National Saving and Fiscal Policy in South Africa: an Empirical Analysis

Lumengo Bonga-Bonga

Working Paper Number 84

National Saving and Fiscal Policy in South Africa: An Empirical Analysis

Lumengo Bonga-Bonga*

June 18, 2008

Abstract

Concerns have been raised in regards to how to redress a decreasing trend in national saving in South Africa. A number of authors have suggested that redressing government saving, through fiscal discipline characterised by a low government budget deficit ratio, should be a key in redressing the national saving trend in South Africa. In order to assess this hypothesis, this paper studies the dynamics of gross national saving, government saving and private saving in response to fiscal shocks, by using the impulse response functions (IRF) obtained from the structural vector autoregressive (SVAR). The paper constructs a structural model, contrary to the reduced-form models used in a number of studies, to assess the response of savings to fiscal shocks. The aim of this paper is twofold: while determining the extent to which fiscal policy influences savings in South Africa, the paper also offers to test whether the Ricardian Equivalence proposition holds in South Africa. The paper concludes that the full Ricardian Equivalence does not hold in the short term and in the long term the response of national saving to fiscal policy shocks is neutral.

1   Introduction

A particularly important issue in South Africa is the extent to which fiscal policy affects national saving. The decline in national saving in South Africa has been attributed to the decrease in government saving, especially from the early 1980s to early 1990s (Tsikata, 1998; Heyns, 1995). Furthermore, the low-growth trap experienced by South Africa since the mid-1980s has been assigned to the continuous decline in national saving, and an improved national performance with regards to saving is frequently regarded as a prerequisite for higher economic growth in South Africa (Aron & Muellbauer, 2000). Recently the South African government, through its Accelerated and Shared Growth Initiative – South Africa (ASGISA) strategy, opted to reach a 6% economic growth by 2010. This objective may be at risk if the country is unable to reverse the current decreasing trend in national saving.

In regards to the importance of fiscal policy on national saving, Barro (1974), in support of the Ricardian Equivalence Proposition (REP), demonstrated that if households are fully rational and take the well-being of their descendants into account in formulating their consumption and savings patterns, decline in taxes today would be balanced by offsetting increases in private saving today. In particular, households would recognise that the reduction in taxes today would increase future tax liabilities and therefore save the tax cut. Thus the implication of the full REP is that an increase in the budget deficit is neutral on national saving. A number of empirical evidences, though, suggest only limited offsets from private savings in response to budget shifts and therefore reject the full REP. For example Gale and Potter (2002), estimating the impact of the 2001 tax cut in the USA,

---

*Department of Economics, University of Johannesburg

find that private saving only offset 31 percent of the decline in public saving, thus budget deficit decreases national savings. Underlying the importance of budget surplus on national saving, Pesaran and Smith (1995) find that in the long run an increase in the public sector financial surplus of one percent of GDP rises national saving by 0.32 percent of GDP.

The adoption of the Growth, Employment and Redistribution (GEAR) policy as the South African macroeconomic policy in 1996 has emphasised fiscal discipline characterised by a low ratio of deficit by gross domestic product (GDP) as the anchor of fiscal policy. In order to determine the extent to which fiscal policy, especially fiscal discipline policy, influences gross national saving in South Africa, this paper studies the dynamic of gross national saving in response to fiscal shocks by using the impulse response functions (IRF) obtained from the SVAR model. The aim of the paper is twofold: firstly, the paper will assess the response of gross national saving and its components, namely government and private savings, to fiscal policy shocks. Secondly, as the relationship between fiscal policy and national saving is often evaluated in the light of the Ricardian Equivalence Proposition (REP), the paper will follow the same pattern in assessing whether the REP holds in the South African context. The remainder of the paper is therefore divided as follows: section 2 presents the literature review on the importance of fiscal policy on saving where the REP is discussed. Section 3 emphasises on the recent development of gross saving in South Africa. Section 4 presents the data and methodology applied for empirical analysis. Section 5 discusses the results of the empirical analysis and section 6 concludes the study.

2   Literature Review

The relationship between fiscal policy and national saving is widely debated around the REP which holds that whenever the government runs a budget deficit, the private sector will save more in order to offset the unfavourable effect of the budget deficit in the next generation (Barro, 1974). The REP involves forward-looking agents perceiving that a cut in taxes as a result of expansionary fiscal policy constitutes a deferred payment. Because the government borrows to finance the budget deficit resulting from its expansionary fiscal policy, households, in particular, will increase their current savings in order to protect the next generation from a probable high-tax burden (Giorgioni & Holden, 2003). Likewise an increase in government expenditure, according to the REP, will decrease private consumption and increase private saving (Feldstein & Elmendorf, 1990). The consequence of the REP is that the response of national saving to fiscal policy is neutral as the increase in private saving due to the expansionary fiscal policy (decrease in taxation) should be fully offset by the decrease in government saving.

The extent to which the REP holds is a matter of empirical analysis. The change in private saving may not necessarily be fully offset by the change in government saving. For example, a study by Lopez, Schmidt-Hebbel and Serven (2000) finds that there is a difference between industrial and developing countries in the response of national saving to fiscal policy change. The authors find that consumers internalise the government budget constraint when predicting future taxes and the proportion of individuals doing so is considerably smaller in developing countries (including South Africa) than in industrial countries, therefore REP holds more for industrial than for developing countries.

In opposing the REP, Feldstein (1976) showed that when the growth rate of the economy exceeds the real interest rate, the government can permanently postpone the repayment of debt and then no generation has to pay any portion of the debt left by previous generations. Thus, a cut in taxes as a result of expansionary fiscal policy will not necessary result in the increase in private savings.

Barro (1989) identifies five reasons why the REP hypothesis does not necessarily hold. Firstly, people do not live forever and, consequently, do not care about taxes that may be levied in future. Secondly, private capital markets are 'imperfect' with a private person's real discount rate exceeding that of the government. The consequence of this fact is that the present value of the extra future taxes

fall short of the current tax cut, and therefore private-person saving will be different to government saving. Thirdly, the REP does not necessarily hold is that future taxes and income are uncertain. According to Feldstein (1976:335) the uncertainty about individuals' future taxes implies a high rate of discount by private individuals in capitalising future liabilities. Consequently discount private saving will be different from government saving. The fourth reason is that taxes are not necessarily lump-sum (non-distortionary taxes). With a lump-sum tax, substitution and income effects (on saving) are neutral. The fifth reason is that the REP results are relevant under the condition of full employment, which condition is not always satisfied, especially in developing economies.

It is important to mention that the best way to assess the interaction between fiscal policy and national saving is by evaluating how fiscal policy affects the components of gross national saving. Gross national saving is made up of saving by households, corporate and general government saving, as well as consumption of fixed capital or provision for depreciation (Mohr, 2007:40). The sum of corporate saving and saving by households constitutes private saving. Because government saving is derived from the government budget surplus, fiscal policy should have a direct effect on government saving in such a way that countries that run a budget surplus will increase government saving and countries that run budget deficits will have a lower or negative government saving. Nevertheless, the manner in which fiscal policy influences private saving should be a matter of empirical analysis unless one is fully convinced that hypotheses such as the REP fully hold.

As far as the literature related to saving behaviour and fiscal policy in South Africa is concerned, Jonsson and Teferra (2001) arrive at the important conclusion that private saving only partially offsets changes in public saving, hence, the existence of partial REP rather than full REP. Both authors believe that the fall in public saving in the 1970s and 1980s is likely to have played a significant role in the reduction of national savings in South Africa. Thus, policies directed toward increasing the national saving rate should aim at increasing public saving. This suggests that fiscal discipline, which is characterised by a low deficit ratio, should provide solutions to increasing national saving. The same view is expressed by Prinsloo (1997), Barr and Kantor (1994) and Tsikata (1998) who believe that policies aimed at improving national saving in South Africa should be focused on raising government's saving rate, rather than the private saving rate. According to these authors, there is an offsetting pattern in the trend of personal and corporate saving (elements of private saving) and not between private and government saving. A rise in corporate saving is completely offset by the fall in household saving and therefore the compositional change in private saving would be of little policy consequence. In explaining the relationship between fiscal policy, government saving and personal saving, Aron and Muellbauer (2000) assert that fiscal policy in South Africa is transmitted to personal saving through rise of income expectations. Fiscal discipline, for example, raises future income expectations above current income and consequently private individuals increase their current consumption and decrease personal saving. For this reason, government saving should be expected to be negatively related to personal income and hence to private saving. In the light of the above there seems to be support of partial REP in South Africa where the positive effect of fiscal policy on government saving more than offsets its negative effect on private saving.

3   Recent development of gross saving in South Africa

Figure 1 shows the trend of gross national saving as percentage of GDP in South Africa. The figure shows that South Africa has experienced a steady decline in its gross national saving rate – which trend started in the early 1980s. While the gross saving rate reached its peak of 33.94% in 1980, the rate was 13.96% in 2006.

The continuous decline in national saving constitutes a cause for concern as a low national saving rate hinders investment-driven growth in the medium term and creates dependence on foreign borrowing for investment financing.

Figure 2 shows the trend of each component of gross national saving. The trend of gross national

saving by GDP seems to be influenced by the trend of private saving. As in Figure 2, contrary to the trend of private saving and gross national saving, the government saving trend started picking up from 1996, depicting an increasing movement with its value becoming positive from 2006. This reflects the effort of the South African government to maintain fiscal discipline, characterised by the low ratio of government's budget deficit by GDP. Fiscal discipline has been an important objective assigned by the GEAR policy.

Gross national saving is important for investment-driven growth. Domestic investment that is largely financed by national saving reduces foreign borrowing exposure to a large extent and consequently reduces the ensued default risk.

The reality in Figure 2 challenges the opinion of many authors that redressing the national saving trend in South Africa should start by redressing government saving. The figure shows that the decline in government saving started to be reversed from 1993 while the national saving has continued its decreasing trend. The trend of national saving did not follow that of government saving. It rather follows the trend of private saving, especially after 1994.

Figure 3 compares gross national saving (saving by GDP) and gross investment (ratio of cap/GDP). The figure shows that before 1994, especially in the period between 1984 and 1994 the ratio of gross saving by GDP has remained above gross investment in South Africa. This can be explained by the isolation of the country as victim of international sanctions as a protest against the apartheid policy institutionalised by the then government. As a result of the isolation, South Africa had to rely on its national saving to finance investment demand. Situations changed with the opening and integration of the country in 1994. The abolition of sanctions by the international community resulted in the increasing inflow of foreign capital and the country could sustain a trade deficit and finance part of the domestic investment by foreign borrowing. Figure 3 indicates that the gap between national saving and investment has increased since 2003, reflecting an increase in trade deficit and large-scale foreign borrowing that finances much of South African's investment.

In order to reduce South Africa's dependence on foreign borrowing and any default or sovereign risk that occurs, as well as to break the low-growth trap endured for decades, South Africa needs to adopt strong policy action to reverse the current decreasing trend of national saving. This is the reason why this study, in its empirical analysis, will assess the extent to which fiscal policy, especially fiscal discipline adopted by the South Africa government in its GEAR policy, will be able to influence national saving. The empirical part of this study will therefore use the SVAR technique to characterise the dynamic impact of fiscal policy on national saving.

4   Data Analysis and Methodology

To characterise the dynamic impact of fiscal policy on national saving, this paper uses the SVAR technique to obtain the response of national saving to fiscal policy shocks. The "traditional" VAR approach to modelling dynamic behaviours of economic variables is widely used to provide insights in forecasting the dynamic of variables through its impulse response functions analysis. Nevertheless, since there are few economic inputs in a traditional VAR modelling, it should not be surprising that there is little economic content in the results provided by the IRF or by the variance decomposition analysis.

What the SVAR model eventually attempts to achieve is to deduce a structural form relationship from the reduced-form VAR, and in this way a VAR can be viewed as the reduced form of a general dynamic structural model. In fact the reparametrisation of Equation 1 below, representing a structural form model leads to a reduced-form relationship as represented by Equation 2.

$$\Gamma Y_t \; = \; B(L)Y_t \; + \; e_t \tag{1}$$

$$Y_t \; = \; \Gamma^{-1}B(L)Y_t \; + \; \Gamma^{-1}e_t \; or Y_t \; = \; B^*(L)Y_t \; + \; \mu_t \tag{2}$$

where Y_t is a $n \times 1$ vector of endogenous variables, Γ is $n \times n$ parameter matrix with ones on the main diagonal and the off-diagonal elements capturing the contemporaneous relationship between the variables. $B(L)$ is a polynomial matrix in the lag operator.

It can be inferred from Equation 1 and Equation 2 that:

$$B^*(L) = \Gamma^{-1}B(L) \tag{3}$$

and

$$\mu_t = \Gamma^{-1}e_t \tag{4}$$

Equation 4 is the core representation of the SVAR model whereby the reduced-form disturbance μ_t is related to the underlying structural shocks e_t. Because structural shocks have an economic interpretation, the IRF thus obtained can be interpreted meaningfully.

The important challenge in a SVAR modelling is to recover the structural shocks e_t from the observed reduced-form innovation μ_t. This refers to as the identification problem. To identify structural shocks, a number of restrictions are imposed on the elements of the coefficient Γ from Equation 4. Because the paper estimates a SVAR with contemporaneous restrictions, two types of restrictions are then imposed. The first restriction, refers to as orthogonality restriction, is imposed on the co-variances of the structural innovations or shocks. This restriction assures that structural innovations are uncorrelated and independent from one another. The second restriction is imposed on the parameter matrix $\tilde{A}$ in order to model the contemporaneous relationship between the reduced-form and structural form innovations. The fact that contemporaneous restrictions are imposed however does not imply that there is no feedback among certain variables in the SVAR structure. The lagged values enter each equation in the SVAR structure and thus all variables are linked together (Breitung, Brugemann & Lutkepohl, 2004: 162).

By using the SVAR technique in assessing the response of fiscal shocks to savings, this paper adds a dynamic dimension in analysing the relationship between fiscal policy and savings (national saving, private saving and government saving), as well as in testing the REP theorem. A number of papers have used cointegration technique in testing the REP where the cointegration technique was used to inform on the long-term relationship between private and government saving without showing how this relationship evolves in time (see for example, Drakos, 2001 and Mandal & Payne, 2007).

To identify the effects of fiscal policy on national and private savings, this paper uses two different vectors. Each vector is made of four variables. The first vector is constituted of the following variables: the ratio of gross national saving by GDP (SAV), the general government budget balance (DEF) represented by the ratio of deficit by GDP, the real interest rate (RATE) and the first difference of the log of permanent or potential output (GROW) calculated by using Hodrick-Prescott (HP) filter. The second vector contains DEF, GROW, RATE and the ratio of government saving by GDP (PSAV). As stated earlier while it is a natural reality that fiscal discipline increases government saving, the implication of fiscal shocks on national and private savings is rather a matter of empirical analysis.

All data series are sourced from the South African Reserve Bank (SARB) quarterly bulletin. Table A1 in Appendix shows the variables used in the model. Usage is made of permanent output in testing for the REP because the proposition relies on forward-looking agents who base their decisions to consume or to save on their permanent income. In the permanent income approach, individuals distinguish between expected and unexpected components of some economic variables, and reformulate their consumption and saving plans accordingly (Seater and Mariano, 1985). With regards to the importance of real interest rate in testing for the REP, Feldstein (1976), on explaining why the REP does not necessarily hold, noted that when the growth rate of the economy exceeds the real interest rate, the government can permanently postpone the repayment of debt and then no generation has to pay any portion of the debt left by previous generations. Thus, real interest rate

should be taken into account when testing for the REP. Furthermore, models based on intertemporal optimisation identify a role of real interest rate in determining gross national saving. There are two possible effects of real interest rates on national saving. Whether gross national saving is positively or negatively related to the real interest rate will depend on the relative strength of the income and substitution effects of changes in real interest rates. The substitution effect of a higher interest rate is to encourage agents to sacrifice current consumption for future consumption and therefore save more. But the income effect is to discourage current saving by giving agents more income in the present and hence more prone to consume than to save (Warman and Thirlwall, 1994). The net effect is ambiguous and should be considered as a matter of empirical analysis.

Contrary to different studies that use structural budget balance as a proxy for fiscal policy in South Africa, the use of the actual budget balance is justified by three reasons: firstly, in South Africa the cyclical components of the general government budget balance represent only a small part of the total balance since the 1970s (Swanepoel & Schoeman, 2003). Secondly, though there are different opinions on how structural balance budget should be calculated in the case of South Africa, actual and structural balance budget have been trending in the same direction since the 1970s (Swanepoel & Schoeman, 2003:815 and Du Plessis, Smit & Sturzenegger, 2007:397). The third reason is related to the aim of this study, which is to evaluate the effect of the observed or actual fiscal shocks on saving. Given the common trend of actual and structural balance budget, the outcome of the SVAR analysis should, relatively, be the same, once either actual or structural balance budget is used.

Annual data from 1970 to 2006 are used in the model estimation. Table A2 present the results of the unit root test of all the data series. The study employs the Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) methodology for the test of stationarity of the data series as it is considered to be more powerful compare to the Augmented Dickey-Fuller (ADF) methodology in small samples (Delong et al., 1989 and Lee and Schmidt, 1996). The results in Table A2 show that all the series are stationary.

The VAR models were estimated with constant, linear trend and two lags (suggested by the Akaike Information Criteria). Exogenous dummy variable was used in the VAR estimation to account for structural break in the national and private savings series. The AR root lag structure indicates that no root lies outside the unit circle; hence, the VAR satisfies the stability condition (see Table A3 and Table A4 in Appendix). The identification condition in the four-variable VAR is represented by the matrix below as:

$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 \\ a_{41} & a_{42} & a_{43} & 1 \end{pmatrix} \begin{pmatrix} DEF_t \\ RATE_t \\ GROW_t \\ SAVE_t \end{pmatrix} = \begin{pmatrix} e_t^{DEF} \\ e_t^{RATE} \\ e_t^{GROW} \\ e_t^{SAVE} \end{pmatrix}$$

Where $SAVE_t$ contains SAV_t or $PSAV_t$. The study uses contemporaneous restrictions to identify structural shocks. The structural shocks are given as $e_t^{'} = \left(e_t^{DEF}, e_t^{RATE}, e_t^{GROW}, e_t^{SAVE} \right)$. The restrictions imposed on matrix A imply that: unanticipated changes in fiscal policy will not contemporaneously respond to national saving and output growth or to the economy in general. This should hold in light of the definition of discretionary or unanticipated change of fiscal policy (Hayford, 2005:985). In setting a_{23} and a_{24} equal to zero, the study assumes that there is a lag response of real interest rate to change in national or private saving as well as to output growth. In setting a_{34} equals to zero, it is assumed that output growth changes directly from the change in investment and indirectly (with lag) from the change in saving. Saving should first influence investment before it impacts on GDP.

5   Empirical Results and Discussion

Figure 4 shows the impulse response functions (IRF) for national saving to the identified structural shocks for a period of 10 years. With the given time period, the study is in a better position to assess the intertemporal implications of structural shocks, mainly fiscal shocks, on national and private savings. It is worth noting that all the series are standardised to keep the same scale for comparison of the effects of shocks.

The results of the IRF in Figure 4 show that SAV declines in response to positive fiscal shocks (fiscal discipline), though this effect disappears over time. This should imply that the effect of national saving to positive fiscal policy shocks is negative in the short term but neutral in the long term. Also, national saving responds negatively to real interest rates shocks. The negative effect of SAV to positive real rate of interest shocks lasts for a period of seven years before it fades away. Figure 4 shows that the response of national saving to output growth shocks is neutral for most of the periods. This is in line with the findings of other studies (see Odhiambo, 2005). The last graph in figure 4 shows that national saving shocks are not persistent. The response of national saving to its own shocks fades away after a period of four years.

Figure 5 shows the impulse response functions for private saving (PSAV) to the identified structural shocks. PSAV responds negatively to positive fiscal shocks. The negative effects of PSAV to positive fiscal policy shocks last for a period of almost five years. Afterwards, the effects become neutral. The second graph in figure 5 shows that private saving responds negatively to real interest rate. The negative effects of PSAV to real rate of interest last for almost five years before the effects disappear. The third graph in figure 5 indicates that the response of private saving to output growth shocks is neutral. The last graph in Figure 5 shows that private saving shocks are not persistent.

5.1   Discussion of the Results

The IRF for national and private savings to the identified structural shocks show that national and private savings respond negatively to positive fiscal shocks (fiscal discipline) for a period of less than six years. The negative response of national saving to fiscal discipline is an indication that in South Africa the negative response of private saving to fiscal discipline policy more than offset the positive effect of government saving to the same policy. Furthermore this finding lends support to the existence of partial REP rather than full REP in a period of less than 6 years. This result is contrary to the findings of a number of studies undertaken for developed countries. In a number of developed countries, the negative effect of private saving to fiscal policy shocks less than offset the effect of government saving to the same shock (Gale and Potter, 2002 and Pesaran and Smith, 1995).

Furthermore, contrary to expectations, there is a negative effect of national and private saving to real interest rate shocks in South Africa. A number of empirical studies conducted on South Africa also support the finding that national saving responds negatively to real rate of interest shocks (Harjes and Ricci, 2005 and Hussain, Mohammed and Kameir, 2003). This should imply that in South Africa the positive income effect of the real rate of interest dominates the negative substitution effect. As stated earlier, the substitution effect of a higher interest rate is to encourage agents to sacrifice current consumption for future consumption and therefore save more. But the income effect is to discourage saving by giving agents more income in the present and hence more prone to consume than to save. The reasons why the positive income effect of the real rate of interest dominates the substitution effect is beyond the scope of the present paper and it is suggested as a topic for further research. Nonetheless, the consequence of this finding is that positive real rate of interest shocks amplify the negative response of private saving. This should probably explain why the negative effect of private saving to fiscal discipline more than offset the positive effect of government saving.

Given the negative response of private saving to positive real rate of interest shocks, not even

fiscal deficit policy will succeed to stimulate private saving and therefore national saving. As fiscal deficit policy leads to an increase in the real interest rates (crowding-out effect), the expected positive effect of private saving from fiscal deficit should probably be offset by its negative effect to positive real rate of interest shocks. Given the decrease in government saving as a result of fiscal deficit policy, the net effect of fiscal deficit on national saving should be negative.

The results of the IRF in Figure 4 show that in the long term the response of national saving to positive fiscal shocks is neutral. This should lead to conclude that change in the fiscal policy have little or no effect on national saving in the long term. While the result may seem to suggest that the REP hold in the long term, it may also simply indicates that the historical movements in national saving cannot be accounted for by fiscal policy shocks. To verify the latter assumption, use is made of historical decomposition.

5.2 Historical decomposition

Figure 6 provides an historical decomposition of SAV in South Africa. A historical decomposition of SAV allows us to assess how much of the movement in SAV can be accounted for by fiscal policy shocks. For this assessment the actual SAV is compared with both a baseline forecast of SAV, assuming no shocks to fiscal policy, and a forecast that includes fiscal shocks. Figure 6 shows that when fiscal shocks improve the forecast of national saving in South Africa, they only accurately accounted for the turning points of SAV in the periods between 1978-1982, 1983-1989 and 1997-2000. These findings show that, while fiscal policy is an important factor in explaining national saving (surely by its impact on government saving), it nevertheless does not account for most of the changes in national saving in South Africa. This should indicate why the long term effects of fiscal shocks are neutral in South Africa. This finding implies that there should also be other important factors (such as extra-economic factors) rather than fiscal policy that can contribute to improve the level of national saving in South Africa. There is currently an urgent call for South African to develop a culture of saving[1]. This leads us to believe that a propensity to save should also be a cultural, rather than only an economic factor.

6   Conclusion

This paper endeavours to assess the extent to which fiscal policy, especially fiscal discipline, affects savings in South Africa. Use was made of the SVAR technique to assess the dynamics of fiscal shocks on the national, private and government savings. The results of the impulse response functions show that the effect of the positive shocks to fiscal policy (fiscal discipline) on the private saving is negative in the short term (less than 6 years). The results of the impulse response functions also show that national saving responds negatively to positive fiscal policy shocks during the same period. These results indicate that the effect of private saving from fiscal shocks more than offsets the effect of government saving from the same shocks. This could be due to the fact that in addition to its negative response to fiscal discipline, private saving also responds negatively to positive real rate of interest shocks. This finding supports the view that partial rather than full REP holds in South Africa in the short term. As far as the long term is concerned, the finding of the paper is that there is a neutral response of national saving to fiscal policy shocks. The paper went further in assessing whether the neutral response of national saving to fiscal policy shocks is the consequence of the REP predictions or that the historical movements in national saving cannot be accounted for by fiscal policy shocks. To this end an historical decomposition framework was provided. It was shown, by historical decomposition, that fiscal shocks impact on national saving only in a few periods of the analysis. On average the effect of fiscal shocks on national saving is neutral. The paper concludes that, while fiscal policy, especially fiscal discipline, is important in increasing government saving,

---

[1]Discussion provided in the article "Dire need for saving culture", published in Finweek of 14 February 2007.

fiscal policy in general fails to stimulate national and private saving. This is mainly due to the negative response of private saving to positive fiscal policy and real rate of interest shocks. We advise for further research that the reasons, particularly, of the negative response of private saving to positive real of interest rate shocks be investigated as this can provide a solution to redressing the decreasing trend in private saving in South Africa.

References

[1] Aron, J. and Muellbauer, J. (2000) "Personal and Corporate Saving in South Africa", *World Economic Review, vol. 14 (September), pp.509-44.*

[2] Barr, G. and Kantor, B. (1994) "the Changing Pattern in South Africa 1970-91*", Journal of studies in Economics and Econometrics, 18(3):59-76.*

[3] Barro, R(1974) "Are government bonds net wealth?" *Journal of Political Economy 82(6):1095-1117.*

[4] Barro, R.J. (1989) "The Ricardian Approach to Budget Deficits", NBER *Working Papers 2685, National Bureau of Economic Research.*

[5] Breitung, J.; Brugemann, R. and Lutkepohl, H. (2004*) "Structural Vector autoregressive modelling and Impulse Response Function in Applied Time Series Econometrics",* Cambridge University Press.

[6] Delong, D.N; Nankervis, J.C.; Savin, N.E and Whiteman, C.H (19890 "Integrated versus Trend stationarity in Macroeconomic Time Series", *University of Iowa Working paper N0. 89-99.*

[7] Drakos, K. (2001) "Testing the Ricardian Equivalence Theorem: Time Series Evidence from Greece", *Journal of Economic Development, 26(1), June, p.1-12.*

[8] Du plessis, SD; Smit, B. and Sturzenegger, F. (2007) " The Cyclicality of Monetary and fiscal policy in South Africa since 1994", *The South African Journal of Economics, 75:3, 391-411.*

[9] Feldstein, M. and Elmendorf, D. W. (1990) "Government debt, government spending and private sector behaviour revisited: comment", *The American Economic Review, 80, 589-99.*

[10] Feldstein, M.S. (1976) "Perceived Wealth in Bonds and Social Security: a comment", Journal *of Political Economy, 84(April). P.331-336)*

[11] Gale, W.G. and Potter, S.R. (2002) "An economic Evaluation of the Economic Growth and Tax Relief Reconciliation Act*", National Tax Journal, 55(1): 133-186.*

[12] Giorgioni, G. and Holden, k. (2003) "Ricardian Equivalence, Expansionary Fiscal Contraction and The Stock Market: a VECM approach", *Applied Economics, 35(12): 1435-1443.*

[13] Harjes, T. and Ricci, L.A (2005) "What drives Saving in South Africa" *In: Nowak, M. and Ricci, L.A (eds) Post Apartheid South Africa: The first ten years, International Monetary Funds, Washington.*

[14] Hayford, M.D. (2005) "Fiscal Policy and National Saving*", Applied Economics, 2005, 37, 981-992.*

[15] Heyns, J.v.d.S. (1995) "The Dimension of Government Saving in South African Policy", *South African Journal of Economics, 63(3), p.308-331.*

[16] Hussain, M.N; Mohammed, N. and Kameir, E.M (2003) "Resource Mobilisation, Fiancial Liberalisation and Investment: The Case of some African Countries" *In: Mkandawire, T and Chukwuma, C (eds) African Voices on Structural Adjustment, Montreal: International Development Research.*

[17] Jonsson, G. and Teferra, H. (2001) "Pattern and Determination of Private Saving in South Africa", *Unpublished, Washington: International Monetary Fund.*

[18] Lee, D. and Schmidt, P. (1996) "On the Power of KPSS test of stationarity against Fractionally-Integrated Alternatives", *Journal of Econometrics, 73(1): 285-302.*

[19] Lopez, J.H.; Schmidt-Hebbel, K. and Serven, L. (2000)"How effective is fiscal policy in Raising National Saving?" *Review of Economics and Statistics 82(2), p.226-254.*

[20] Mandal, A. and Payne, J.E. (2007) "The long-run relationship between private and public saving: An empirical note", *Journal of Economics and Finance, 3(1), March, p.99-103.*

[21] Mohr, P. (2007) *"Economic Indicators",* Third Edition, Unisa Press; Pretoria

[22] Prinsloo, J.W. (2000) "The Saving Behaviour of the South African Economy, Occasional Paper N0. 14, Pretoria: South African Reserve Bank).

[23] Odhiambo, N.M. (2005) "Money and Capital Investment in South Africa: A Dynamic specification Model", *Journal of Economic and Business, 57: 247-258.*

[24] Pesaran, M.H. and Smith, R.P. (1995) "Estimating Long-Run Relationship from Dynamic Heterogeneous Panels", Journal of Econometrics, 69: 79-113.

[25] Prinsloo, J.W. (2000)" *The Saving Behaviour of the South African Economy",* Occasional Paper N0. 14, Pretoria: South African Reserve Bank.

[26] Seater, J.J. and Mariano, R.S. (1985) "New Test of the life-cycle and Tax discounting hypothesis", *Journal of Monetary Economics, 15: 196-215.*

[27] Swanepoel, JA and Schoeman, NJ (2003). "Countercyclical fiscal policy in South Africa: Role and impact of automatic fiscal stabilizer", *South African Journal of Economics and Management sciences, 6(4): 802-822.*

[28] Tsikata, Y. (1998) "Saving in South Africa: An empirical Investigation" *(Unpublished; Washington: World Bank).*

[29] Warnan, F. and Thirlwall, A.P. (1994) "Interest Rate, Saving and Growth in Mexico 1960-90: Test of Financial liberalisation Hypothesis", *Journal of Development Studies, 30(3): 629-649.*
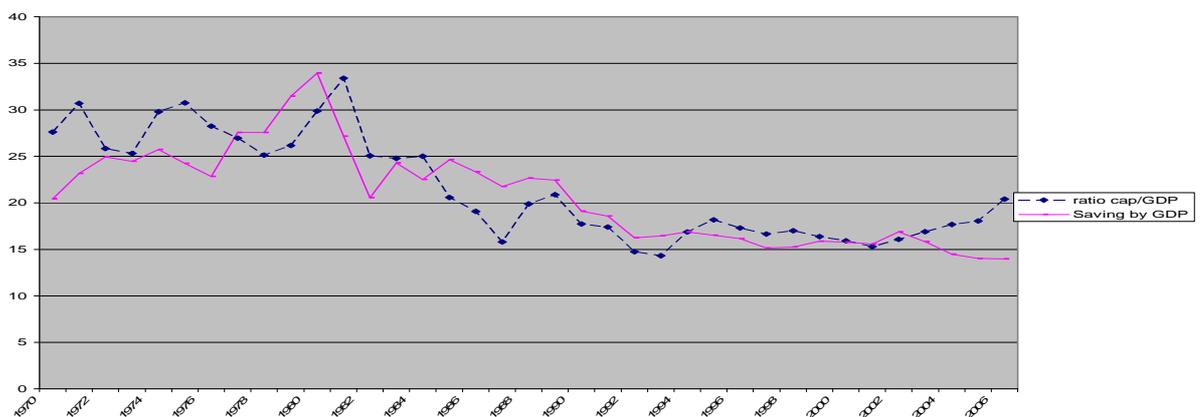
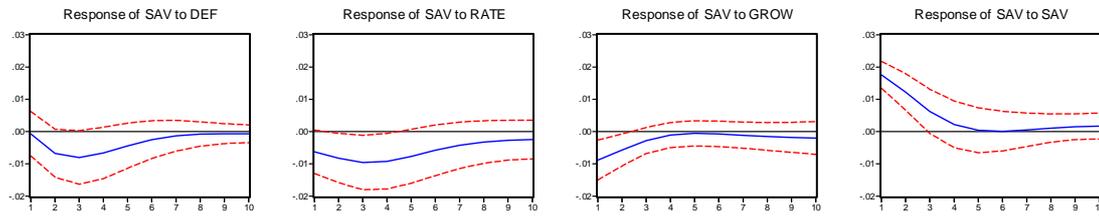**Figure 1: Gross national saving as percentage of GDP**
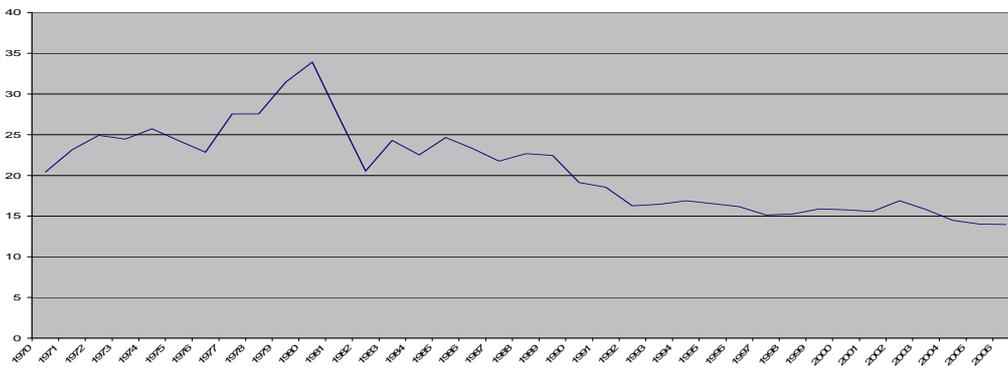
Figure 2: Gross national, private and government saving as a percentage of GDP
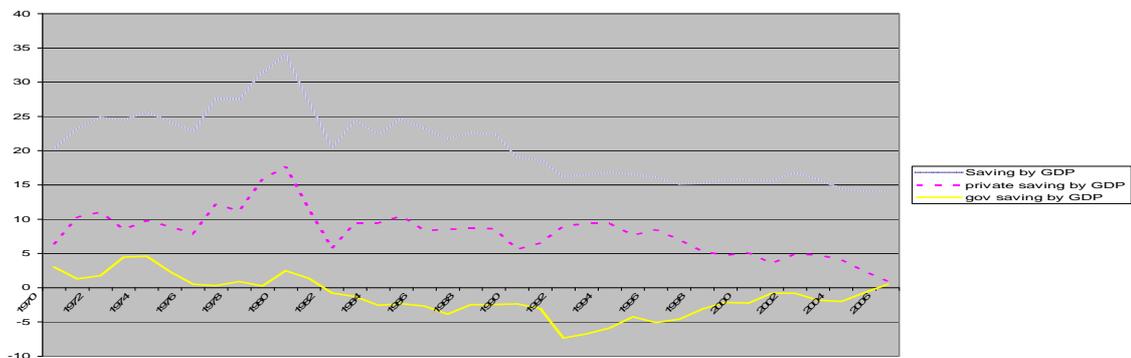
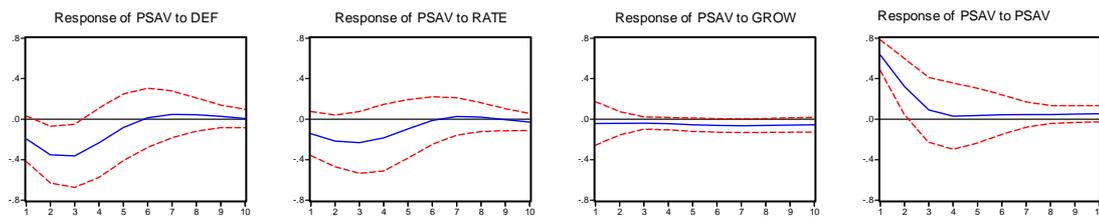**Figure 3: Ratio of capital formation by GDP and gross saving by GDP**

Figure 4: Responses of national saving to one-standard deviation structural shocks
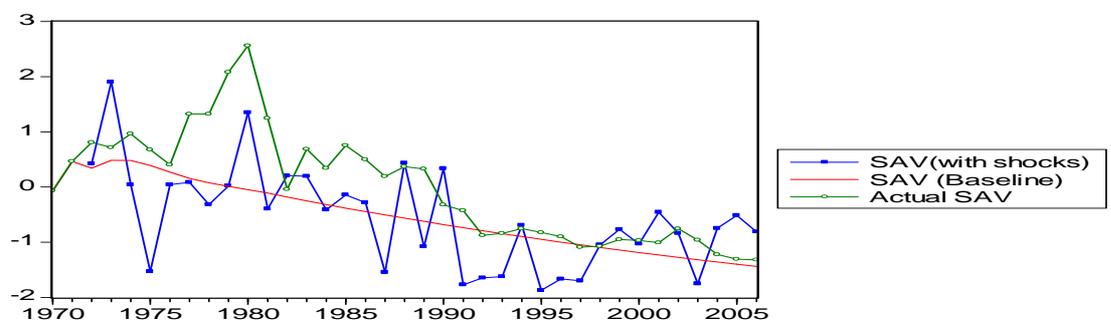

Note: _____ Response Function

 ------ 95% Monte Carlo confidence interval

Figure 5: Responses of private saving to one-standard deviation structural shocks

Note: _____ Response Function

 ------ 95% Monte Carlo confidence interval

Figure 6: Actual SAV, Baseline forecast SAV and SAV with fiscal shocks

Appendix

Table A1 Data

Variable	calculation	Source and code
DEF	Budget deficit as % of GDP	SARB, 4420F
PSAV	Sum of corporate and household Savings by GDP	SARB, 6201J*, 6202J*, 6006Y
SAV	Total saving by GDP	SARB, 6203J*, 6006Y
RATE	Real interest obtained as nominal retail deposit minus inflation	SARB, 2007J, 7032J
GROW	First difference of the log of potential GDP (HP filter of real GDP)	SARB, 6006Y

* Transformed into 2000 constant value

Table A2 Unit root test of different series

Variables	KPSS (LM-statistics)
DEF	0.124323
PSAV	0.162406
SAV	0.119609
REAL	0.090379
GROW	0.18463

KPSS is the Kwiatkowski-Phillips-Schmidt-Shin test for which the null hypothesis is that the series is stationary. Given the 1% level asymptotical critical value of 0.216000, the null hypothesis is not rejected for all the variables.

Table A3 Stability condition of the VAR process, variables: DEF, RATE, GROW, PSAV

Root	Modulus
0.970787 – 0.166256i	0.984921
0.970787 + 0.166256i	0.984921
0.271073 – 0.653733i	0.707706
0.271083 + 0.653733i	0.707706
0.502130 - 0.395307i	0.639063
0.502130 + 0.395307i	0.639063
0.243347 – 0.251517i	0.349969
0.243347 + 0.251517i	0.349969

No root lies outside the unit circle. VAR satisfies the stability condition

Table A4 Stability condition of the VAR process, variables: DEF, RATE, GROW, SAV

Root	Modulus
0.966735 – 0.166848i	0.981027
0.966735 + 0.166848i	0.981027
0.290125 – 0.648406i	0.710354
0.290125 + 0.648406i	0.710354
0.579094	0.579094
0.380527 – 0.417022i	0.564542
0.380527 + 0.417022i	0.564542
0.037449	0.037449

No root lies outside the unit circle. VAR satisfies the stability condition