guided discretion" from 1994 to 1998 and "transparency-based discretion" subsequently (Siebrits and Calitz, 2004: 781).

The period of "target guided discretion" starts with the election of the Government of National Unity in 1994 which adopted the Reconstruction and Development Programme. Budget deficits were disconcertingly high (though declining) at the time and a set of numerical targets were used to guide the fiscal authorities, including: a target to reduce the deficit by 2.5% of GDP, the goal to cut non-interest government expenditure and the goal to maintain a constant ratio of government revenue to GDP (Ajam and Aron, 2007: 11).

Government adopted a new macroeconomic strategy, GEAR (Growth Employment and Redistribution) during 1996 with very specific fiscal implications, such as the goal to reduce the conventional deficit to less than 3% of GDP over a 4-year horizon, and not to allow government revenue to exceed 25% of GDP. This revenue ceiling was breached in 2005/06 as government revenue remains on a sharply rising trend (figure 4). Government revenue has not only increased, but has also seen changes in composition with potentially important implications from a stabilisation perspective. Figure 5 shows the changing composition of government revenue since the mid-eighties.

Figure 5 about here

---

[5] For detailed summaries of these reforms see Calitz and Siebrits (2003) and Ajam (2007).

The proportion of total government revenue accounted for by personal income tax has receded since 2000 as income tax relief has shifted the tax burden. Meanwhile the other two major components of government revenue, corporate taxes and VAT have both risen in relative importance since 2000. Whether this broadening of the tax base has undermined automatic stabilisers – as Swanepoel (2004) suspected[6] – depends on the relative elasticities of the various revenue components with respect to their underling tax bases and ultimately with respect to economic growth. This is an empirical matter on which we present evidence in section 2.

While fiscal policy in South Africa has seen the successful consolidation described above, it was not intentionally used as an active component of stabilisation policy overt his period. There are only two occasions since 1996 in which the Finance Minister mentioned that the fiscal stance had been adjusted for the economic cycle i.e. the budget of February 2001 and the Medium Term Budget Policy Statement of October 1998 (Manuel, 1998, 2001), though he has regularly referred to the "expansionary" stance of fiscal policy since 2002. The 2007 budget saw Minister Manuel introduce a new counter-cyclical concern when he argued that the fiscal stance "helps keep a check on emerging imbalances in the economy", though it was not clear whether this was an intended or welcome, though unintended, consequence. Likewise Calitz and Siebritz (2003: 56) argued that the South African fiscal authorities had abandoned a Keynesian doctrine of active counter-cyclical policies by the late seventies and have not returned to those ideas since.

2. Evidence of counter-cyclical fiscal policy in South Africa

Except for the two occasions mentioned above, the South African fiscal authorities have not openly used discretionary anti-cyclical fiscal policy since 1994. Restricting such discretionary interventions to periods when there is a clear negative output shock (the case is most clear in 1998 for South Africa) matches the international experience, with discretionary fiscal policy used, if at all, to soften the impact of especially adverse shocks rather than as an ongoing anti-cyclical tool (Blinder, 2006: 53-54; Sims, 2006: 72). Vito Tanzi (2005a: 59) has argued that this was also the consensus prior to World War I, with discretionary fiscal policy used as stabilising tool in exceptional circumstances. During the Keynesian interlude, however, the business cycle was in Tanzi's words: "added… to the list of events that required the abandonment of the balanced budget rule" (Tanzi, 2005a: 59).

However, there are also non-discretionary aspects to anti-cyclical fiscal policy, notably the potential for automatic stabilisation through cyclically responsive components of government revenue and expenditure. It follows that South African fiscal policy might still have had an anti-cyclical impact over the last decade even if it was not a goal of discretionary fiscal policy during this period. But it is also possible that the automatic stabilisers in South Africa have been too weak to facilitate an anti-cyclical stance for fiscal policy. And evidence to this effect has recently been presented by, inter alia, Swanepoel and Schoeman (2003: 816-817) and Frankel, Smit and Sturzenegger (2006: 65).

---

[6] Calitz and Siebrits (2003: 56) argued that bracket creep during the 1970s and 1980s had effectively put paid to automatic revenue stabilisers in South Africa. Evidence presented below suggest that if they were correct with respect to the late seventies and eighties the situation with respect to automatic stabilisers has since changed fundamentally.

Weak automatic stabilisers might indeed generate a countercyclical fiscal stance, but it also possible that a combination of weak automatic stabilisers and poor discretionary fiscal policy could generate a pro-cyclical fiscal stance, with fiscal policy exacerbating economic fluctuations. Nor is this unfortunate outcome a rarity, as it occurs in many and perhaps even the majority of countries (Tanzi, 2005a) and the consequences thereof have been calculated to be large in terms of lost output (Fatás and Mihov, 2003).

A number of explanations have been offered for pro-cyclical outcomes from fiscal policy, including: the long and variable lags[7] (the inside lag and the outside lag), public choice explanations in terms of the political business cycle, pro-cyclical international capital flows, Dutch Disease in commodity dependent countries and sudden stops of capital flows (Tanzi, 2005a; Frankel et al., 2006).

Whether fiscal policy has been pro- cyclical or counter-cyclical remains, therefore, an empirical question and it is the main task of this section to present the evidence in this regard. There are a number of different methods for gauging the cyclicality of fiscal policy, four of which have been used in the South African literature: (i) a structural budget balance (Swanepoel and Schoeman, 2003), (ii) the calculation of a fiscal "impulse" (Horton, 2005; Ajam and Aron, 2007; Swanepoel, 2007), (iii) the use of a structural vector-autoregression model to identify the time pattern of fiscal shocks (Du Plessis, Smit and Sturzenegger, 2007c), and (iv) an analysis of government expenditure (Du Plessis, 2004). The first two of these methods tries to disentangle from the budget balance the temporary and the permanent (or longer lasting) decisions of the fiscal authorities, while the last two methods use the share taken by government expenditure in GDP as a proxy for the discretionary components of the fiscal authorities.

2.1 A structural budget balance

A structural budget balance reflects the revenues and expenditures of government after these have been adjusted for the impact of the economic cycle, and is intended to reflect the "underlying fiscal stance" (Girouard and André, 2005: 6). In the South African literature Swanepoel and Schoeman (2003) and Swanepoel (2004) have offered the most recent calculations of the structural budget balance. Swanepoel and Schoeman (2003), for example, offered a calculation for 1970 to 2000 while Swanepoel's (2004) sample covered 1973-2003.

Because the focus of this paper is on the period since 1994, the structural budget balance was calculated afresh, using the same three-step procedure described in Swanepoel and Schoeman (2003: 810) and elsewhere. These three steps are: (i) the estimation of the trend GDP and the output gap, (ii) the estimation of elasticities for the cyclical response of fiscal revenue and expenditure components and (iii) using the output gap estimated in step (i) and elasticities estimated in step (ii) to adjust the budget components for cyclical effects and so to calculate the cyclically adjusted (or structural) budget balance.

Appendix A provides a thorough exposition of how steps (ii) and (iii) were implemented here, while the output

---

[7] These lags include long decision lags, implementation lags and the time it takes for the policy to have its full effect (the outside lag).

gap in step (i) is from the recent work of Du Plessis, Smit and Sturzenegger (2007a) who used a structural VAR method to identify the separate contributions of aggregate supply shocks, fiscal policy shocks, and monetary policy shocks on real GDP in South Africa since 1960. The calculation of potential GDP, or alternatively the output gap, is a critical step in gauging the cyclicality of the fiscal stance and though this issue has not received much consideration in the relevant South African literature. In this literature the Hodrick-Prescott filter[8] is used almost without exception, and there has been scant critical scant on its usefulness in this regard. In contrast, Du Plessis et al. (2007a) supported their alternative business cycle decomposition with theoretical evidence, a plausible historical decomposition on the implied path for potential GDP and by comparing their business cycle measure with independent sources of information on the South African business cycle.

To illustrate the issue at stake figure 6 contrasts Du Plessis et al.'s (2007a) output gap for the South African economy (as a percentage of trend GDP) with the output gap calculated with a Hodrick-Prescott filter-trend as used in Swanepoel and Schoeman (2003: 812). Both output gaps are shown against a background indicating periods of expansion and contraction as defined by the SARB's official turning points for the South African business cycle.

Figure 6 about here

There are two major reasons for preferring the structural VAR output gap in this application. Firstly, the structural VAR model of Du Plessis et al. (2007a) uses some economic content to identify the long run trend and output gap, as opposed to the purely statistical procedure of the Hodrick-Prescott filter. Secondly, the structural VAR model used here allows a positive or negative output gap to persist for much longer than allowed by the Hodrick-Prescott filter. This is an attractive feature in an economy such as South Africa's where there is reason to suspect that factors of production had not been fully employed for many years (Du Plessis and Smit, 2006: 4-5).

Indeed the contrast between the two output-gap measures is sharpest during the present expansionary phase of the South African business cycle. During this time, observed output has hardly moved relative to trend according to the Hodrick-Prescott method. In contrast the structural VAR method suggests that observed output started considerably below trend output at the end of the previous downswing in economic activity but has since moved far, and especially sharply since 2003 to close the gap with potential GDP by the third quarter of 2005 and subsequently to open a modest positive gap relative to trend GDP.

Elasticities for the cyclical response of fiscal revenue and expenditure components were also calculated afresh for the purposes of this paper. The difference between the elasticities derived here and those offered in Swanepoel and Schoeman (2003: 813) include (i) the use of quarterly data for the sample 1990 to 2006 in contrast with their use of annual data for 1970-2000 and (ii) a finer dis-aggregation of government revenue. Table 1 shows the elasticities of the various revenue components calculated here and offers a comparison with the elasticities calculated in Swanepoel and Schoeman (2003: 813) and recent estimates for the OECD.

---

[8] The Hodrick-Prescott filter is a smoothing technique used by economists to distinguish long run movements in a data series (the trend) and short run fluctuations around that trend.

Table 1 about here

The elasticities offered in Table 1 compared favourably with the OECD sample, though they are generally smaller than is the case for the developed economies of the OECD[9]. The elasticity for total tax revenue of 1.06 is almost identical to the elasticity of 1.05 used by the fiscal authorities of Chile to calculate their structural budget balance (Marshall, 2003: 99). This is not unexpected as the tax structure of a developed economy allows more scope for the automatic stabilisers which raise the elasticities of revenue with respect to output.

However, our estimates are noticeably higher than those offered by Swanepoel and Schoeman (2003: 813)[10]. Further, the structure of our estimates are different from theirs, insofar as Swanepoel and Schoeman (2003: 813) find that direct taxes have an elasticity more than twice as large as that of indirect taxes. This is not confirmed by our estimation where we find that indirect taxes such as VAT have an elasticity of about the same order of magnitude as direct taxes, and that VAT on imported goods have a noticeably larger elasticity.

Combining the elasticities and the output gap measure with the fiscal data since 1990 yields an estimate of the structural budget balance for South Africa. Figure 7 contrasts the actual and structural budget balances for South Africa against a background that shows expansions (shaded) and contractions (light) of the business cycle.

Figure 7 about here

The structural budget balance reported here differs in three important respects from the calculations of Swanepoel (2004) and Swanepoel and Schoeman (2003): firstly the estimated output elasticities of government revenue is more than twice as high in this study and closer to comparable international results. Secondly, there is little evidence of consistent pro-cyclical or counter-cyclical fiscal stance from the gap between the actual and structural budget deficits in figure 8. During the contraction of the late 1980s and early 1990s the structural budget balance moved counter-cyclically, but less so during the subsequent expansion. During the contraction of 1997 to 1999 the structural budget balance indicates a pro-cyclical fiscal stance, and during the ongoing expansion it is not possible to identify an unambiguous link between the structural budget balance and the cycle. The evidence presented here does not support an unambiguous view on the cyclicality of fiscal policy in South African since the early 1990s. Thirdly, while Swanepoel's (2004) results implied weak automatic stabilisers in South Africa, the present results suggest that the automatic stabilisers have operates as expected over the sample period, and with a magnitude comparable to the international experience[11].

---

[9] The IMF's estimates of the revenue elasticities of the same developed countries are generally lower (Hagemann, 1999: 8), and closer to the those estimated for South Africa in this study.

[10] The use of quarterly data in this study allowed dynamic effects to be included in the estimation of the elasticities which Swanepoel and Schoeman (2003: 813) may have found unnecessary or unwise with their annual data set.

[11] The gap between the actual and structurally adjusted budget deficit widens during the contraction of 1997/98 and narrows during the present expansions as it gathered pace in recent years. This indicates that the automatic revenue stabilisers in the South African economy have contributed modestly to supporting demand during the most recent contraction, while that stimulus has fallen away in the course of the present expansion. Indeed, most recently the automatic stabilisers have generated a more restrictive fiscal stance. The order of magnitude of the automatic stabilisers' impact on the structural balance (a maximum of about 0.5% of GDP) is similar here and in Swanepoel and Schoeman (2003: 813), suggesting a modest overall effect of automatic stabilisers on GDP fluctuations.

2.2 The fiscal impulse

As an alternative to the structural budget balance economist have proposed calculating a "fiscal impulse", which is defined as the change in the stance of fiscal policy that can be attributed to discretionary decision on taxation and expenditure (Chand, 1977; Schinasi and Lutz, 1991). Two different approaches have been used the recent literature to calculate fiscal impulses for South Africa, with Horton (2005) and Ajam and Aron (2007) using one method and Swanepoel using a different method.

Starting with the method of Horton (2005) and Ajam and Aron (2007): these authors define government revenue and expenditure in a base-year as "neutral", with Horton selecting fiscal year 1998/99 while Ajam and Aron (2007) preferred 200/01. In both cases the choice was justified by reference to an output gap calculation based on the Hodrick-Prescott, and the base year was identified with a period where the gap was zero, i.e. the economy was operating at potential GDP.

Having identified a "neutral" base period, assumptions are required to compare revenue and expenditure in other periods with those of the base period. Ajam and Aron (2007) followed the assumptions of Horton (2005) in this regard, i.e. neutral non-interest government expenditure is assumed to expand with potential GDP, while neutral government revenue is assumed to expand with actual GDP.

The fiscal stance is then defined as the difference between the neutral primary balance[12] and the actual primary balance in every period, and the fiscal impulse is the change in this fiscal stance. For every period a revenue stance and non-interest expenditure stance is defined in the same way. A positive fiscal stance (when the neutral primary balance exceeds the actual primary balance) indicates accommodating fiscal policy, while a negative fiscal stance indicates contractionary fiscal policy. By implication, a negative fiscal impulse indicates tightening fiscal policy (Horton, 2005). Horton (2005) and Ajam and Aron (2007) find evidence of pro-cyclical fiscal policy since the early 1990s, especially in the years immediately following the political transition of 1994 and during the present expansion.

But much depends on the identification of the "neutral" base year in this exercise and neither the choices of Horton (2005), nor that of Ajam and Aron (2007) are persuasive: the South African economy was in recession during 1998/99 – Horton's (2005) choice – and it is implausible that the economy was operating at potential under such circumstances. But the same is true of 2000/01 – Ajam and Aron's (2007) choice – which, though one year into the present expansion, is another implausible base period given the very modest trajectory of economic growth during the first part of the present expansion[13] (Laubscher, 2004). By way of comparison the calculations of these authors have been repeated here, with one alteration, that is to substitute a more reasonable base period as the "neutral" point of reference. Using the output gap as calculated by Du Plessis et al. (2007b) the second quarter of 2005 (well into the present upswing) is identified as a more plausible date when actual GDP

---

[12] The primary balance is the difference between non-interest government expenditure and government revenue.
[13] The implausible base periods selected by Horton (2005) and Ajam (2007) underline our concerns with the Hodrick-Prescott filter as a method for identifying potential GDP in South Africa.

matched potential GDP .

Figure 8 shows the evolution of the overall fiscal stance as calculated here against the output gap since the early nineties.

Figure 8 about here

A positive correlation between the overall fiscal stance and the output gap is noticeable during the mid-nineties, i.e. the period of fiscal consolidation was somewhat pro-cyclical. However, since 2004 the present expansion has been gathering pace while the fiscal stance shows a more contractionary fiscal stance. Further, the less accommodating fiscal policy of recent years is accounted for by a less accommodating revenue stance, with non-interest expenditure remaining neutral. This more contractionary fiscal stance generated by government revenue is further evidence that the automatic stabilisers in South Africa work as expected.

The cyclicality of the fiscal stance is perhaps more easily identified in a cross plot such as in figure 9. In this graph, entries in the top left hand and bottom right-hand quadrants indicate periods of countercyclical fiscal stance.

Figure 9 about here

The concentration of points in the top-left quadrant suggests that the stance of fiscal policy has often been countercyclical in South Africa over this period. This is true of two-thirds of the quarters between 1992Q1 and 2006Q3 a result which contradicts the results of Horton (2005) and Ajam and Aron (2007)[14]. And it contradicts the results of Swanepoel (2007) who confirmed his earlier evidence of pro-cyclical fiscal outcomes by calculating a fiscal impulse along the lines suggested by Blanchard, which requires an adjustment of government revenue for changes to the unemployment rate.

It is instructive to note that the contrasting evidence here, as with the structural budget balance above, is chiefly due to the employment of different measures of the output gap. This shows the centrality when investigating the cyclicality of fiscal outcomes of a task that might otherwise seem peripheral to the exercise, i.e. the identification of the business cycle.

---

[14] However, two observations leads one to interpret the evidence of countercyclical fiscal outcomes presented above cautiously: first, the fiscal stance deteriorated sharply between 1997 and 1999 which was also the period over which the output gap reached its largest negative value. Indeed, if the fiscal impulse (the change in the fiscal stance) is substituted for the fiscal stance in figure 9 then the evidence of countercyclical fiscal policy largely disappears. Second, if fiscal policy operated successfully as a countercyclical tool we would see a pattern matching large output gaps with a large fiscal stance. However, there is no sign of such a pattern, suggesting that, even when countercyclical, the contribution of fiscal policy to output stabilisation must have been modest. Horton (2005: 89) interpreted this overall lack of correlation between the fiscal impulse and the output gap as evidence that "fiscal policy aimed mainly at consolidation, rather than demand management over most of the decade", which is certainly consistent with the stated intentions of South Africa's fiscal authorities overt his period.

2.3 A structural vector autoregressive analysis (SVAR)

Du Plessis et al. (2007c) used the results of the structural VAR estimated by Du Plessis et al. (2007b) with the goal of addressing some of the shortcomings in the literature on the cyclicality of fiscal policy in South Africa. The improvements they aimed at included: estimating a multivariate model as opposed to a single figure index, where the model would allow much richer interaction between the policy variables and output and avoiding contentious assumptions about base years and controversial estimates of elasticities (Du Plessis et al., 2007c: 16-17).

In Du Plessis et al.'s (2007b) three-variable model there are three independent shocks: a supply shock (associated with productivity, the terms of trade, world growth and so on), a monetary shock (associated with the real interest rate) and a fiscal shock (associated with government expenditure). To identify these shocks they placed a number of identifying restrictions on the model, including the requirement that monetary and fiscal shocks don't have permanent output effects. This means that fiscal and monetary policy shocks jointly define the aggregate demand side of their model, while the supply shocks accounts for aggregate supply. The cumulative effect of the supply shock defines the potential GDP series used to derive the structural budget balance above. This places their paper in the structural VAR tradition tracing a line back through Galí (1992) and Clarida and Galí (1994) to the seminal contribution of Blanchard and Quah (1989).

Du Plessis et al. (2007b) offered two versions of their model, one estimated for the sample since 1960 and the other estimated with data from 1983 onwards wit the sub-sample used as a robustness check. They investigated the cyclicality of fiscal outcomes with three methods using this model: First, with impulse response functions, secondly, with a historical decomposition[15] of the fiscal policy shocks and finally by using the model to simulate a counterfactual history with a baseline fiscal scenario.

The evidence from Du Plessis et al.'s (2007b) impulse response functions is ambiguous for fiscal policy: while fiscal policy responds counter-cyclically to an aggregate supply shock n their model, it response mildly pro-cyclically to a monetary policy shock (i.e. fiscal policy somewhat off-sets the effect of a monetary policy shock) (Du Plessis et al., 2007c: 20). Turning to the historical decomposition: here, too, Du Plessis et al. (2007b) found little evidence of pro-cyclical fiscal policy since 1994, though they do report evidence that fiscal policy has become pro-cyclical on that measure during the most recent years (post 2002) of the present expansion (Du Plessis et al., 2007b: 23-24).

Finally, Du Plessis et al. (2007b) calculated a counter-factual history for real output given their model and their time series of identified shocks. Their strategy was to compare the fluctuations of real GDP generated by their model under two scenarios: including all the historically identified fiscal, monetary and aggregate supply shocks in one and setting all the fiscal shocks post 1994 to zero in the second. If fiscal policy had been pro-cyclical and destabilising over this period then the variation of real GDP should be much less under the second scenario.

---

[15] Historical decomposition is a technique that allows the econometrician to assign portions of the historical variation in real GDP to the three identified shocks (aggregate supply, monetary and fiscal) in this model.

Table 2 about here

The final column of table 2 shows that eliminating all fiscal shocks would, indeed, have lowered the variability of real GDP somewhat, providing mild-evidence of pro-cyclical fiscal policy. But the magnitude of the effect is very small, 0.42% instead of 0.49% for the model estimated over the longer sample and 0.38% instead of 0.45% in the model estimated over the shorter sample.

2.4 The cyclicality of government expenditure

The structural VAR model of Frankel et al. (2006) used government expenditure as a proxy for the discretionary stance of fiscal policy, a proxy recommended by Fatás and Mihov (2003: 1422) in their influential study of the potentially adverse effects of pro-cyclical fiscal policy. Du Plessis (2004) followed Fatás and Mihov (2003: 1422) to identify discretionary fiscal policy with changes in the ratio of government expenditure to GDP. However, instead of using a regression model to discover the cyclicality of government expenditure as they had done, Du Plessis (2004) used a business cycle dating algorithm to separate periods of relatively expansionary discretionary policy from periods of relatively contractionary fiscal policy.

Figure 10 shows the data used by Du Plessis (2004) against a background marking the phases of the official business cycle for South Africa. At stake in Du Plessis's (2004) investigation was whether government expenditure expanded faster or slower than GDP during different phases of the business cycle. A counter-cyclical discretionary fiscal policy stance would be characterised by a reduction in the ratio of government expenditure to GDP during business cycle expansions and a rise in the same ratio during business cycle contractions.

Figure 10 about here

For a sample from 1970 to 2003 Du Plessis (2004: 19) found evidence of a modest countercyclical movement for this measure of discretionary fiscal policy. This effect does not seem to have been strong after the early nineties though. Government expenditure declined pro-cyclically relative to GDP during the downswing of the middle nineties. This decline in government expenditure relative to GDP has continued during the expansion, which is a countercyclical development. But stepping back from the detailed breakdown it is clear from the entire post-1994 period that fiscal considerations did not drive the evolution of government expenditure.

However Du Plessis (2004) missed an important feature of South African fiscal policy since the early nineties – transfer payments by government in the form of social benefits, grants and other payments, which have been rising faster than GDP during the present expansion (see the widening gap in figure 10 and figure 11). This rise has been larger than the relative decline of government expenditure on wages and goods and services, rendering overall discretionary fiscal policy pro-cyclical in recent years. A pro-cyclical expansion of social benefits (such as the old age grant in this case) is particularly worrying given the irreversibility of these programmes at a later date.

Figure 11 about here

Frankel et al. (2007) was also concerned with the evolution of government expenditure, especially in recent years, and presented a case for improved counter-cyclical fiscal policy by allowing the automatic revenue stabilisers of fiscal policy to operate more strongly. In contrast with Swanepoel though, they argue that the key lies in preventing government expenditure form moving counter-cyclically. If government could maintain greater stability in the level of government expenditure (by setting it relative to long-run public needs) then the automatic stabilisers on the revenue side would generate both counter-cyclical fiscal policy and better coordination with monetary policy. This brings the discussion round to the explicit consideration of fiscal rules as a vehicle for allowing automatic stabilisers to move the stance of fiscal policy in a countercyclical manner and in that way to enhance the stabilising efforts of monetary policy.

3. Fiscal rules and automatic stabilisers

Fixing the level of government expenditure relative to GDP, while allowing government revenue to fluctuate with the economic cycle, as suggested by Frankel et al. (2006: 76), is a step towards a fiscal rule, though Frankel et al. (2006: 76) are emphatic that they do not wish this to be read a proposal for a fiscal rule. And it is instructive that their aversion to adopting a fiscal rule is based on their concern for the likely loss of reputation by policymakers when they commit to rules "…which are just bound to be violated when shocks require the use of discretion". This was also the concern of Siebrits and Calitz (2004) with fiscal rules in the South African literature.

This concern goes to the heart of the debate about fiscal rules and the ongoing rules versus discretion debate in economic policy more generally, i.e. the perceived trade-off between the credibility offered by a rule and the flexibility of discretion. Authors such as Mody (2004: 4) have claimed that the combination of higher voliaty of emerging market economies with the intrinsically transitional nature of these economies implies that this trade-off between commitment and credibly is especially acute in these economies. Or as it is sometimes (Wyplosz, 2001: 10) formulated, a policy rule attempts to capture the gains of credibility without surrendering too much on flexibility.

Fiscal policy rules have lately gained prominence in the policy literature, even though lagging behind the very extensive literature on monetary policy rules. This is partly a consequence of the increasing use of fiscal policy rules in both developed and developing countries, including: the stability and growth pact (SGP) in the EMU, the golden rule[16] in the United Kingdom, the structural budget balance rule in Chile and so on (Wyplosz, 2001; Manasse, 2005). Indeed fiscal rules have become sufficiently widespread that we can talk of a "third wave" in the historical development of fiscal rules (Kopits, 2001: 5).

The first of the modern "waves" of fiscal rules dates back to the nineteenth and early twentieth century when, for example, governments in the USA and Switzerland used the "golden rule" to strengthen their commitment to

---

[16] The "golden rule" is the commitment by government not to borrow for current (non-capital) government expenditure, i.e. government debt would finance only public investment.

prudent fiscal policy (Kopits, 2001: 4). In South Africa the discretion of fiscal authorities were bound by the golden rule until the seventies (Siebrits and Calitz, 2004).

A second wave followed in the post-War era and was associated with the post-War reconstruction. In these circumstances fiscal rules were frequently used to provide commitment mechanism by limiting the discretion of fiscal authorities in countries with low public sector credibility. The golden rule was common in this second wave too, but little attention was given to the problem of "creative accounting" and other non-transparent procedures to satisfy the fiscal rules (Kopits, 2001: 5) and this set the stage for the third wave of fiscal rules with explicit attention given to transparency.

The third wave in the history of fiscal rules, as described by Kopits (2001: 5), starts with New Zealand's Fiscal Responsibility Act of 1994, which shifted the emphasis on the transparency, monitoring and accountability to fiscal procedures that support the numerical fiscal targets which had been common in the first two waves. Fiscal authorities in many countries have followed New Zealand's lead (Kopits, 2001: Table 1) including, more recently, emerging market economies, especially in Latin America.

A wide variety of fiscal rules have since been implemented in emerging market economies, with numerical targets including numerical limits for the government's budget balance (or an adjusted budget concept, such as the structural budget balance) or limits on total government expenditure (or a component thereof such as government's wage bill (Kopits, 2004: Table 1.1). And in most of these cases the numerical target is supported by rules that guide the budget process and ensure the transparency of fiscal policy. Additionally, the adoption of fiscal rules in emerging market economies is, usually, an attempt to match an already existing rule based framework for monetary policy, such as inflation targeting (Kopits, 2004: 2, 4-5). In South Africa, the monetary policy regime is already a rule-based inflation targeting system and the fiscal reforms of the post-1994 era has introduced many features of a procedural rules, such as the multiyear budget framework and increased transparency.

In this section we propose further steps along the path towards fiscal rules of the third wave, i.e. a combination of a numerical target for government expenditure and procedural rules to support the numeral rule and to provide additional transparency for fiscal policy. Since And existing suggestions for fiscal rules (or near-rules) in the local policy literature – Burger and Jimmy (2006) and Frankel, Smit and Sturzenegger (2007) – concern numerical performance limits, not the procedural rules and transparency which have typified the third wave, we start the section with numerical targets.

3.1 Fiscal rules as numerical targets

Frankel, Smit and Sturzenegger (2007: 70-71) recently argued that the potential pro-cyclicality of fiscal policy in South African might be avoided by allowing government to fluctuate with the business cycle while maintaining a much more constant government expenditure profile. This is an argument for strengthening the role of automatic

stabilisers and is consistent with many of the fiscal rules adopted in emerging market economies[17]. It is an improvement on the well-known fiscal rules at the heart of the Economic and Monetary Union (EMU), which have been criticised for generating pro-cyclical fiscal outcomes.

Numerical fiscal targets have been associated with a number of problems, including: incentives for sharp-accounting, problems of enforcement, the encouragement of off-budget spending and the potential lack of flexibility (Eichengreen, Hausmann and von Hagen, 1999).

The much-discussed stability and growth pact (SGP) of the EMU contains two different numerical fiscal targets: a deficit limit (of 3% of GDP) and an upper limit on the ratio of government debt (60% of GDP). The SGP's deficit limit is not contingent on the state of the economy. A consequence of this of this policy design is the incentive it creates for pro-cyclical discretionary fiscal policy, especially during contractions. Government revenue declines relative to government expenditure during a contraction in those countries (such as the member states of the EMU) where automatic stabilisers are operational. But if this widening of the deficit during a contraction risks breaching the 3% of GDP floor, then the government is required to cut expenditure or to raise taxes, either of which would be a discretionary pro-cyclical fiscal contraction (Manasse, 2005). This is not merely a theoretical possibility: recent years have seen EMU member countries, large and small[18], fall foul of the 3% limit during domestic contractions and were confronted with the need to implement further discretionary fiscal tightening. Even worse, the unintended pro-cyclicality of the rule has encouraged dishonest fiscal reporting in some EMU members, including the series of incorrect data provided by Greece until finally forced to admit that their fiscal books were substantially in breach of the SGP targets (Benoit and Parker, 2005).

The Brazilian crisis of 1998-1999 is perhaps easier to identify with from a South African perspective: the deficit rule, which the Cardoso Administration had used to good effect to build credibility, became a burden during the downturn of economic activity. As the deficit widened towards the limit set by the rule the government was forced into an increasingly contractionary discretionary fiscal stance (Eichengreen et al., 1999). By early 1999 Brazil's fiscal situation had become unsustainable and the economy descended into crisis.

A contingent (or feedback) rule is an alternative to the fixed-parameter type deficit limit of the SGP whereby the deficit may not exceed 3% of GDP regardless of the state of the economy. In contrast, the appropriate fiscal deficit in any particular fiscal year is contingent on the state of the economy, with larger deficits during contractions matched by surpluses during expansions. Such a contingent rule would entail a much more flexible fiscal policy than a fixed parameter rule (Eichengreen et al., 1999). The contingent rule that underlies inflation targeting is sufficiently flexible that prominent scholars have preferred to call it a system of constrained discretion (Bernanke and Mishkin, 1997).

---

[17] However, Frankel, Smit and Sturzenegger (2007: 71) did not want their proposal of a flat expenditure profile for government (determined by long run public expenditure needs) to be labelled as a fiscal rule, as they were concerned that the hard-won credibility of the South African fiscal authorities might be compromised when external shocks cause a temporary deviation from a numerical fiscal target.
[18] The following countries have experienced difficulties with the SGP's deficit rule in recent years: France, Germany, Italy, Greece and Portugal.

Burger and Jimmy (2006) have recently argued the case for a contingent rule relating the appropriate deficit to the state of the economy and the existing debt stock. Frankel et al.'s (2007) suggestion of a flat expenditure path, allowing the revenue-based automatic stabilisers to generate mildly counter-cyclical fiscal outcomes is also flexible, but in both cases the authorities will need additional information about the state of the economy.

In the case of Burger and Jimmy's (2006) recommendation this is clear: their feedback rule depends on the existing debt stock, which is a mater of public record, but also the output gap, the estimation of which is a matter of considerable controversy as indicated in section 2. Indeed the Hodrick-Prescott short-cut which is often used in the local academic literature has generated questionable results in a number of cases discussed in this paper. There are a number of different sources of information about the stance of the economy, including the Hodrick-Prescott filter approach, the SVAR approach of Du Plessis et al. (2007b), the dating algorithm used by Du Plessis (2006) and the most comprehensive (though also the least transparent), namely, the SARB's method of calculating leading, lagging and reference cycles for the South African business cycle. Du Plessis et al. (2007b) and Du Plessis (2006) and have recently demonstrated that all of these techniques, except for the Hodrick-Prescott filter, generate comparable business cycles for South Africa. But their information is not identical and in practice would require close scrutiny if the estimated stance of the economy was to influence fiscal decisions in real time.

At first glance Frankel et al.'s (2007: 70) recommended ceiling for government expenditure does not seem to require information about potential GDP or the output gap. Instead they argue that the appropriate level should be based on "long run objectives in terms of public goods" (Frankel et al., 2007: 70). But thesis theoretical argument has no unambiguous practical translation: there is no theoretically appropriate limit to the provision of public goods. In practice, their recommendation requires National Treasury to exercise precisely the discretion over expenditure which the fiscal rule intended to prevent. A more practical recommendation is to allow government expenditure to expand with potential GDP, but this would require the identification of potential GDP, just as with Burger and Jimmy (2006) rule.

Practical versions of the fiscal rules under consideration in the South African literature require an assessment of potential GDP and the output as a inputs. This suggests that a proposed numerical target for one of the performance measures of fiscal policy be accompanied by a procedural rule that requires independent participation in the evaluation of potential GDP, which would match more closely the third wave of fiscal rules described above.

3.2 Procedural rules

National Treasury have implemented a number of important procedural rules in South Africa since 1994, including the important step towards a medium term budgeting framework under the MTEF. And they have reformed the SA Revenue Service and the budget process and have become more transparent. However, there is a potentially important further step to take, i.e. the creation of a business cycle commission to assist National Treasury in the assessment of potential GDP and the output gap. This is reminiscent of an interesting variation of

procedural fiscal rules was suggested by Alan Blinder (1997) a decade ago and have found proponents in a number of developing countries, i.e. the proposal to depoliticise a central aspect of the fiscal process and hand the decision on the size of the deficit, or the change in the national debt, to a fiscal policy committee, or a National Fiscal Council (NFC) as Eichengreen et al. (1999: 417) suggested.

Behind this proposal is the argument that political control has its advantages (for example, setting priorities sensitive to the needs of the electorate) but also its disadvantages (for example, the incentives that encourage political business cycles and the widespread fiscal deficit bias). Policy-making is a many-layered process and there is no reason *a priori* to suspect that the political process would generate appropriate incentives at each level.

Blinder (1997-118) built his case by analogy with the theoretical and practical justification of Independent Central Banks in the monetary policy context. In a democratic society it is not appropriate simply to delegate a powerful instrument of economic policy, such as monetary policy, to control by politically independent decision-making body. However delegation is an uncontroversial aspect of democratically elected governments so there are really two issues at hand: (i) which policy tasks to delegate and (ii) how to ensure that the decision makers to whom authority has been delegated act in the interest of their ultimate principals, the public at large. Economic theory, especially the principal-agent literature, can help us to answer these questions.

In monetary policy both theory and practice have combined to show that it is appropriate to delegate decision-making authority on the stance of monetary policy to an independent authority, usually the Central Bank. In this case we say, using the terminology of Debelle and Fischer (1994), that the Central Bank is "instrument independent". However the goal which the Central Bank pursues with the instruments of monetary policy are set by political authorities, which is to say that the Central Bank is "goal dependent". This configuration of goal dependence and instrument independence adequately describes the relevant aspects of the monetary policy regime in South Africa (Du Plessis, 2005) as it does for other fully-fledged inflation targeting countries and elsewhere in countries such as the USA and the EMU. The principal-agent solution to the central banker's problem is, therefore, to define clear goals for the central bank, to grant it requisite power in the pursuit of that goal and to hold the Bank accountable for achieving those goals (Fischer, 1999).

In the same way we might use theory and experience to identify those dimensions of fiscal policy most suitable to political control and those best delegated to an independent decision making body (Blinder, 1997: 122). There are clear incentives for politicians to use a distorted perspective on the state of the economy in the policy making process, just as there are various incentives which result in a politically driven deficit bias in fiscal policy (Eichengreen et al., 1999). These tasks (determining the state of the economy in as objective a manner as is possible, and judging the appropriate fiscal stance – in terms of deficit, or change in national debt) are appropriate for an independent decision making body (for example, a business cycle commission) that will in turn be accountable to parliament for the manner in which they exercised that authority and also accountable to the public through the disclose of their methods and results (Blinder, 1997; Eichengreen et al., 1999: 124).

Though the business cycle commission would judge the state of the economy – as they do in the case of Chile, that will be discussed below – and determine an appropriate primary deficit, they would not be tasked with setting spending priorities within the limits placed on the budget, nor would they determine the appropriate tax structure. These are matters best left to the political process as they involve priority setting and trade-off and are not mainly matters of technical competency. Instead there are real conflicts of opinion and of interest in these priority trade-offs and in a democratic state these conflicts are resolved peacefully through representative political decision making (Buchanan and Tullock, 1969; Du Plessis, 2005).

3.3 Chilean example

Chile adopted a fiscal rule in 2000 that contains a number of interesting design features from South African perspective. First, the numerical rule is formulated in terms of the structural budget deficit, i.e. the budget deficit adjusted for the fiscal impact of the business cycle, and the rule requires a surplus of at least 1% of GDP for the structural balance (Garcia, Garcia and Piedrabuena, 2005: 3). Further, since 2002 an independent panel of experts have been charged with calculating the stance of the economy relative to potential GDP (the output gap) to allow a depoliticised adjustment of government revenue for the purposes of calculating the structural budget balance[19]. Because the state-owned copper company is a very large tax contributor in Chile a similar independent panel of experts have, since 2001, also been charged with forecasting the medium-term copper price, and this forecast is used to adjust revenue for the cyclical shock of copper price variations (Martner, 2006: 170-171). The precise definition of the structural balance used in Chile is therefore "…the level of revenues minus expenditures if GDP were equal to potential and the copper price equal to its medium-term trend" (Marshall, 2003: 98), as shown in equation (1) below:

$$\text{Structural Balance} = \text{Conventional Balance} + \left[T_t^* - T_t \right] + \left[C_t^* - C_t \right] \qquad (1)$$

Where: T_t^* is tax revenue when GDP equals potential GDP, T_t is actual tax revenue, C_t^* is the medium-term copper price and C_t the actual copper price[20].

These independent projections for potential GDP and the copper price also guides the expansion of government expenditure in Chile, since the government needs to maintain a balance between the expansion of its expenditure and potential GDP in order to meet the target for the structural balance. Finally, the method and the calculation of potential GDP is published in Chile (Martner, 2006: 172-174) and government follows a communication strategy to educate politicians, the public and financial market analysts about the structural budget balance.

Chile's combination of numerical and procedural fiscal rules with explicit attention to transparency typifies what Kopits has called the third wave of fiscal rules. And it has been highly successful on three accounts: first, the debt

---

[19] To be more precise: potential GDP is obtained by averaging the estimates of the members of the independent panel (Marshall, 2003: 99).

[20] It is instructive to note that the elasticity of government revenue with respect to the output used for this calculation in Chile is 1.05 (Marshall, 2003: 99), which is a very close to the estimates for South Africa presented in this paper.

burden in Chile has declined since the introduction of the rule, contributing to a sustainable fiscal position in the long run. Second, the rule has ensured that the automatic stabilisers via government revenue were able to generate a modestly counter-cyclical fiscal outcome (Martner, 2006: Table 5). During periods of below trend growth the structural balance will still satisfy the target without requiring any downward adjustment of government expenditure and so avoid a pro-cyclical fiscal contraction. Conversely, during periods of above trend growth the structural budget balance will prevent government expenditure from rising in step with actual government revenue, avoiding a pro-cyclical fiscal expansion. In this way the adoption of the fiscal rule in Chile helped to stabilise the economy (Garcia et al., 2005: 7). Third, fiscal policy has become more predictable both to the markets and to government departments due to the associated greater stability of government expenditure (Garcia et al., 2005: 7-8).

The lessons from Chile's experience with fiscal rules can now be combined to yield a policy proposal for South Africa. The point of departure is Frankel et al.'s (2007) suggestion of a numerical limit to government expenditure. But to make this practical the ceiling for government expenditure (including transfer payments) should be defined relative to potential GDP and allowed to expand as potential GDP grows. To allow the automatic stabilisers to generate a counter-cyclical fiscal stance we need to add a numerical target for the structural budget to the limit on government expenditure, for example a requirement that the budget be balanced after adjusting revenue for the business cycle.

Additionally, to avoid the incentive problems regarding manipulated fiscal data that have, regrettably, undermined the credibility of some fiscal rules an independent business cycle commission should be charged with calculating potential GDP for the purposes of generating the structural budget balance and the output gap. Such a business cycle commission would contribute to counter-cyclical policy in the following way: it removes the incentives facing politicians in identifying the cycle and in calibrating the stance of policy accordingly, which is logically related to the unintended pro-cyclical outcomes observes in many economies.

The degree of transparency about this commission's work needs to be worked out. For example, a trial period of 2 to 4 years could be introduced during which time the commission reported only to the Minister of Finance without publicising their method or results, or the minister might agree to release the commission's work with a time lag. Further flexibility could be built into the target by formulating the target for the structural balance in terms of a range such as -1% to 1% instead of a point, reflecting uncertainty about the present state of the economy and allowing modest discretion fro the Finance Minister.

The composition of the business cycle commission is also a matter for future deliberation. Chile has the advantage of a large population of expert economists outside of the public sector who are able to staff this kind of commission. In South Africa the number of business cycle specialists is much more modest and the majority of these are employees of the SARB. Since it does not seem sensible to create a commission without substantial participation by SARB a delicate political balancing act is required. In the best case National Treasury and the SARB would see SARB's participation on the business cycle commission as an opportunity to deepen their co-operation.

4. Summary

The South African economy – like many others, most notably the United States – has experienced considerable economic stability over the last decade. At stake in this paper is whether fiscal policy had intentionally or unintentionally contributed to this favourable outcome. A number of techniques are used to investigate the cyclicality of fiscal outcomes since the early 1990s in South Africa and the evidence does not support claims that South African fiscal policy had been pro-cyclical (and hence destabilising) overt this period. But to prevent potential fiscal pro-cyclicality from becoming a reality in South Africa a package of reforms is derived that is consistent with the empirical evidence presented. The recommended reform includes: firstly, a fiscal rule that includes the following features: a numerical limit on the ratio of government expenditure to GDP and a commitment to a balanced budget (adjusted for the economic cycle), which would allow automatic revenue stabilisers to ensure a counter-cyclical policy. Secondly, a procedural rule that requires an independent business cycle commission to calculate potential GDP, the output gap and the adjustments required to calculate the structural budget balance. This depoliticised commission will enhance fiscal transparency and prevent the temptation by fiscal authorities to adjust these estimates, which have undermined some fiscal rules in practice.

Appendix A   Calculating the structural budget balance

This appendix provides a short description of the methodology employed in determining the structural budget balance.

A.1 Data sources

Table A.1 is a list of the tax data series used in the analysis. All of the time series are available from the Quarterly Bulletin of the South African Reserve Bank, with the exception of the two time series on domestic and customs VAT collections, which were obtained directly from the National Treasury.

Table A.1 about here

A.2 Calculation of elasticities

Conventionally, the structural budget balance, b^*, is defined as (Swanepoel and Schoeman, 2003; Girouard and André, 2005):

$$b^* = \sum_i T_i^* - G^* + X \qquad (A1)$$

where:
   T_i^* = structural component of the ith tax category
   G = structural component of current primary government expenditures
       X = non-tax revenue minus capital and net interest spending

The structural components of the ith tax category, T_i^*, is calculated from the actual figure, proportionally adjusted according to the output gap and an estimated elasticity as:

$$\frac{T_i *}{T_i} = \left(\frac{Y *}{Y}\right)^{\alpha_i} \qquad \text{(A2)}$$

where

T_i = actual tax revenue for the ith tax category
$Y*$ = potential output
Y = actual output
α_i = elasticity of ith tax category with respect to output gap

It is worth noting that, while the ratio $\frac{T_i *}{T_i}$ is calculated from fiscal series in nominal terms, the ratio $\frac{Y *}{Y}$ is calculated from price-adjusted series. Therefore, the calculation implicitly assumes that the output gap calculated from real rates approximate the output gap calculated from nominal rates.

The elasticity, α_i, of the ith category with respect to the output gap are estimated either directly or indirectly. Direct estimation involves calculating the long-run sensitivity of the ith tax component to output. The long-run impact is estimated from an unrestricted Vector Autoregression (VAR) with the ith tax component and output as the endogenous variables, using a lag order of four quarters. The following equation in the VAR, with the ith tax component as dependent variable, is used to calculate the long-run impact:

$$T_t = \mu + \sum_{k=1}^{4} \beta_k Y_{t-k} + \sum_{k=1}^{4} \gamma_k T_{t-k} + \varepsilon_t \qquad \text{(A3)}$$

The long-run impact, or elasticity, is calculated as:

$$\alpha_i = \frac{\sum_{k=1}^{4} \beta_k}{1 - \sum_{k=1}^{4} \gamma_k} \qquad \text{(A4)}$$

However, where possible, it is more prudent to calculate the elasticity of the ith tax category w.r.t. output indirectly, that is, as the product of two elasticities: the elasticity of the ith tax category w.r.t. the relevant tax base ($\eta_i^{t,tb}$) and the elasticity of that tax base w.r.t. output ($\eta_i^{tb,y}$):

$$\alpha_i = \eta_i^{t,tb} \eta_i^{tb,y} \qquad \text{(A5)}$$

where $\eta_i^{t,tb}$ and $\eta_i^{tb,y}$ are each estimated from unrestricted VARs (see equation (A3)). Table A.2 shows how the elasticities for different tax components are estimated in this study:

Table A.2 about here

A.3 Elasticity estimates

Following the above-mentioned approach, the following elasticity estimates are obtained:

Table A.3 about here

References:

Ajam, T. and J. Aron (2007). "Fiscal Renaissance in a Democratic South Africa." Journal of African Economies, forthcoming: 1-31.

Aron, J. and J. Muellbauer (2005). "Monetary Policy, Macro-stability and Growth." World Economics, 6(4): 123-147.

Benoit, B. and G. Parker (2005). Budget deficits heighten sense of crisis in EU. Financial Times. London. September 29, 2005

Bernanke, B. and F. S. Mishkin (1997). "Inflation targeting: a new framework for monetary policy?" Journal of Economic Perspectives, 11(2): 97-116.

Blanchard, O. J. and D. Quah (1989). "The Dynamic Effects of Aggregate Demand and Supply Disturbances." American Economic Review, 79(4): 655-673.

Blanchard, O. J. and J. Simon (2001). "The Long and Large Decline in US Output Volatility." Brookings Papers on Economic Activity: 135-164.

Blinder, A. S. (1997). "Is Government Too Political?" Foreign affairs, 76(6): 115-126.

--- (2006). The Case Against the Case Against Discretionary Fiscal Polciy. In: R. W. Kopcke, G. M. B. Tootell and R. K. Triest (eds.). The Macroeconomics of of Fiscal Policy. Cambridge, Ma., The MIT Press.

Buchanan, J. M. and G. Tullock (1969). The calculus of consent. Logical foundations of constitutional democracy. Michigan, The University of Michigan Press.

Burger, P. and C. Jimmy (2006). "Should South Africa Have a Fiscal Rule?" South African Journal of Economics, 74(4): 642-669.

Calitz, E. and F. K. Siebrits (2003). "Fiscal Policy in the 1990s." South African Journal of Economic History, 18: 50-75.

Cecchetti, S. G., A. Flores-Lagunes and S. Krause (2001). Has monetary policy become more efficient? A cross-country analysis. Ohio State University, Unpublished mimeograph.

Chand, S. K. (1977). "Summary Measures of Fiscal Influence." IMF Staff papers, 24(2): 405-449.

Clarida, R. and J. Galí (1994). "Sources of Real Exchange Rate Fluctuations: How Important are nominal Shocks?" Carnegie-Rochester Conference Series on Public Policy, 41: 1-56.

Cronje, A. (1998). Deficit Financing and the Public Debt in South Africa: Some Unpleasant Fiscal Arithmetic. In: I. Abedian and M. Biggs (eds.). Economic Globalization and Fiscal Policy. Cape Town, Oxford University Press.

Debelle, G. and S. Fischer (1994). How independent should a central bank be? In: J. C. Fuhrer (eds.). Goals, guidelines, and constraints facing monetary policymakers. Boston, Federal Reserve Bank of Boston.

Du Plessis, S. A. (2004). Reconsidering the business cycle and stabilisation policies in South Africa. Cape Town, Paper presented at the 9th annual conference for econometric modelling in Africa.

--- (2005). "The Democratic Deficit and Inflation Targeting." South African Journal of Economics, 73(1): 93-104.

--- (2006). "Reconsidering the business cycle and stabilisation policies in South Africa." Economic Modelling, 23(5): 761-774.

du Plessis, S. A. and B. W. Smit (2003). Stabilisation policy. Stellenbosch, Paper presented at the 8th annual conference for econometric modelling in Africa.

Du Plessis, S. A. and B. W. Smit (2006). South Africa's growth revival after 1994. Stellenbosch, Stellenbosch working paper, WP01/2006.

Du Plessis, S. A., B. W. Smit and F. Sturzenegger (2007a). Identifying Aggregate Supply and Demand Shocks in South Africa. Stellenbosch, Mimeograph.

--- (2007b). Measuring Potential Output and the Business Cycle in South Africa. Stellenbosch and Boston, University of Stellenbosch and Kennedy School of Government, mimeograph.

--- (2007c). The Cyclicality of Monetary and Fiscal Policy in South Africa since 1994. Stellenbosch, Mimeograph.

Eichengreen, B., R. Hausmann and J. von Hagen (1999). "Reforming Budgetary Institutions in Latin America: The Case for a National Fiscal Council." Open Economies Review, 10: 415-442.

Fatás, A. and I. Mihov (2003). "The case for restricting fiscal policy discretion." Quarterly Journal of Economics, 2003(November): 1419-1447.

Fatás , A. and I. Mihov (2003). "The case for restricting fiscal policy discretion." Quarterly Journal of Economics, 2003(November): 1419-1447.

Fischer, S. (1999). Why are central banks pursuing long-run price stability? Kansas City, Address delivered to the Federal Reserve Bank of Kansas City.

Fourie, F. C. v. N. and P. Burger (2000). "Is Fiscal Sustainability Attainable? High Interest Rates, Low Growth and the General Balance Effect." South African Journal of Economics, 67(2): 212-245.

Frankel, J., B. W. Smit and F. Sturzenegger (2006). South Africa: Macroeconomic Challenges after a Decade of Success. Cambridge Ma,, CID Working Paper No. 133, September 2006.

--- (2007). South Africa: Macroeconomic Challenges after a Decade of Success. Cambridge MA, CID Working Paper No. 133, April 2007.

Friedman, M. (1968). "The role of monetary policy." American Economic Review, 58(1): 1-17.

Galí, J. (1992). "How Well Does the IS-LM Model Fit U.S. Data?" Quarterly Journal of Economics, 107(May): 709-738.

Garcia, M., P. Garcia and B. Piedrabuena (2005). Fiscal and Monetary Policy Rules: The Recent Chilean Experience. Santiago, Central Bank of Chile Working Papers, No. 340.

Girouard, N. and C. André (2005). Measuring Cyclically-Adjusted Budget Balances for OECD Countries. Paris, OECD Economics Department Working Papers No. 434.

Hagemann, R. (1999). The Structural Budget Balance The IMFs Methodology Washington, IMF Working Paper, WP/99/95.

Horton, M. (2005). Role of fiscal policy in stabilization and poverty alleviation. In: M. Nowak and L. Ricci (eds.). Post-Apartheid South Africa. The first ten years. Washington, IMF.

Kopits, G. (2001). Fiscal rules: Useful policy framework or unnecesary ornament. Washington, IMF working paper, WP/01/145.

--- (2004). Overview of fiscal policy rules in emerging markets. In: G. Kopits (eds.). Rules-based fiscal policy in emerging markets. Basingstoke, Palgrave Macmillan.

Laubscher, P. (2004). "The SA business cycle over the 1990s and current prospects." Journal for Studies in Economics and Econometrics, 28(1): 21-43.

Lucas, R. J. (2003). "Macroeconomic priorities." <u>American Economic Review</u>, 93(1): 1-14.

Manasse, P. (2005). Deficit Limits, Budget Rules, and Fiscal Policy. Washington, IMF Working Paper, WP/05/120.

Manuel, T. A. (1998). The 1998 Medium Term Budget Policy Statement and Adjustments Estimate Cape Town, Presented to Parliament during October 1998.

--- (2001). Budget Speech. Cape Town, Presented to Parliament on 21 February 2001.

--- (2007). Budget Speech. Cape Town, Presented to Parliament on 21 February 2007.

Marshall, J. (2003). Fiscal Rule and Central Bank Issues in Chile. Basel, BIS Papers No. 20.

Martner, R. (2006). Cyclical Indicators of Fiscal Policy in Latin American Countries (With Special Reference to Chile), Paper presented at the Bank of Italy's eigth workshop on public finances, held in Perugia, 30 March-1 April, 2006.

Modigliani, F. (1977). "The monetarist controversy or, Should we forsake stabilisation policies?" <u>American Economic Review</u>, 67(2): 1-19.

Mody, A. (2004). What is an emerging market? Washington, IMF working paper, WP/04/177.

Mundell, R. A. (2000). "A Reconsideration of the Twentieth Century." <u>American Economic Review</u>, 90(3): 327-340.

Plosser, C. I. (1989). "Understanding real business cycles." <u>Journal of Economic Perspectives</u>, 3(3): 51-77.

Prescott, E. C. (1986). "Theory ahead of business cycle measurement." <u>Carnegie-Rochester Conference Series on Public Policy</u>, 25(Autumn): 11-44.

Romer, C. D. (1999). "Changes in business cycles: evidence and explanations." <u>Journal of Economic Perspectives</u>, 13(2): 23-44.

Schinasi, G. J. and M. S. Lutz (1991). Fiscal Impulses. Washington, IMF Working Paper, WP/91/91.

Siebrits, F. K. and E. Calitz (2004). "Should South Africa adopt numerical fiscal rules?" <u>South African Journal of Economics</u>, 72(4): 759-783.

Sims, C. A. (2006). Comments on Blinder's "The Case Against the Case Against Discretionary Fiscal Policy". In: R. W. Kopcke, G. M. B. Tootell and R. K. Triest (eds.). <u>The Macroeconomics of of Fiscal Policy</u>. Cambridge, Ma., The MIT Press.

Stock, J. H. and M. W. Watson (2003). Has the business cycle changed? Evidence and explanations. Jackson Hole, Wyoming, Proceedings from the Federal Reserve Bank of Kansas City Symposium "Monetary Policy and uncertainty", August, 2003.

Swanepoel, J. A. (2004). "The Monetary and Fiscal Policy Mix in South Africa." <u>South African Journal of Economics</u>, 72(4): 730-758.

--- (2007). Indicators of Fiscal Stance in South Africa: a Re-examination. Pretoria, South African Reserve Bank Discussion Paper, DP/07/03.

Swanepoel, J. A. and N. J. Schoeman (2003). "Countercyclical Fiscal Policy in South Africa: Role and Impact of Automatic Fiscal Stabilisers." <u>South African Journal of Economic and Management Sciences</u>, 6(4): 802-822.

Tanzi, V. (1997). The Changing Role of the State in the Economy. Washington, IMF Working Paper, WP/97/114.

--- (2005a). "Fiscal policy and fiscal rules in the European Union." <u>CESifo Forum</u>(3): 57-64.

--- (2005b). "The Economic Role of the State in the 21st Century." <u>Cato Journal</u>, 25(3): 617-638.

Taylor, J. B. (1997). "A core of practical macroeconomics." <u>American Economic Review</u>, 87(2): 233-235.

--- (2000). "Reassessing Discretionary Fiscal Policy." <u>Journal of Economic Perspectives</u>, 14(3): 21-36.

Wyplosz, C. (2001). Fiscal Policy: Institutions vs Rules. Geneva, HEI Working Paper No. 02/2002.

Figure 1   The "great moderation" of the South African economy
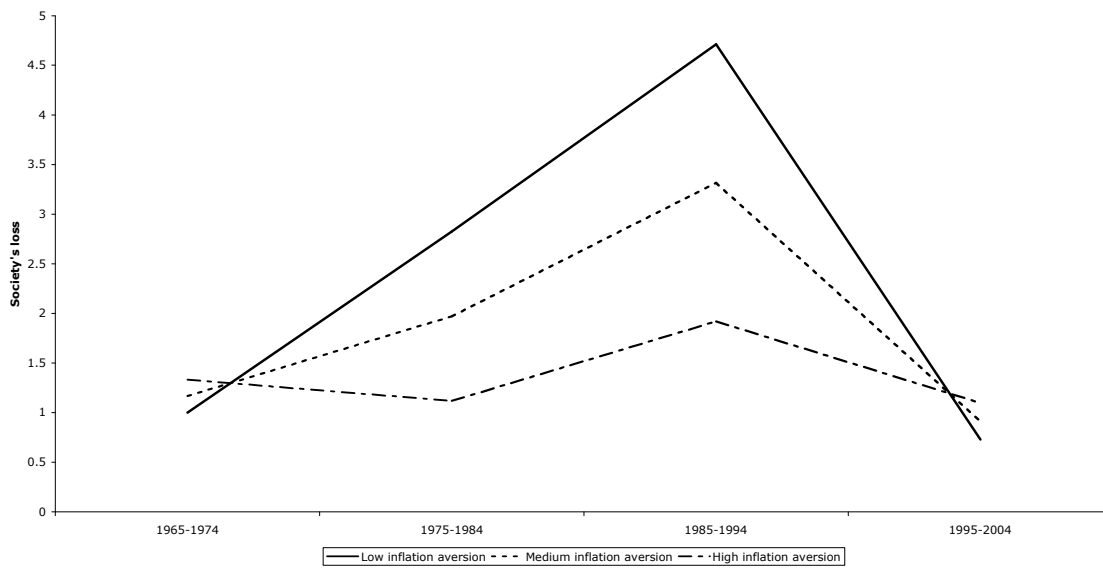
Source: Data from the SARB quarterly bulletin data

Figure 2 The stability of the South African economy in an international context (1996-2006)
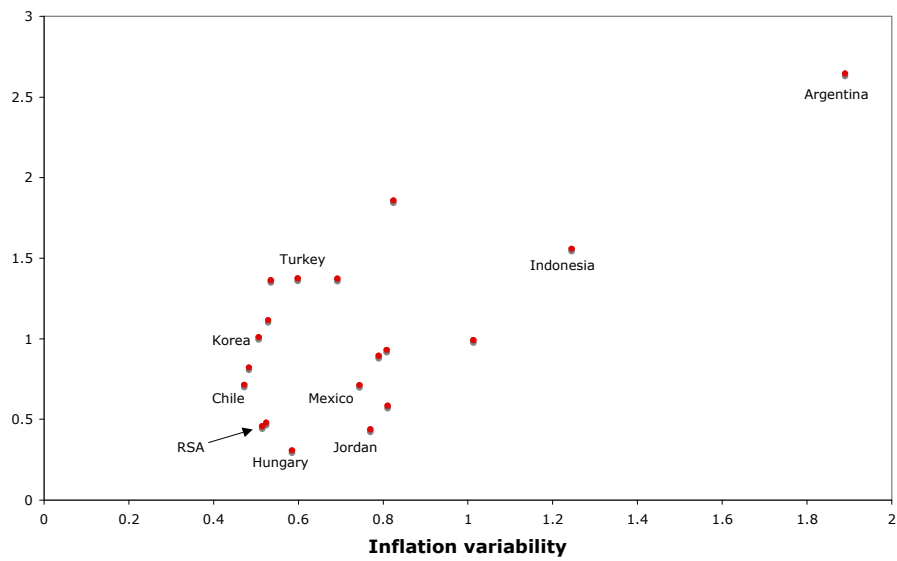
Source: Data from the IFS data base

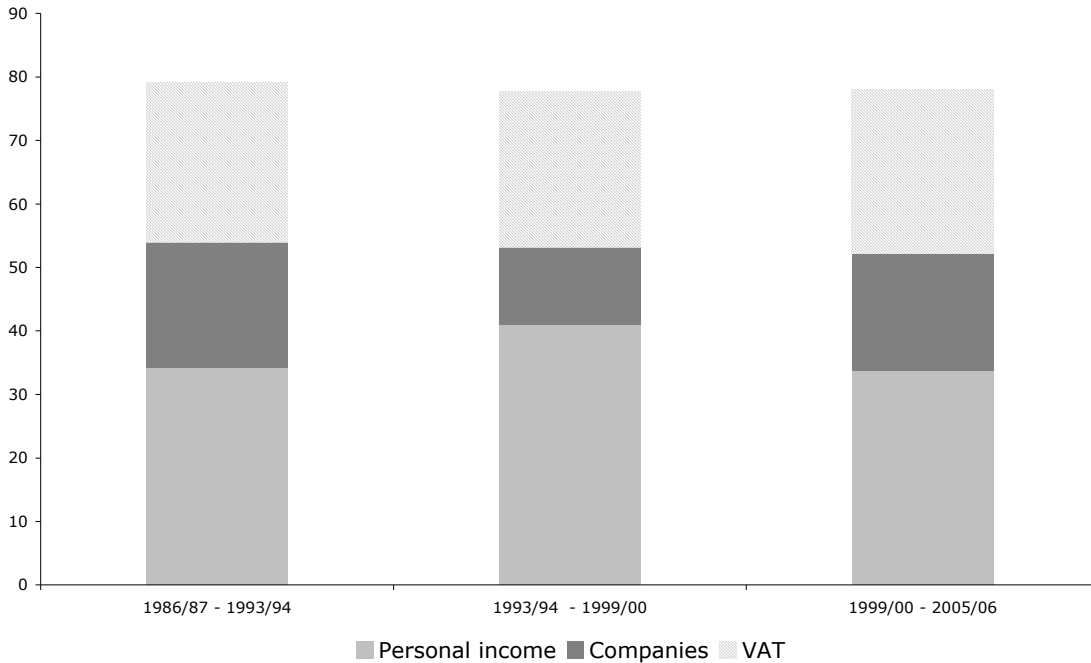Figure 3 Domestic and foreign debt of the South African government
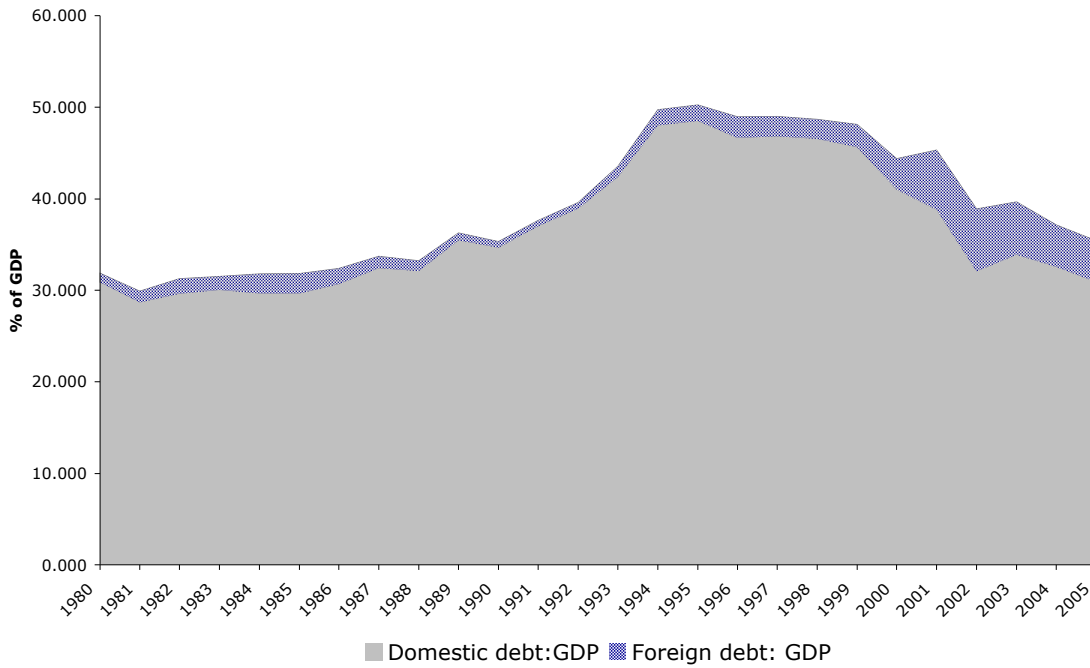
Source: data from the IFS data base

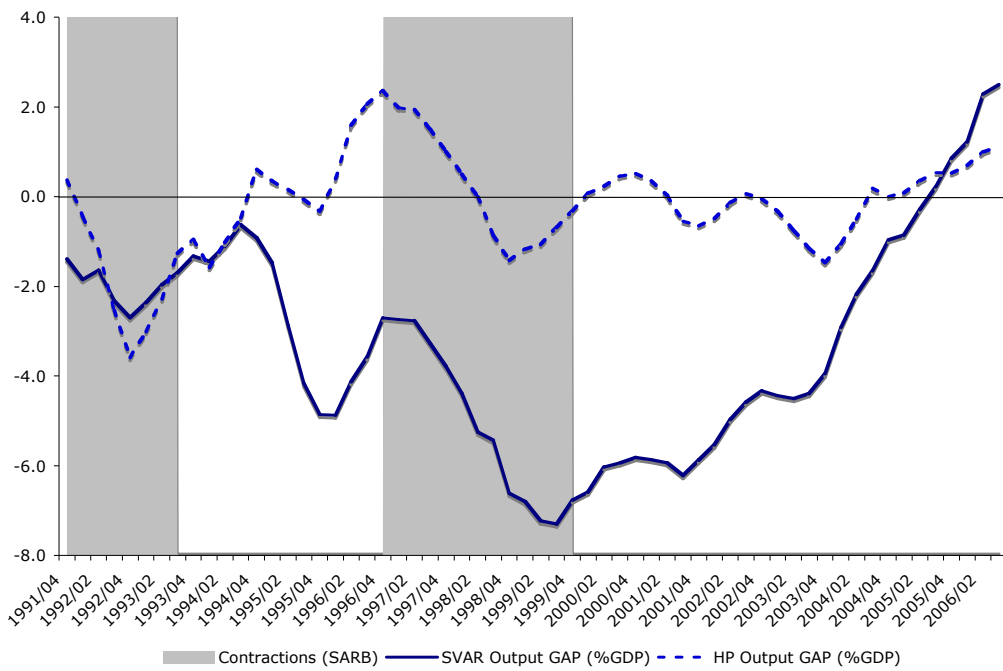Figure 4 Government revenue and expenditure since the early nineties
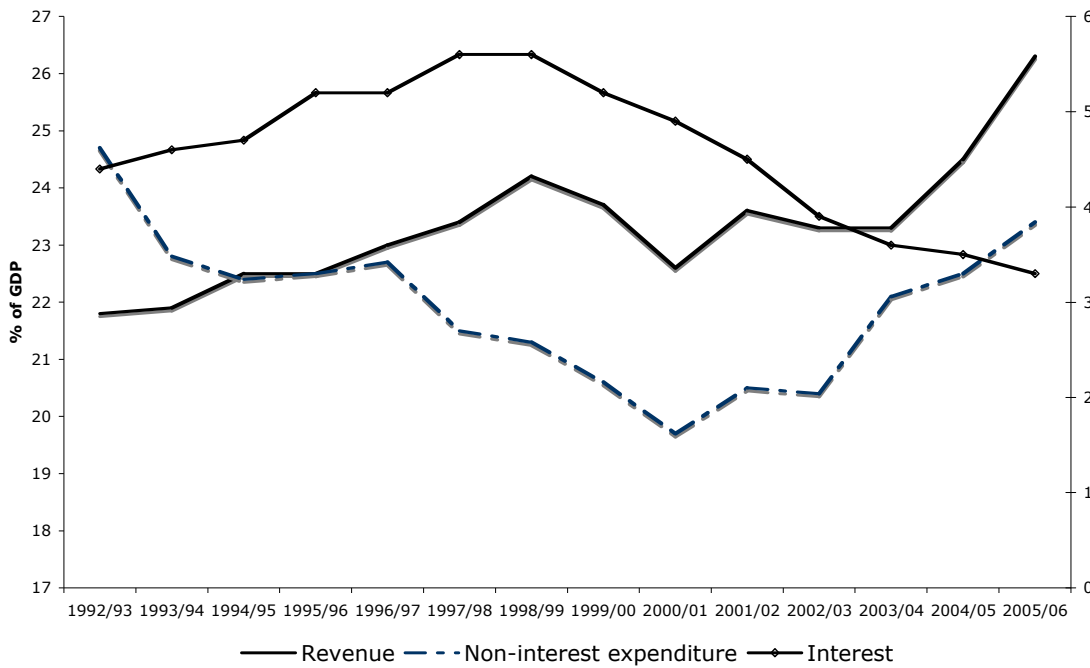
Source: Data from the SARB quarterly bulletin data

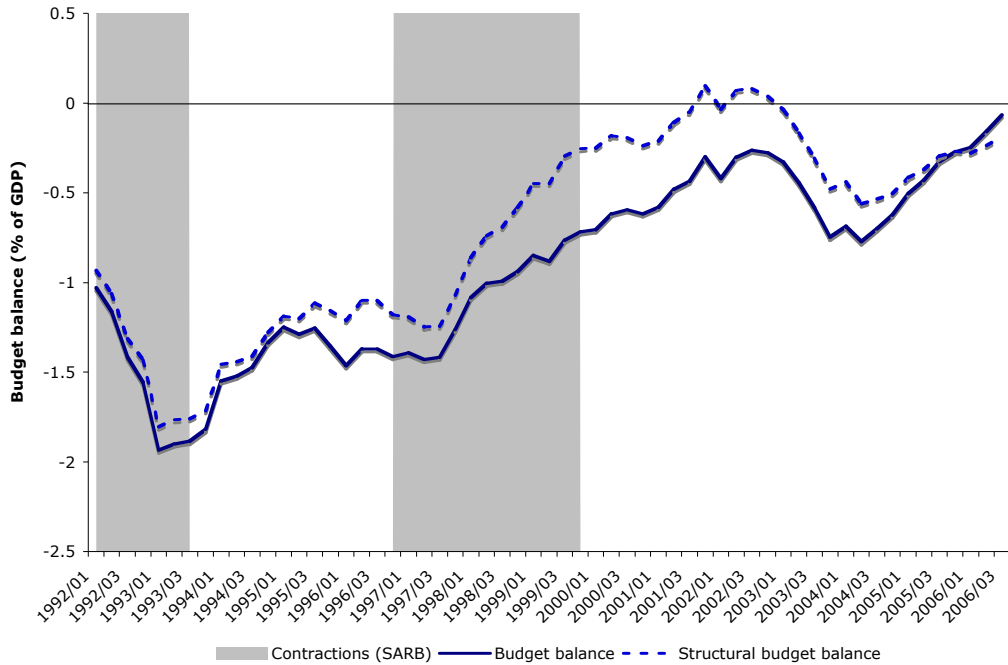Figure 5 The changing composition of government revenue

Figure 6   Output gaps and official expansions of the South African economy
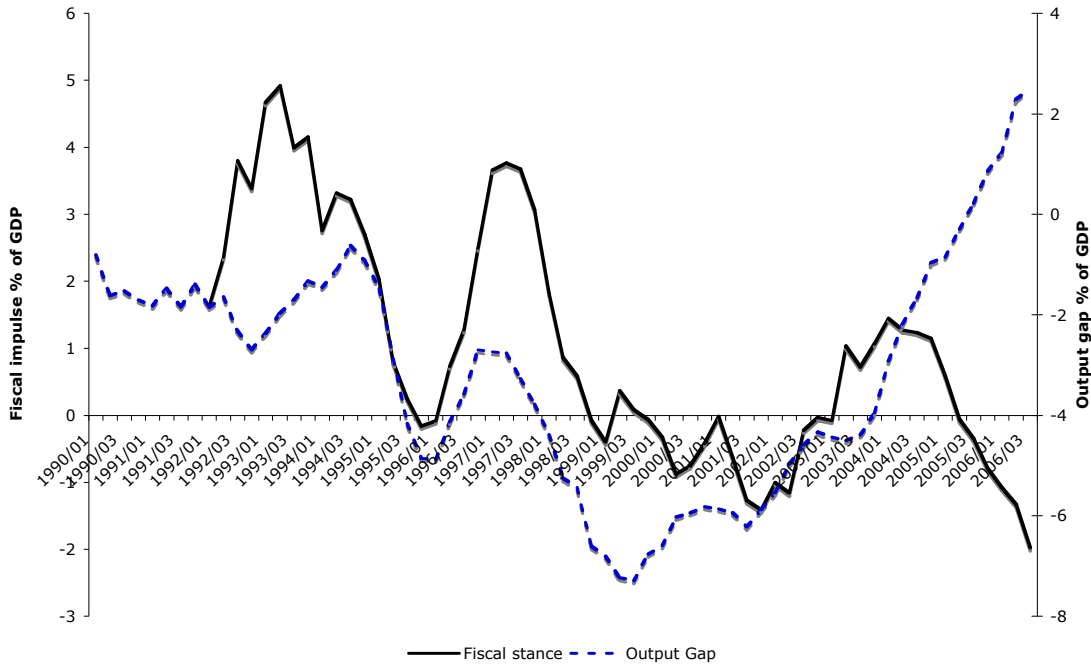
Figure 7   Actual and structural budget balance

Source: own calculations. Quarterly data presented with a 4-quarter moving average
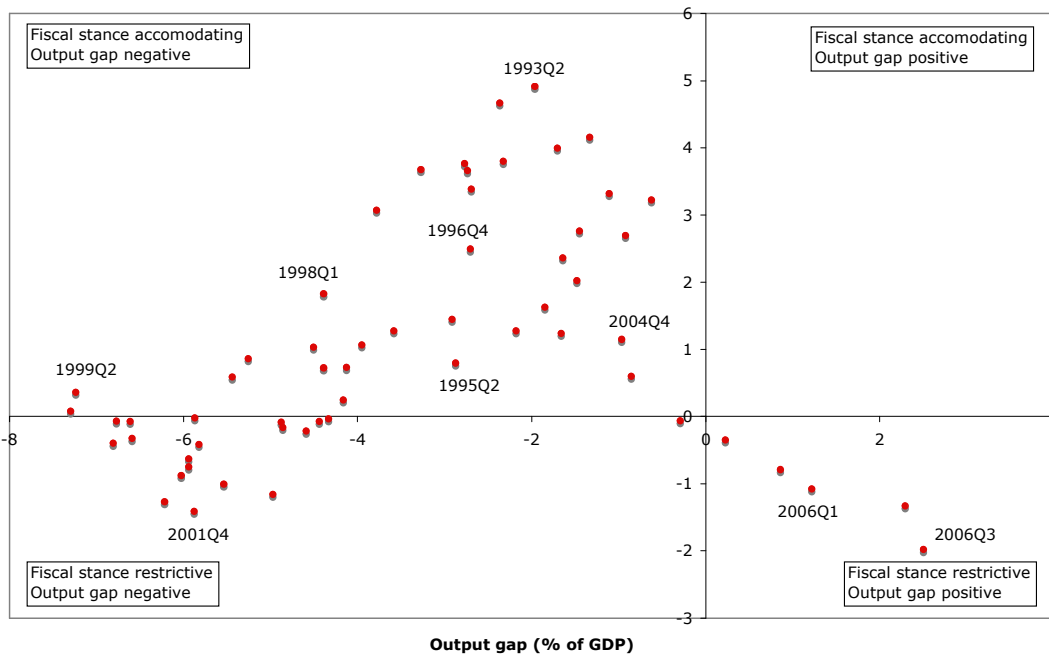
The structural budget balance shown here was calculated with the most disaggregated data allowed by the SARB Quarterly Bulletin.

Figure 8   The evolution of the fiscal stance
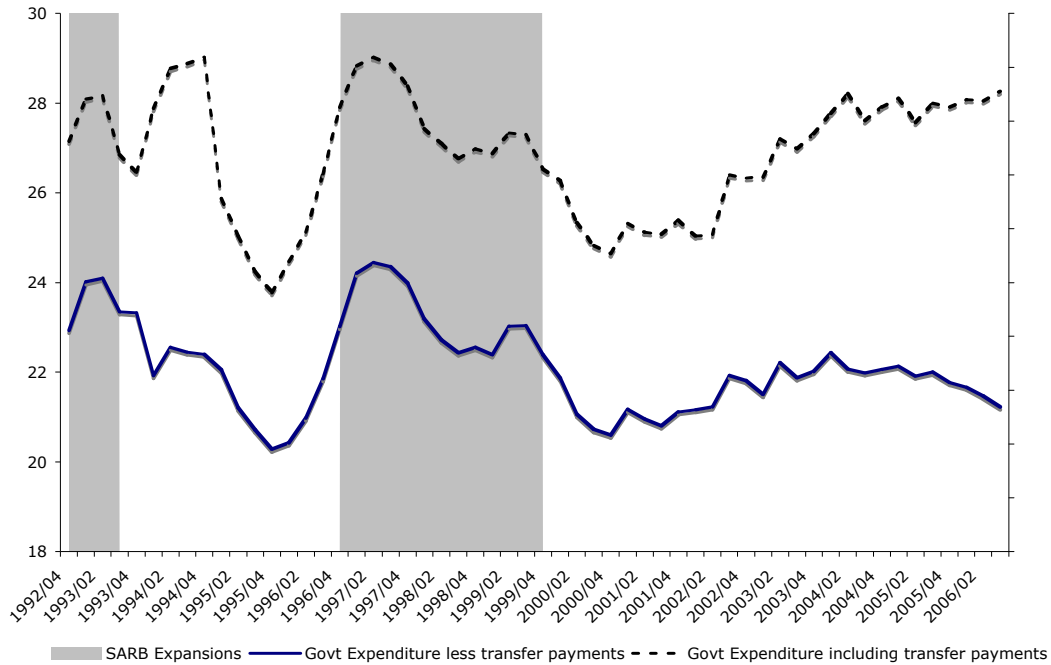

Source: Data from the SARB quarterly bulletin

Figure 9   The fiscal stance and the output gap (1992Q1 to 2006Q3)

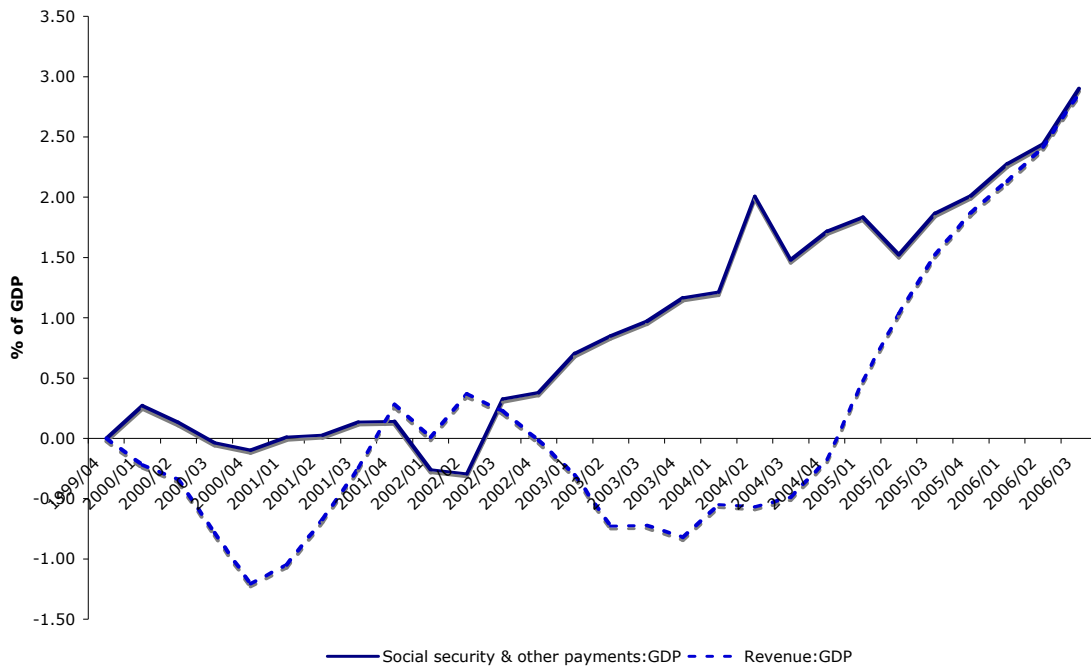Source: Data from the SARB quarterly bulletin

Figure 10 The cyclicality of government expenditure

Source: own calculations from SARB quarterly bulletin

Transfer payments is here meant to combine three expenditure items in the SARB Quarterly bulletin: social benefits, grants and other expenses by government.

Figure 11 The rise in social security and other government expenses during this expansion

Source: own calculation using SARB quarterly bulleting data. Both revenue and expenditure were rebased to 0 in 1999Q3, and subsequent developments reflect equal absolute changes in the two variables.

Table 1   Estimated output elasticities for components of government revenue

Revenue component	Elasticity estimate
Our estimates	
Total income tax on persons, individuals, corporations and other enterprises	1.05
Total taxes on income, profits and capital gains	0.82
Total taxes on payroll and workforce	1.19
Transfer duties	1.27
Total other taxes on property	1.37
Total taxes on property	1.35
Value-added tax (total)	1.14
Value-added tax (domestic)	1.06
Value-added tax (customs)[a]	1.40
Fuel levy	0.67
Other excise duties	0.85
Total domestic taxes on goods and services	1.02
Total taxes on international trade and transactions	0.36
Other taxes	1.05
Total tax revenue	1.06
Swanepoel and Schoeman	
Direct taxes	0.42
Indirect taxes[b]	0.19
Total revenue and grants	0.91
OECD average	
Corporate tax	1.5
Personal tax	1.26

Source: own calculations from the SARB quarterly bulletin data, Swanepoel and Schoeman (2003) and (Girouard and André, 2005).
[a] In our calculations we distinguished between VAT on domestic purposes and VAT on imported goods since the balance between these two sources of revenue has shifted sharply with the re-opening of the economy since the early nineties. VAT on imported goods now accounts for as much as 45% of all VAT revenue.
[b] "Consisting of taxes on net income and profits, donations tax, estate duty and taxes on payroll and workforce" (Swanepoel and Schoeman, 2003: 820)

Table 2   Variability of real output under different policy scenarios

	Standard Dev. of Actual GDP	Without monetary shocks	Without fiscal shocks
Short model			
1984q4-2006q3	0.69%	0.68%	0.66%
1994q1-2006q3	0.45%	0.44%	0.38%
Long model			
1961q2-2006q3	1.12%	1.13%	1.11%
1994q1-2006q3	0.49%	0.56%	0.42%

Table A.1: Data table

Quarterly Bulletin Code	Description
KBP4570M	Total income tax on persons, individuals, corporations and other enterprises
KBP4571M	Secondary tax on companies
KBP4572M	Total other taxes on income and profits
KBP4573M	Total taxes on income, profits and capital gains
KBP4574M	Total taxes on payroll and workforce
KBP4575M	Transfer duties
KBP4576M	Total other taxes on property
KBP4577M	Total taxes on property
KBP4578M	Value-added tax
n.a.	Value-added tax (domestic)
n.a.	Value-added tax (customs)
KBP4579M	Fuel levy
KBP4580M	Other excise duties
KBP4582M	Total domestic taxes on goods and services
KBP4592M	Total taxes on international trade and transactions
KBP4593M	Other taxes
KBP4594M	SACU Repayments
KBP4595M	Total tax revenue

All series are seasonally adjusted using the conventional X-12 seasonal adjustment approach.

Table A.2: Approach used for calculation of elasticity

Tax category	Approach
Total income tax on persons, individuals, corporations and other enterprises	Indirect (tax base: household disposable income)
Secondary tax on companies*	N.A.
Total other taxes on income and profits*	N.A.
Total taxes on income, profits and capital gains	Indirect (tax base: household disposable income)
Total taxes on payroll and workforce	Indirect (tax base: household disposable income)
Transfer duties	Direct
Total other taxes on property	Direct
Total taxes on property	Direct
Value-added tax (also for domestic and customs components)	Indirect (tax base: household consumption expenditure)
Fuel levy	Direct
Other excise duties	Direct
Total domestic taxes on goods and services	Direct
Total taxes on international trade and transactions	Direct
Other taxes	Direct
Total tax revenue	Direct

- No structural components were calculated for STC or total other taxes on income and profits.

Table A.3: Elasticity estimates

Tax category	Elasticity estimate
Total income tax on persons, individuals, corporations and other enterprises	1.05
Total taxes on income, profits and capital gains	0.82
Total taxes on payroll and workforce	1.19
Transfer duties	1.27
Total other taxes on property	1.37
Total taxes on property	1.35
Value-added tax (total)	1.14
Value-added tax (domestic)	1.06
Value-added tax (customs)	1.40
Fuel levy	0.67
Other excise duties	0.85
Total domestic taxes on goods and services	1.02
Total taxes on international trade and transactions	0.36
Other taxes	1.05
Total tax revenue	1.06