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Macroeconomic effects of fiscal policy changes: A case of South Africa

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ABSTRACT

This study develops comprehensive full-sector macro-econometric models for the South African economy with the aim of explaining and providing the macroeconomic effects of fiscal policy changes in the country. The models are applied to test the effectiveness of fiscal policy actions in an economic environment with existing structural supply constraints versus demand-side constraints and also to detect which components of the fiscal would be more effective in stabilising the economy. Based on the structure of the South African economy and the framework presented, the study concludes that the South African economy can be characterised as one which is embedded with structural supply constraints. Thus, a model which is suitable for policy analyses of the South African economy needs to capture the long-run supply-side characteristics of the economy. A price block is incorporated to specify the price adjustment between the supply-side sector and real aggregate demand sector. The models are estimated with time-series data from 1970 to 2011, capturing both the long-run and short-run dynamic properties of the economy. The results from the series of fiscal policy scenarios suggest that fiscal policy actions are more effective in an economic environment with limited or no supply constraints. Fiscal expansion or consolidation that comes more from government spending changes will be more effective in an economic environment where structural supply constraints are absent while tax revenue changes will be more effective in an economic environment where there exist major structural supply constraints.

1. Introduction

Fiscal policy remains an essential demand management tool of government in stabilising and stimulating economic activity. The last few years have experienced one of the biggest economic crises since the 1930s and the need to stabilise the global economy using fiscal and monetary policy tools became very urgent. This paper deals, however, only with fiscal policy measures.

The literature on fiscal policy changes and its effects on the macro economy are anchored on two different schools of thoughts. The classical view is that government expenditure will completely crowd out private investment and will not have any effect on the economy, while the Keynesian position is that fiscal policy actions are appropriate tools to stabilise the economy in the short-term. However, seminal works anchored on these strong positions have mixed results, with strong arguments in support of fiscal policy having a major impact on output and consumption, while others argue that fiscal policy changes do not have any effects on aggregate demand given that individuals smooth out their consumption pattern over time (Blanchard and Perotti, 1999; Blinder and Solow, 2005; Dornbusch et al., 1998; Ramsey, 2008).

The role of fiscal policy in stabilising the South African economy cannot be underestimated given that about 30% of aggregate domestic demand comes from government consumption expenditure and about 95% of this expenditure is financed through tax revenue. Therefore, fiscal policy should play a big role in affecting the economy especially in the short- to medium-term.

Many empirical studies (Abbas et al., 2010; Afonso and Sousa, 2012; Calitz, 2000; Endegnanew et al., 2012; Gibson and Van Seventer, 1997; Ocran, 2011; Romer and Romer, 2010) (inclusive of the South Africa case) have been carried out on the link between fiscal policy actions and other aspect of the economy such as GDP, employment, inflation and current account. These studies found a significant impact of fiscal policy (tax and expenditure changes) actions on the major macroeconomic variables. But there has been no strong empirical evidence to support the plausibility of which components of fiscal policy (tax or expenditure) would be more effective in stabilising the economy.

Based on the above background, the main objective of this study is to develop and estimate full-sector macro-econometric models for the South African economy.[1] The models are then applied to:

- Test the effectiveness of fiscal policy actions in an economy with existing structural supply constraints versus demand-side constraints; and

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[1] A Similar approach has been established in Akanbi and Du Toit (2011) when analysing the growth-poverty gap in Nigeria.

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- Test the hypothesis of how fiscal consolidation which, comprises entirely of tax increases and fiscal consolidation which, is entirely from government expenditure cuts will be more effective on the macro economy.

This idea is partly a follow-up from the International Monetary Fund (2011) and the current debates (outcome of the global economic crises) on what components of fiscal policy should consolidation come from. In this milieu, the study will enable policy makers especially in South Africa to detect the kind of economic environment they operate in and which types of fiscal policy measures should be adopted.

The results suggest that fiscal consolidation typically has contractionary effects on economic activity especially in the short- to medium-term. Fiscal consolidation is found to be more effective in an economic environment with limited or no supply constraints. In addition, fiscal policy action that comes more from government spending changes will be more effective in an economic environment where structural supply constraints are absent while tax revenue changes will be more effective in an economic environment where major structural supply constraints exist.

The rest of the study is organised as follows: Section 2 evaluates the fiscal performance of the South African economy in which the structural and cyclical components of the budget are identified. Section 3 presents an empirical analysis which contains the model specification, methodology, data description, core structural equations, model closures and the fiscal policy simulations. Section 4 concludes the study, provides policy recommendations and highlights some limitations encountered in the study.

2. Evaluating the fiscal performance of the South African economy — some stylized facts

The stylized facts presented in this section focus on revealing the fiscal performances of the South African economy over the past few decades. It detects the cyclicality of the fiscal policy actions and also reveals the components of the fiscal balances that are cyclical and structural in nature.

Fiscal policy actions have been much more linked to economic performances than most other policies due to its direct and immediate effects on the economy. Counter-cyclical fiscal policies have been widely accepted in the literature as the most appropriate tool to stabilise the economy. Fig. 1 shows the relationship between the fiscal balance as a percentage of GDP and the estimated output gap.[2]

The estimated curve shows that for every 6 percentage point change in output gap, the fiscal balance changes by approximately 2.4 percentage points (translating into a slope of 0.4) over the period 1970 to 2011.[3] This reveals counter-cyclical fiscal policy actions adopted in most of these years. The distribution in Fig. 1 is well spread across the cyclical axis (output gap) but recorded fiscal deficits for all the years except for 2007.[4]

The counter-cyclicality nature of fiscal policy actions in South Africa does not change after 1994 (end of apartheid). Breaking down the series into two components, the apartheid (1970–1993) and post-apartheid (1994–2011) fiscal policy revealed the same counter-cyclical policies with a slope of 0.15 in both periods.

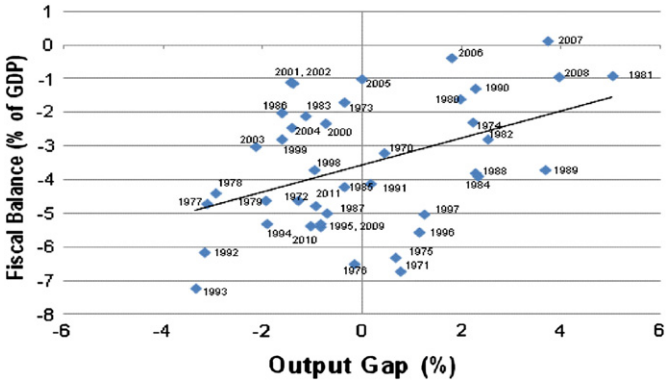

Fig. 1. Cyclicality of the fiscal balance (1970–2011).
Source: South African Reserve Bank and author's own calculation.

In order to understand the implications of the changes in South Africa's economic conditions in terms of fiscal measures, there is a need to break down the fiscal balance into structural and cyclical components. This breakdown is presented in Fig. 2.

The cyclical component reflects the fiscal balance's sensitivity to the cyclical condition of the economy due to the reaction of the automatic stabilisers, while the structural component is the difference between the cyclical and observed balances. To estimate the cyclical component, the BBVA (2012) approach to Spain data was adopted and is presented below:

$$\text{Annual cyclical fiscal balance} = \text{Slope of curve in Fig.1 (0.4)} * \text{Annual output gap.}$$

The series generated as presented in Fig. 2 is similar to the alternative measure adopted in Endegnanew et al. (2012) when trying to capture the non-policy factors suggested by the IMF (2011) as a weakness to the conventional approach to estimating the cyclical components. As shown in Fig. 2, fiscal policy actions since 1970 have been mainly structural in nature with only about 15% of the total fiscal balances on average to be attributed to cyclical fluctuations of the economy.

This scenario is different when comparing the apartheid and post-apartheid era. In the apartheid era, structural balances recorded about 113% of the total fiscal balances, indicating that no policy actions were caused by the business cycle. In the post-apartheid era fiscal policy actions were still counter-cyclical but recorded about 52% cyclical component and 48% structural on average. This swing was caused by the spike in 2007 (fiscal surplus year) and post-crisis (2007) era has been recording a minimal cyclical component.

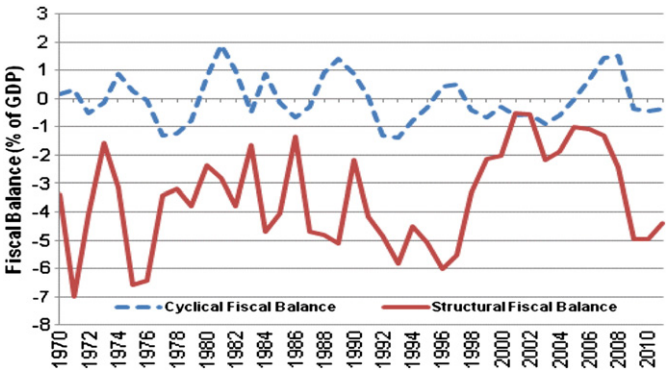

Fig. 2. Structural and cyclical fiscal balance (1970–2011).
Source: South African Reserve Bank and author's own calculation.

[2] Output gap is represented as the percentage deviation of actual GDP from potential GDP in relation to potential GDP. Potential GDP is estimated using the Hodrick–Prescott (HP) filter technique. This technique has been widely accepted as a robust estimate of the potential level of GDP and it's important to note that, the potential output measured in this study do not represent output that could be produced under full employment conditions, but rather viewed as the maximum output that can be produced without causing any inflationary pressures (DeMasi, 1997; Klein, 2011; Okun, 1962).

[3] These estimates are similar to Swanepoel and Schoeman (2003).

[4] Note that series are in yearly 2005 prices which may be slightly different from the fiscal years.