

# **National saving and Fiscal Policy in South Africa: an Empirical Analysis**

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## 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 in respect of saving is frequently regarded as a prerequisite for higher economic growth in South Africa (Aron & Muellbauer, 2000).

The adoption of the GEAR policy as the South African macroeconomic policy in 1996 has emphasised fiscal discipline characterised by a low ratio of deficit

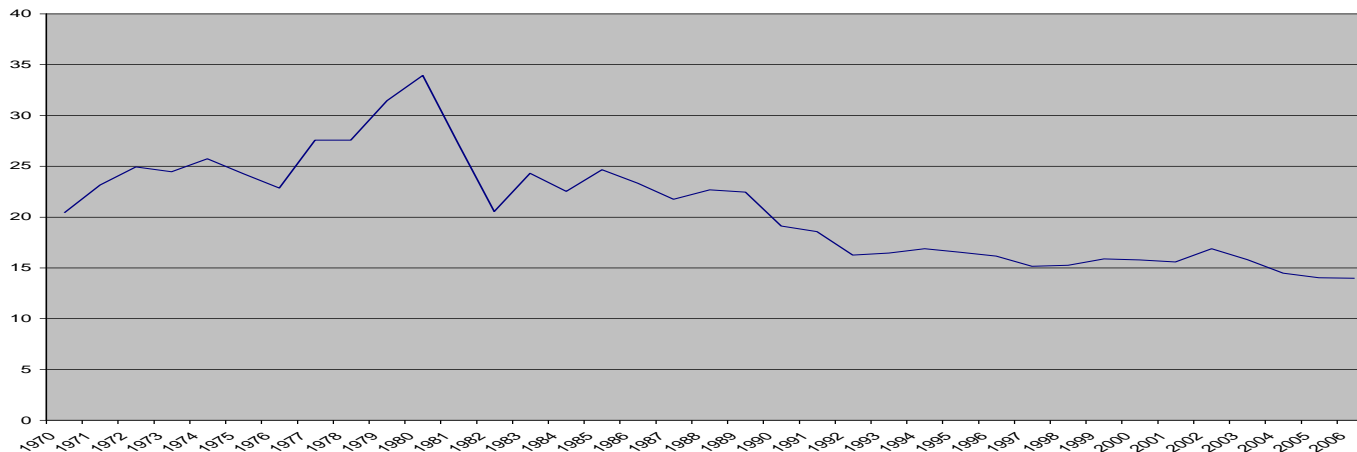
by gross domestic product (GDP) as the anchor of fiscal policy. Is fiscal discipline, as fiscal policy stance, the key to reversing the decreasing trend in national saving in South Africa?

## Focus of the study

To determine the extent to which fiscal policy influences gross national saving in South Africa.

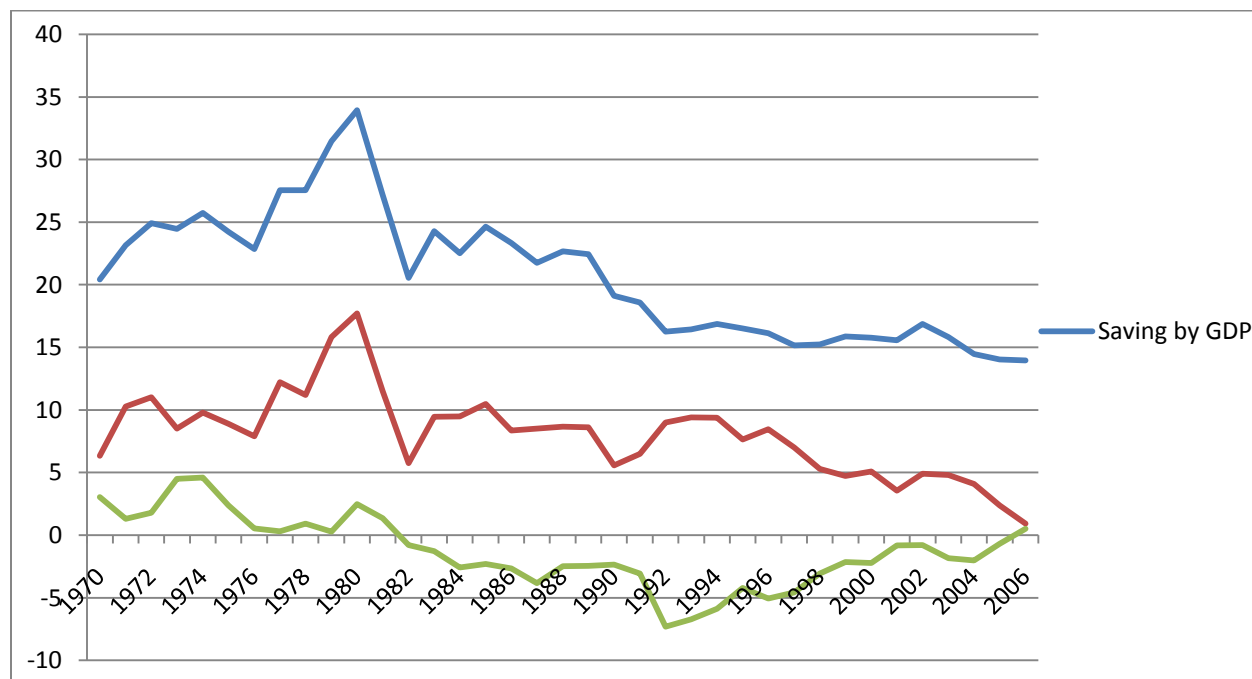
## Recent development of gross saving in South Africa

Figure 1: Gross national saving as percentage of GDP



While the gross saving rate reached its peak of 33.94% in 1980, the rate was 13.96% in 2006.

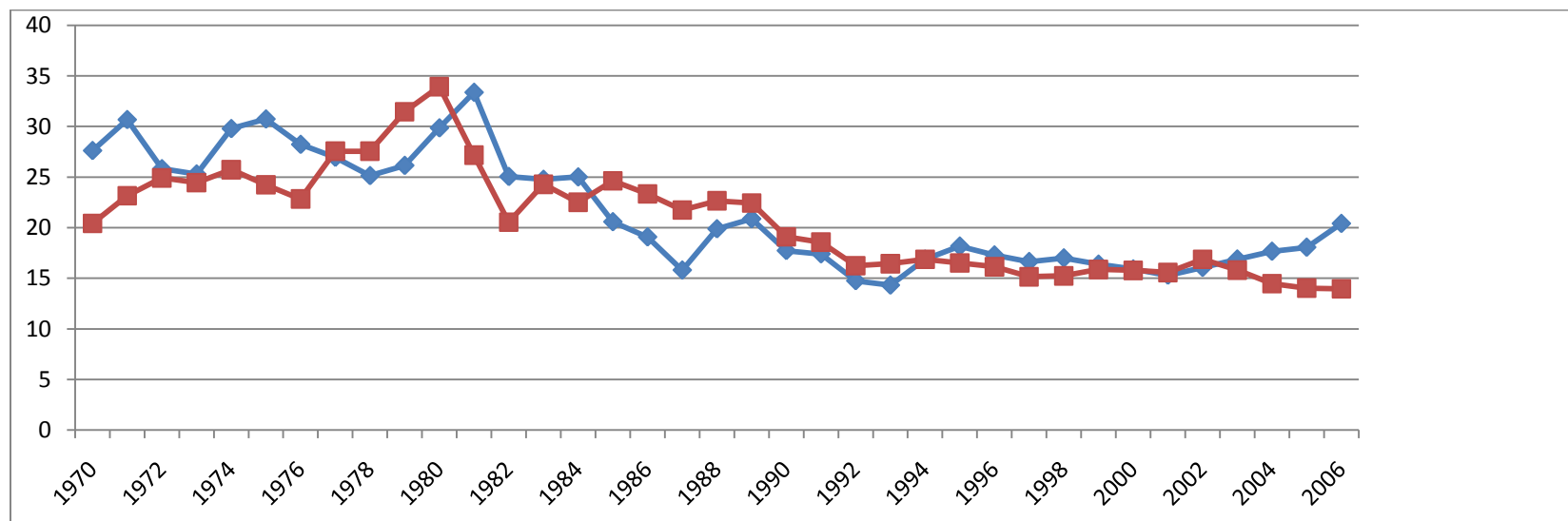
**Figure 2: Gross national, private and government saving as a percentage of GDP**



The trend of gross national saving by GDP seems to be influenced by the trend of private saving.

The reality in Figure 2 may challenge the opinion of many authors that redressing the national saving trend in South Africa should start by redressing government saving. See trend from 1996.

**Figure 3: Ratio of capital formation by GDP (in blue) and gross saving by GDP (in red)**



As a result of the isolation, South Africa had to rely on its national saving to finance investment demand (1986-1994)

Things 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.

To reduce South Africa's dependence on foreign borrowing and any default or sovereign risk that may occur, 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.

Can fiscal discipline as the anchor of the South African policy be a remedy to the low national saving?

## **Data Analysis and Methodology**

To characterise the dynamic impact of fiscal policy on national saving, we make use of the SVAR technique to obtain the response of national saving to fiscal policy shocks from the IRFs.

What the SVAR model eventually attempts to achieve is to deduce a structural form relationship from the reduced-form VAR.

Equation 1 below, representing a structural form model leads to a reduced-form relationship as represented by Equation 2.

$$\Gamma Y_t = B(L)Y_t + e_t \quad (1)$$

$$Y_t = \Gamma^{-1}B(L)Y_t + \Gamma^{-1}e_t \quad \text{OR} \quad Y_t = B^*(L)Y_t + \mu_t \quad (2)$$

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

$B^*(L) = \Gamma^{-1}B(L)$  (3) and  $\mu_t = \Gamma^{-1}e_t$  (4). Equation 4 is the core representation of the SVAR model whereby the reduced-form disturbance  $\mu_t$  is related to the underlying structural shocks  $e_t$ .

So important when determining the effect of structural shocks

The important challenge in a SVAR modelling is to recover the structural shocks  $e_t$  from the observed reduced-form innovation  $\mu_t$  (identification problem).



The paper imposes restrictions on the parameter matrix  $\Gamma$  in order to model the contemporaneous relationship between the reduced-form and structural form innovations.

In assessing the dynamic impact of fiscal shocks on national saving, this paper also attempts to test whether the Ricardian Equivalence Proposition holds in South Africa.

On 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 REP is that an increase in the budget deficit is neutral on national saving.

To identify the effects of fiscal policy on national and private savings, this study 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).

Use 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.

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

Annual data from 1970 to 2006 are used in the model estimation.

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).

The AR root lag structure indicates that no root lies outside the unit circle; hence the VAR satisfies the stability condition.

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 restrictions imposed on matrix A imply that:

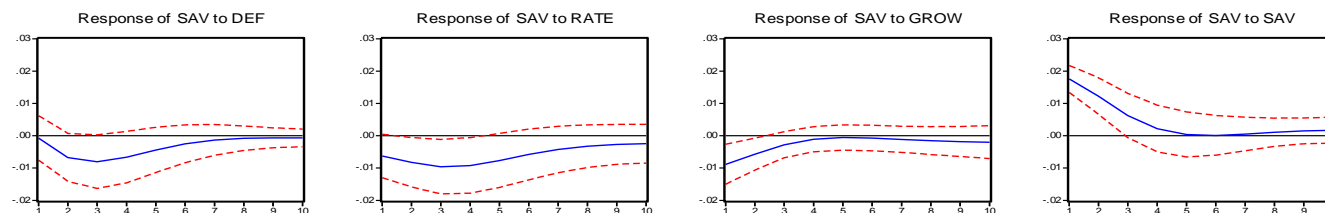
Unanticipated changes in fiscal policy will not contemporaneously respond to national saving and output growth or to the economy in general. This should be true, from the definition of discretionary or unanticipated change of fiscal policy (Hayford, 2005:985).

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.

## Empirical Results

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



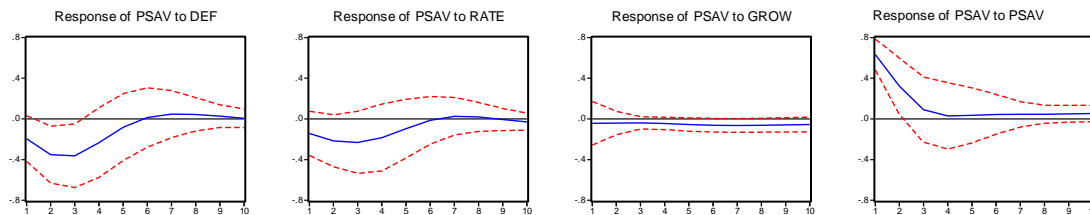
Note: — Response Function  
- - - 95% Monte Carlo confidence interval

The results of the IRF in Figure 4 show that SAV responds negatively to positive fiscal shocks (fiscal discipline), though this effect disappears over time (after a period of six years).

This should imply that the effect of national saving to fiscal policy shocks is neutral in the long term.

Figure 4 shows that the response of national saving to shocks to output growth is neutral for most of the periods. This is in line with the findings of other studies (see Odhiambo, 2005).

**Figure 5: Responses of Private Saving to one-standard deviation structural shocks**



Note: — Response Function  
- - - 95% Monte Carlo confidence interval

## 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 6 years.

The negative response of national saving to fiscal discipline during that period should be an indication that in South Africa the negative response of private saving to fiscal discipline more than offset the positive effect of government saving to fiscal discipline.

This result is contrary to most findings, especially in developed countries, where 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).

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.

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 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.

## Historical Decomposition

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 that 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: Actual SAV, Baseline forecast SAV and SAV with fiscal shocks**

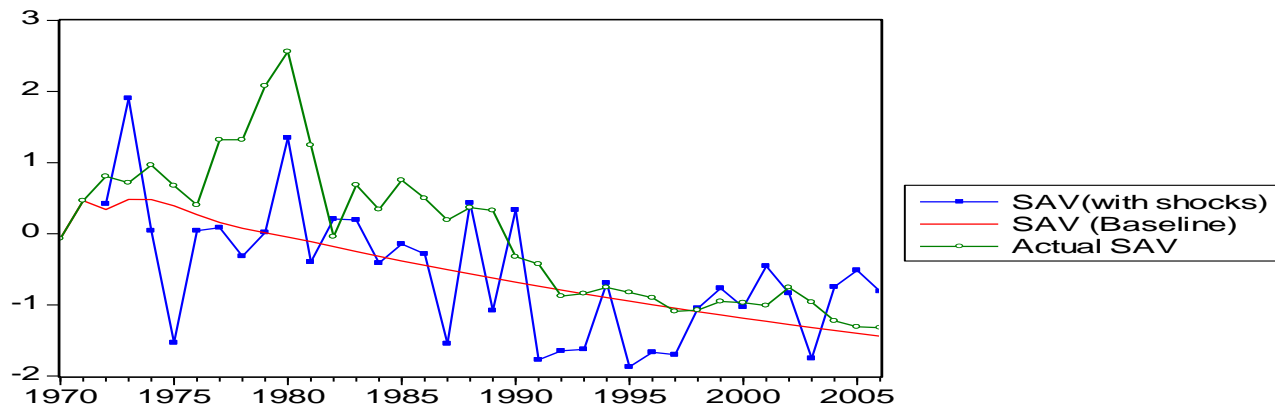


Figure 6 shows that when fiscal shocks improve the forecast of national saving in South Africa, they only accurately accounted for the turning points of SAV in the periods between 1978-1982, 1983-1989 and 1997-2000.

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 saving 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.

## Conclusion

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 should indicate that the effect of private saving from fiscal shocks more than offsets the effect of government saving from the same shocks.

The finding supports the view that partial rather than full REP holds in South Africa in the short term.

Historical decomposition analysis shows 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, fiscal policy in general fails to stimulate private saving.

For Further research, private saving should be disaggregated and find the response of each component to fiscal shocks.