THE EFFECTS OF FISCAL POLICY ON ECONOMIC GROWTH IN SOUTH AFRICA

By

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DECLARATION

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ABSTRACT

The question of whether fiscal policy influences economic growth has dominated the theoretical and empirical debates for a very long time. One viewpoint, the Keynesians, believe that government's involvement in economic activity is vital for economic growth, whereas the opposing view of the Classical economist's holds that government operations are inherently bureaucratic and inefficient and therefore, impede, rather than promote growth. Empirical literature results show a positive relationship between fiscal policy and economic growth; however, some cases do have conflicting results. The aim of this research was to add to the fiscal policy-growth literature by examining the effects of fiscal policy in South Africa as a developing country. South Africa experienced slow but steady economic growth between 1994 and 2009 and an average GDP growth rate of 2,93 percent from 1993 until 2016. Due to the low growth rate, the country has one of the highest unemployment rates in the world, having recorded an unemployment rate of 27.7 percent in the first quarter of 2017, as per Stats South Africa. This study therefore intended to examine the South African fiscal policy experience between 2013 and 2017. The study examined each of the three fiscal policy variables (government spending, tax revenues and budget deficits) and their impact on the economic growth of developing countries, mostly in Africa. Macro-economic time series data which ranged from 2013 to 2017 was used in the application of the SVAR model. The necessary steps needed to make sure that the time series were stationary and appropriate for the SVAR model were taken. From the FEVD and IRF analysis, the null hypothesis was demeaned. The main objectives of the study were to identify whether fiscal policy has a positive or negative contribution to the economic growth of South Africa. Secondly, the study sought to identify which variable of fiscal policy, if any, is most effective when the government seeks to grow the economy. The results of the study indicated that fiscal policy had a zero impact on the economic growth of an economy. In other words, fiscal policy measures are not effective in effecting economic growth to the economy of South Africa. The study also found no variable to be most effective when the government seeks to grow the economy.

LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENTS

CHAPTER ONE – INTRODUCTION AND OVERVIEW

1.1 INTRODUCTION

Fiscal policy is the use of fiscal instruments by government to achieve certain macroeconomic objectives (Havi & Enu, 2014). The government can influence the economy by using fiscal components such as government spending, tax revenues and budget deficits, to either stimulate economic growth in such times as recessions, or reduce and limit economic growth, where it intends to combat rising inflation.

Theoretically, there are two competing theories surrounding the relationship between government intervention and economic growth. The Keynesians theory which argues that because markets do not always correct themselves and find market equilibrium, government intervention, through increased spending and reduced taxes, results in increased purchasing power for consumers and firms, pushing up aggregate demand and stimulating the economy. Contrary to this is the Classical economist theory which holds that markets should be left to themselves, as the 'invisible hand' essentially clears the market, and in the long run, finds market equilibrium where supply matches demand and everyone who wishes to work is employed. The Classical economists therefore believe that there is no significant relationship between fiscal policy and economic growth, (Chipaumire & Ngirande, 2014).

The objective of this study was therefore to examine whether there is a positive or negative relationship between government intervention through fiscal policy, on the growth of the South African economy. Furthermore, the study aimed to establish which of the fiscal policy instruments (government expenditure, tax revenues and budget deficits), if any, is more effective in stimulating economic growth.

1.2 BACKGROUND OF THE STUDY

One of the measures which any government may adopt in an attempt to intervene and stimulate economic growth in a country, is what is referred to as fiscal policy. Fiscal policy is therefore the means by which a government may adjust its levels of spending, tax revenues and budget deficits, in order to influence a nation's output, effectively influencing the economy. Economic growth in any country largely depends on the nature and quality of economic policy (Collier & Dollar, 2011). Countries which provide a good environment for firms and households to save and invest, generally observe economic growth.

Fiscal policy has been one of the means in which the post 1994 government has utilised to provide for economic growth in South Africa. For example, debt as a percentage of GDP has increased

marginally over the past decades, from a high of 40% in the 1960s to 32% in the 1980s. The post 1994 period returned fiscal management to 1960 levels. More recently, the severity of economic recession after 2008 financial crisis led governments across the world to adopt fiscal stimulus measures between 2008 and 2010. According to Constantin & Channing (2018), South Africa was also one of the economies which attempted to reverse budget deficits and increase economic growth by adopting fiscal policy measures post this recession crisis.

1.3 FOCUS OF STUDY

The field of study explored in this dissertation contains components relating to fiscal policy and economic growth. The study was focused on South Africa and the impact of fiscal policy on the country's economic growth. It reviews government spending, tax revenues and fiscal deficits, as well as the effects of each variable on economic growth.

1.4 PROBLEM STATEMENT

The problem of economic growth and high unemployment rates remains a major concern for South Africa's post-apartheid government. Although South Africa experienced slow but steady economic growth between 1994 and 2009, the country is technically in a state of recession, as of the first quarter of 2017, according to Statistics SA (2017). According to Seekings (2010), studies have focused primarily on growth and poverty in South Africa. This quantitative study examined the effects of fiscal policy variables on the economic growth of South Africa.

1.5 PURPOSE STATEMENT

The purpose of this causal study was to test the theory of fiscal policy that relates to the effects of government spending, tax revenues and budget deficits to economic growth in South Africa. The independent variables which include government spending, tax revenues and budget deficits are defined as fiscal policy in this study. Fiscal policy relates to how a government may adjust its levels of spending, tax revenues and budget deficits to effectively influence a nation's economic growth. The economic growth of any country largely depends on the nature and quality of economic policy (Collier & Dollar, 2011). The dependent variable will be generally defined as economic growth. In this view, the study aims to answer the following research questions.

1.6 RESEARCH QUESTIONS

To achieve the main aim of the study mentioned, the research aims to answer the following questions:

1.6.1 Have the aforementioned fiscal policies contributed negatively or positively towards the economic growth of South Africa?

1.6.2 Which component of fiscal policy (government expenditure, tax revenues or budget deficits) would be the most effective in growing the economy of South Africa?

1.7 RESEARCH OBJECTIVES

This research aimed to achieve the following research objectives, namely to:

1.7.1 Identify whether fiscal policy has a positive or negative contribution to the economic growth of South Africa.

1.7.2 Identify which variable of fiscal policy (government expenditure, tax revenues or budget deficit), if any, is most effective when the government seeks to grow the economy.

1.8 RESEARCH METHODOLOGY

The Structural Vector Auto Regression (SVAR) method is used in this study, to measure the impact of fiscal policy on economic growth. The method was invented by Sims (1980) as a method to overcome the identification restrictions which are undesirable in large scale models used in economics. This study makes use of time series data of the macro economy. Boussard *et al.,* (2012) explain that the methodology used in the study of the relationship between fiscal policy and economic growth is of great impact.

For this study, the quantitative approach was followed, as the study aimed at establishing the relationship between variables, as well as the effects of the fiscal policy on economic growth in South Africa.

1.9 EXPECTED OUTCOMES OF THE STUDY

The expected outcomes of the study may be that fiscal policy has either a positive or negative, or zero impact, on the economic growth of South Africa. The study will also suggest which of the three (government expenditure, tax revenues and budget deficits) is most effective when the government seeks to influence and promote economic growth. Fiscal policy therefore supposedly enables government to influence the growth of a nation's economy.

1.10 SIGNIFICANCE OF THE RESEARCH

The results of this study will therefore contribute towards stimulating the slow economic growth of South Africa, by suggesting which of the three variables should be adjusted.

1.11 LIMITATIONS

The main limitation of this study is that it may not test the three fiscal policy variables in isolation, but rather in conjunction with one another. Another limitation was that there may have been other contributing factors to influencing either a negative or positive relation to growth at the time of the study. This may therefore lead into observing fiscal policy in either a negative or positive manner to growth, whereas there were other contributing factors which may have impacted on growth.

1.12 DISSERTATION OUTLINE

Chapter 1: Introduction and Overview

Chapter 1 introduced the field of the study and provided the problem statement. The research questions and objectives are provided, followed by the limitations of the study.

Chapter 2: Literature Review

Chapter 2 reviews literature relating to this study and provides the theoretical framework underpinning the research.

Chapter 3: Research Methodology

Chapter 3 presents the research methodology undertaken to fulfill the objectives of the study.

Chapter 4: Research and Results

Chapter 4 is a presentation and analysis of the results. The macro-economic time series data which ranged from 2013 to 2017 was used in the application of the Structural Vector Autoregression model.

Chapter 5: Conclusions and Recommendations

Chapter 5 presents the conclusion and recommendations for further research.

1.12 SUMMARY

In this chapter, an introduction to fiscal policy was given, followed by the background of the study. The research questions and objectives of the study were laid out, which focus on identifying whether fiscal policy has a positive or negative contribution to the economic growth of South Africa. Chapter 2 presents the literature review and discusses the theoretical framework of the study through models and theories relative to the study.

CHAPTER TWO – LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents literature that is both recent and relevant to this study. Agreement has been found amid policy makers and researchers regarding the use of monetary policy by central banks in order to retort to the cycles of businesses, as compared to the scenario where fiscal policy is used (Fatas & Mihov 2009). An in-depth definition of fiscal policy is given in this chapter. The chapter also discusses whether fiscal deficits positively affect economic growth or not. This chapter provides a review of the broad debate revolving about the problem of varying perspectives on the impact of fiscal deficits on economic growth. among other things, the following issues are discussed in this chapter: the theoretical framework that provide views of Neoclassical, Keynesians and the Ricardian-equivalence theorists. This is followed by a theoretical argument of how the managing variables can impact on the success of fiscal deficits on the growth of the economy. A concluding statement is also given, harmonising the contrasting ideas by presenting a discussion of empirical evidence on the effect of fiscal deficits on the economy.

2.2 BACKGROUND OF FISCAL POLICY & ECONOMIC GROWTH

The link between economic growth and fiscal policy is a crucial topic and has since been a vital concern for numerous policy makers and economists, since it is a representation of plans of government expenditure, budget deficits and the structure of taxation of an economy. The main goal of governments is to better the economic growth of their country simultaneously with better systems of education and low levels of debt (Fatas & Mihov, 2009).

The welfare of an economy is as well determined by economic growth. In recent history, 2008; there was an economic predicament on a global scale, and this reactivated motivation in fiscal policy as a tool for long-term economic growth, as well as development. Fiscal policy has been related to as a process that uses government expenditure and the use of taxation in order to impact on the amount of economic activities. The use of fiscal policy is mainly drawn from the budget of the government (Gupta, 2012). Fiscal policy works with the deliberate actions of a government in the use of money and tax levying, with an aim of impacting on the macro-variables of an economy in an intended way. This includes the creation of employment, lowering of inflation, as well as long-term economic growth (sustainable economic growth). In other words, a fiscal policy has goals such as economic stabilisation. The raising of government spending and lowering of taxation ensures that the economy of a country does not plunge into recession, at the same time higher taxes and lowered spending inhibit an economic boom (Anh& Thang 2010).

Haghithi (2012) explained that in the general neoclassical model of growth, changes in technology, an increase in the supply of labour (physical and human capital), determine the long-run increase in output. The ratio of equilibrium capital-output would be changed as a result of fiscal policy increasing investment of saving incentives. In other words, there would be an increase in the rate of growth in the process of an economy being elevated to a greater output per capita level. However, it would be to restore to its previous level in the long-run (Beetsma, 2011).

2.3. AN OVERVIEW OF FISCAL POLICY IN SOUTH AFRICA

The South African National Treasury has been through different alterations in the previous decades. More importantly, after the early 90s, the reforms undertaken included the programme of medium-term expenditure (MTEF) (Hasset 2009). This programme was undertaken from the late 90s up to the year 2000. There were improvements in the capacity of administration, as well as tax reforms. Currently, the performance of fiscal policy has been diluted. To mention an example, debt, being put as a percentage of national output (GDP-Gross Domestic Product), has marginally risen. Expenditure as part of GDP has noticeably increased in the past decades. The expenditure of consumption by the government has also greatly increased and possibly, this was partially facilitated by greater expenditure of non-wage consumption and much on health, education and related equipment and supplies (Hasset, 2009).

Real growth in the spending by the government on wages and non-wages can also be attributed to the mentioned increased levels. Concerning noticeable increase in the expenditure of consumption after the conclusion of apartheid, it is important to mention that the South African government has since been offering social grants to a larger part of the population (Haghighi *et al.,* 2012). Currently, more than 30% of the population has access to a form of social grant. The transfers comprise pensions for the old age citizens, dependence care, child support, disability, as well as grants of foster care (Ocran, 2011). The size of grants approximately made up 14% of the total spending of the government in the financial year of 2009/10 (Budget Statement, 2009). While the consumption of expenditure is greatly viewed as being unproductive in the literature of economic growth and fiscal policy, it is as well proposed in some sections of the literature relating to social grants; it is referred to as having implications on welfare (Hasset 2009). The implication may actually have some favourable impact on the growth of the long term. However, when there is a consideration of the formation of gross fixed capital, it is seen that the government has been making investments in less amounts, as compared to long ago. In other words, a decline has been seen in the investments (Hasset 2009).

2.4 THEORETICAL FRAMEWORK

According to Barro (1997), numerous theories exist to assist in the analysis of the use of fiscal policy, with the ultimate goal of economic growth. In basic terms, an individual theory results in diverse conclusions relating to how economic growth is affected by the use of fiscal policy. In this section, more focus is given on three main theories namely the neoclassical, Keynesian and the Ricardian approaches of equivalence.

2.4.1 KEYNE'S THEORY

John Maynard Keynes (Lord Keynes) in 1936 was one of the first scholars who hypothesised a theoretical framework on fiscal policy. The theory became to be known as Keynesianism. It rose in the middle of high global levels of unemployment, which was a result of the Great Depression of 1929. The rate of unemployment at that period was more than 22% and the gap of output grew bigger in countries in Europe and also the United States (Barro, 1997: 5). In this state of the economies, Keynes imposed that in order to boost the economies, the governments needed to raise their spending level, and also lower the levels of taxation. More importantly, Keynes noticed gross domestic product as being determined by the aggregate demand in the short run. Depression or recession was an outcome of declining demand of the economy productive capacity, and the solution was demand stimulation. Blinder and Solow (2005) suggest that consumption has a positive effect on the economy.

At this period, this was seen as unorthodox because of the ruling idea that market forces would be responsible for the recovery of the economy, that is, there would be no intervention of the government. In contrast, Keynes argued that regardless of the availability of sufficient productive capacity in an economy, an economy would continue to suffer with high levels of unemployment, if there is insufficient aggregate demand. The view of the Keynesians is that following insufficient demand, there would be poor performance by firms and there would be a decline of profits throughout the economy. A decline of profits would lead business firms to lay off workers and to reduce their production levels. The problems of falling profits and increasing unemployment would advance the lowering of demand, which would result in continuous cycle of the absence of aggregate demand (Fazzari et al. 1998). Keynes adds that monetary policy has no impact in the boosting of an economy from a depression, because it relies on rates of interest, and that in a period of depression, the rates of interest would be near zero, meaning that there would be a liquidity trap (Hasset & Hubbard, 2002).

According to Keynes, in order to get out of such an economic problem, there is need to run a fiscal deficit. He argued that if the spending of the government is increased, demand will not be directly boosted. However, this would set off a knock-on effect of boosted demand from suppliers and workers who would be having increased levels of income due to increased expenditure of the government (Saleh, 2003). Saleh (2003) further argued that Keynesians are of the view that cutting off taxes would lead consumers to have more disposable income, which would in-turn boost demand.

The Keynesian general model of the macro economy shows better results of an economy which can be obtained if the strategies mentioned above would be applied, that is, fiscal deficits. Another main result of this model is that alterations in the taxation and spending of the government would have their economic effect multiplied. By means of tax reduction and increased government spending, there would be an initial increase in the national income, with the value equivalent to the deficit value, and there would also be double effects created by the Keynesian multiplier (Steytler & Powel, 2010).

The Keynesian multiplier's proposal is that if the expenditure of the government increases by a R1, there would also be a R1 rand increase in income and then finally, the national income would increase by more than R1 as an outcome of the multiplier effect. In other words, a fiscal deficit increase does not need to be necessarily proportional to the ruling output gap. Rather, it can be the amount that is just sufficient for covering the output gap, following a secondary effect of the multiplier. It also obeys that consumption and national income stimulation should also affect increased investment, which is referred to as investment accelerator (Gaber 2010). Finally, the fiscal deficit would stimulate the utilisation of capacity and better the business cycle.

There are assumptions in Keynesianism. They include a prospect of surplus production capacity and labour that is unemployed. It is also assumed that there would be a liquidity constraint on the large part of the population (Dwivedi 2010). The first assumption proposes that there would be underutilisation of capacity and therefore, there would be an output gap that is negative in the economy. The second assumption proposes that people can soon after significantly increase their demand as a response to a short-term tax reduction or increased government spending. If an economy is under a scenario that has been described above, it would be working under potential. This is the case in which the Keynesians believe it would be ideal to implement fiscal deficits for the smoothening of economic growth (Fatas & Mihov 2009).

2.4.2 NEOCLASSICAL THEORY

The neoclassical theory is of the view that economic growth is negatively affected by fiscal deficits. Diamond (1965) conducted a seminal work which succeeded in putting the neoclassical argument. The argument was that interest rates would be raised by fiscal deficits and in turn, this would deal out with the accumulation of capital. The neoclassical theory has been forwarded by numerous scholars; Taylor (2009) and Auerbach and Kotlikoff (1987). Halcos and Paizonas (2015) suggest that in neoclassical theory of growth, fiscal policy can only have temporary impact on economic growth.

The neoclassical argument represents a distinguishing upshot which is maintained by the analysis of IS-LM. The analysis asserts that output expansion from fiscal deficit would raise the demand for money. If there is a fixed supply of money, there would be an increase on the interest rates and the accumulation of capital (private investment) would decline. As an outcome, this would lower output and have a tendency of offsetting the multiplier effect of the Keynesian (Taylor, 2009).

The neoclassical theory, just as the Keynesian theory, is also subject to particular assumptions. There is an assumption that gormandisers are rational, long sighted and are able to enter capital markets. Given the assumptions, it can be said that consumers would be improbable in raising their consumption levels as an outcome of an increase in the government spending or tax reduction. It can be drawn from this reason that economic activity may not be stimulated by deficits. It is argued by Bernheim (1989: 59) that considering the assumptions given, there is zero or very little effect on interest rates, consumption and private investment by fiscal deficits.

The solution to business cycle smoothening, as explained by the theory of neoclassical, would be letting the market forces to freely operate, that is, the invisible hand, which is contrary to permitting the intervention of government by means of fiscal deficits. Bernheim (1989: 57) and Taylor (2009: 550) highlighted that the self-modification of wages and prices would assist an economy in restoring equilibrium to an optimum level. The theory proposes that if a negative output gap is created as a result of an economy turning away from equilibrium, there would be a force in the economy, effecting a quick fall of wages and at the same time lowering production costs for the suppliers. Increased output would be an outcome of reduced production costs and this would also cover the output gap, without government intervention.

2.4.3 RICARDIAN-EQUIVALENCE THEORY

This theory proposes that a fiscal deficit would be of no effect on either income or private consumption, regardless of the method of financing used (Dalyop, 2010). This is the same as saying a fiscal deficit does not goad the growth of consumption and therefore, has no effect of expansion to the output. The reason for this is that after the implementation of a deficit, people

would increase their current savings as they would be expecting tax burdens that are increased in the future (Corden 1991). The conclusion for the theory is that there would be no positive effect on economic growth, as a result of fiscal deficit.

The school of thought mentioned is appropriate under several assumptions and they include that:

→ Consumers who are not concerned about the government's sources of finance internalise the budget constraint of the government;

→ Perfect capital markets, this means that the rate of interest for lenders and borrowers should be equal; and that

→ No distortions should be found in taxes.

This theory proposes that there are linkages in generations, which are tied together by generosity and that the present generation would be concerned about the future generations' welfare (Bernheim 1989). The Ricardian-equivalence theory is dismissed by various economists as it is characterised by assumptions that are unrealistic. Some of the scholars include Buiter (2010), Hemming et al. (2002) and Blinder (2004). Blinder (2004) conducted an empirical study in which it was discovered that consumption greatly responds to the present cash income, in comparison with the changes in future taxes. The author also argues that this ideology nullifies the argument of the Ricardian-equivalence. Since this theory is dismissed by numerous scholars, it is ideal to concentrate on the neoclassical and Keynesian theorists on the theoretical debates.

2.5 RELATED THEORETICAL DEBATES

It is important to begin the argument concerning fiscal deficits between neoclassical and Keynesians by showing that this discussion is closely linked with ideological controversy about the role of the government in an economy (Fatas & Mihov, 2009). John Keynes argued that if an economy is left to operate itself, this may result in the economy collapsing and left in a state of deficit. This is the reason why the Keynesians maintain that the proposition by the neoclassical which talks about self-regulating of an economy by means of price and wage adjustments is most likely to fail, hence, the assistance of the government would be required. Fatas and Mihov (2009) pointed that the Keynesians proposed that prices and wages are more likely to be sticky instead of falling, and that if an economy if left for self-regulation after it has collapsed, it would be another ingredient to strengthen the downfall.

On the other hand, the neoclassical economists importune that the intervention of the state would lead to the resources being misallocated in an economy and would always have the same results.

The intervention of the government requires that policy makers have the knowhow regarding the running of the economy (SARB, 2013). This assumption is not very true, since the government would carry out actions so that they may be recognised by electorates to be striving and meeting the interests of vested groups, so doing. The intervention by the government is opposed, for the reason that many times, the programmes of expenditure are made to meet political priorities which are narrow, instead of broader needs of the macro economy (Fatas & Mihov, 2009). This is the reason why they propose that it is better for an economy to correct itself by the invisible hand.

In addition, the neoclassical theorist's express criticism in the fiscal deficits, arguing that they can inhibit the self-regulating of a market and inflate programmes of the public, so that they may stress the tax payers (Fatas & Mihov, 2009). They further explain that fiscal deficits that are financed by means of domestic debt would only mean resource transfer between the public and the private sector, that is, for the private to the public. They further explain that none of these is desirable because economic growth and more jobs are actually an outcome of the private sector (Dalyop, 2010). The crucial idea in the line of neoclassical thinking is that the government is more rigid, as compared to the invisible hand of the market forces. The crushers of the neoclassical theorists propose that increased packages of stimulus are required in order create capitalism that is balanced through investments in important areas, for social welfare and economic growth, and public expenditure increments (Kuttner, 2009).

2.5.1 THE CROWDING OUT ARGUMENT

It has been mentioned earlier that the Keynesians supports the idea that fiscal deficits lead to national income increment with a multiplier effect. There is an advantage in this effect, the fact that it assists in the re-establishment of national output to the maximum potential. However, the neoclassical theorists criticised the claim (Kuttner, 2009). They asserted that the Keynesians do not consider the minor effects of fiscal policy. If a government attempts a fiscal deficit, the credit market would be the finance source by means of borrowing. If there is a fixed supply of money, government borrowing would reduce savings, that is, funds available at the financial markets may result in increased interest rates. High interest rates could lead to consumer spending and private investment crowding out (Arestis& Sawyer, 2003). In other words, the crowding out's effect may, to some degree, offset the effectiveness of fiscal deficit in promoting economic growth.

It can be drawn from the above, that there is interplay between the monetary and fiscal policies. It would then imply that it would not be correct to give an analysis of economic growth and fiscal policy without including monetary policy. According to David and Leeper (2011), many researchers noted that if fiscal and monetary policies are in isolation, they would be overlooking important interactions of the policies in equilibrium determination. This is further supported by

Ilzetzki *et al.,* (2010). Therefore, it is important that the variable of real interest rate in the short term, be included in the model for the analysis of how fiscal policy interacts with monetary policy.

Including the variable of short-term real interest rate assists in the finding of various objectives which include;

→ Comprehending the effect of crowding-out disseminated by the neoclassical economists; and

→ To discover the effect of short-term real interest rate on the impact of fiscal input in the economy, taking into consideration that the SARB (South African Reserve Bank) espouses the targeting of inflation for the framework of monetary policy by means of a Taylor-type rate of interest.

This implies that the reserve bank makes adjustments on the short-term interest rate as a result of inflation and GDP deviating from their levels of stability (Jooste & Naraidoo, 2012). In such scenarios, the part of monetary policy in maintaining an inflation level that is desired, or output by means of alterations in the rate of interest, may counterbalance the input effect of the fiscal policy (Perotti, 2002). This reason led Spilimbergo *et al.,* (2009) and Christiano *et al.,* (2009) to conclude that fiscal policy, under monetary policy targeting inflation, would be a failure. This section aims to clarify the degree to which the conclusion applies to the context of South Africa.

However, it should be noted that Keynesians do not dissipate the chance that fiscal deficits could lead to an increase in the real interest rate and therefore, crowding out investment. They argue that there may be an increase in interest rates, if an economy works above potential output, since under that state, the authorities of money would need to prevent economy over-heating (Fatas & Mihov, 2009). The period during which the fiscal policy is effective is when the output is less than potential, that is, during recession. It is the same period when the rates of interest would be entrapped in the bound of lower limit and tend to respond less to pressure resulting from fiscal deficits. In this time period, the moistening effect of raising the rates of interest on spending (private) would be at minimum. Christiano *et al.,* (2009) explain that due to the above-mentioned reason, the implementation of fiscal deficit would be recommended by Keynesians during recession times.

2.5.2 FISCAL POLICY AND EXCHANGE RATES

The discussion of fiscal and monetary policy interacting also leads to a kind of exchange rate regime which the monetary authorities pursue. Numerous scholars have asserted that the impact of

fiscal policy in the fostering economic growth relies on the exchange rate regime used and also, an economy's capital mobility. This is also supported by Ilzetzki (2010) and Spilimbergo *et al.* (2009). A number of scholars argue for the effectiveness of fiscal policy in exchange rate regimes that are fixed, as the mobility of capital increases. Exchange rate regimes that are fixed would amplify the fiscal multiplier, if there is mobility of capital, since there is need for the exchange rate to be kept is parity (Jooste *et al.*, 2012; DeCastro & Salto, 2012).

Despite that the exchange rate regimes come in a variety of mixes; it is argued that there are only two regimes that are extreme, and these are floating and fixed exchange rates (Van der Merwe 2004). The first quarter of 1995 is the period regarded as having an exchange rate that is flexible. According to Gupta (2012), 1995 is when South Africa evolved into the flexible exchange rate regime. It is also essential to assess how the element affects the potential of fiscal policy in the country, by taking it as a dummy element in the SVAR model.

2.5.3 FISCAL POLICY AND REAL EXCHANGE RATE

Real exchange rate is an important variable of monetary policy which should not be looked past in studies about the effects of fiscal policy on an economy, the reason being that real exchange rate assists in the investigation of the economy's competitive position following the occurrence of fiscal shock. In theory, De Castro and Garrote (2012) assert that fiscal deficits cause exchange rate appreciation. This was also noted by Kiechner (2011) who discovered that if the government consumption is increased, it would affect real exchange rate appreciation in the long-run. Beetsma *et al.* (2008) found that the shocks of government spending do not merely cause an appreciation of the real exchange rate, but further goes on to increase budget deficits and trade balances which are negative as well. This is furthered agreed by Saleh (2003) who asserts that raising a budget deficit could affect pressure on interest rates which would lead to the inflows of capital and exchange rate appreciation, which ultimately causes an increase in the deficit of the current account.

2.5.4 FISCAL POLICY AND ECONOMIC OPENNESS

According to Leeper (2015), if a government increases spending in an open economy, this would cause a replacement of locally manufactured goods by products which are imported. This is as well supported by Boussard *et al.* (2012) and Spilimbergo *et al.* (2009). Daylop (2010) indicates that if a government increases spending in an open economy, this does not merely cause the replacement of local goods by the foreign goods but would also cause increased demand for foreign assets as well. This comes up because of surplus supply of money which would be an

outcome of the instruments of debt depicted on the central bank (Dalyop, 2010). It also results in domestic absorption and therefore, the expansion of imports as a result of deficit in the current accounts (Corsetti &Mueller, 2012). For this cause, it is argued that many open economies are characterised by bigger import propensities and in economies like that, fiscal policy is less effective, in comparison with partially open and closed economies (Dalyop, 2010).

However, Keynesians recognise the negative influence which fiscal policy may put on the external sector and therefore, on economic growth as well. The results explained above are supported by Saleh (2003). They agree with the notion that the impact of fiscal policy may be negatively affected, according to the openness of an economy. It is also contended that this is possible if incremental liquidity greatly causes imports to increase, in comparison to local output (Dalyop, 2010). For this cause, it is proposed that a local economy should have the ability to take in extra liquidity by increasing their output, since this would cause fiscal policy to be more simulative (Dalyop 2010).

2.5.5 FISCAL POLICY AND SAVINGS

Neoclassical economists are also concerned that fiscal deficits effect reduced savings in an economy. They believe that there may be economic repercussions in the long term, resulting from the reduction on savings in an economy. Their belief is that the sum of savings includes the government savings, business savings, as well as individual savings (Chowdhury, 2004). Fiscal deficits could cause low savings and then an economy would either borrow more from abroad or lower their plant and equipment investments. Both these solutions could also lead to undesirable results in the long run. Investment at lower levels would affect lower stock of capital, as well the lowering of an economy's potential of output production in the future. If the foreign debt is increased, this would mean that the local economy would be forced to move much of its gains or profits to foreign economies, at the detriment of the local economy (Chowdhury, 2004).

On the other hand, Keynesians defend against the above criticism; they propose that fiscal policy does not always cause reduction of savings from an economy. An increase in demand, which is accompanied by fiscal deficits, could better profits in the private investment and therefore, this leads to elevated investment levels, despite the given interest rate (Eisner, 1989). Therefore, it may be concluded that investment and savings may be stimulated by fiscal deficits, regardless of increased interest rates.

2.5.6 ECONOMIC MEASURES (SUPPLY AND DEMAND)

Fiscal deficits have been crushed by anti-Keynesians because they do not support the supply side economic principle. This is according to Brunner (1982), who proposes that the main element in steering the growth of an economy is not the spending by the consumer, but rather, the production taking place in the economy. It is half-witted to concentrate on consumer spending, as proposed by supply side economists. This is because consumption follows production. They argue that if prosperity is obtained by the spending of consumers, it may look as prosperity in appearance, but in actual fact, it would be the contrary. Finally, the supply of the factors of production is essential in the growth of an economy, and not the demand. According to Bernheim (1989), concentrating on increasing total demand by means of deficits would not affect economic growth, but rather causes inflation.

In response to the above, the Keynesians argue that recession is a result of insufficient demand which has been explained earlier in this chapter. In order to cover for the scenario, demand should be boosted by means of raising spending, and also lowering of taxes, which include using a fiscal deficit. This would foster spending by consumers, national output, as well as investment by businesses (Fatas & Mihov, 2009). According to Feldstein (2009), it is pointed that the impact of spending by the government is needed to foster the demand of consumers, as well as spending by businesses, and in the absence of the mentioned solution, it is believed by Keynesians that there would be a longer and serious economic recession.

Another issue that is debated among the schools of thought is the degree to which the confidence of consumers is boosted by fiscal deficits. It is proposed by Keynesians that the confidence of consumers can be fostered by stimulus spending, by indicating to the minimum, the idea that there will be a normal operation of an economy. According to Dalyop (2010,), fiscal deficits boost an economy in the short term, through making households seeing themselves as wealthier, which would have an outcome of increased spending of both private and public consumption. Bettered economic activity may result in increased aggregate demand. This would lead to the formation of capital and increased savings. As a result, firms and individuals would be prompted to raise their spending, much that they otherwise could. Consequently, this would positively impact on the economy.

2.5.7 FISCAL POLICY AND PUBLIC DEBT

The disagreement between the schools of thought is centred in the topic of debt. It is argued by the neoclassical theorists that fiscal deficits would damage the economy by means of increased

obligations of future debt (Sidman & Lewis, 2009). A heavy weight would be placed upon future tax payers as the government commits to debt servicing.

However, the raising of debt in the time of recession is justified by Keynesians, on the basis that it would lead to the fostering of growth, but because of that, effecting revenue increases, which would then be used to cover the debt. According to Feldstein (2009), when a recession is about to end, the ratio of debt to GDP for an economy would rise. As a result of this, there can be development of policies such as slowly reducing the expenditure by the government, in order to limit the burden of debt and have a position of fiscal surplus.

2.6 ASSOCIATED LITERATURE ON EMPIRICAL EVIDENCE

Considering the theoretical debate that has been presented, the right position regarding the impact of fiscal deficits may be strengthened by means of empirical evidence. In this section, the empirical evidence which relates to the impact of fiscal deficits which are formed by various kinds of fiscal shocks is provided. It concentrates on the evidence of tax and spending shocks, short and long-run outcomes of fiscal deficits, and also the outcomes of fiscal deficits in less developed countries and more specifically, South Africa.

2.6.1 IMPACT OF TAX CUTS

The state may make use of tax cuts (rebates) as a fiscal method in order to foster investment and consumption, and therefore, economic growth. Literally, there is mixed evidence concerning the impact of changes in tax on the growth of an economy. According to Riera-Crichton *et al.* (2012), a tax shock refers to the reaction of output following tax changes.

Johnson (2006) made use of data from a survey of consumer expenditure in the investigation of the effect of tax rebates on the expenditure of consumers. This was done in the U.S. following the economic recession of 2001. It was established that the spending by consumers is increased by tax rebates, however, on non-durable goods. Agarwal *et al.* (2007) also examined the effects of tax cuts and found that consumers make use of the money they benefit from the tax cuts to cover any debts on their credit cards and then after that, they purchase more goods. This counters the suggestion by the Ricardian-equivalence scholars, which proposes that consumers do not react to tax rebates by raising their present purchases. According to Romer and Romer (2007), a 3 percent increase in GDP is usually a result of a tax cut of 1%, that is, in approximately two years' time frame. This shows that tax cuts positively affect GDP.

From a business investment point of view, much of empirical evidence indicates that there are significant and positive economic effects as a result of tax cuts. However, there are some which disagree with the view that business spending and consumption are effectively stimulated by tax cuts. Another survey was undertaken following the global recession of 2008. This was undertaken by Shapiro and Slemrod (2009), whose survey revealed that twenty percent of the participants aimed to raise their spending on consumption because of the tax rebates reason. A data presentation was done by Taylor (2009) and it indicated that the tax rebates which were announced for the United States economy for the year 2008, had a negative effect on the expenditure for personal consumption, although it leads to an increase in the disposable income.

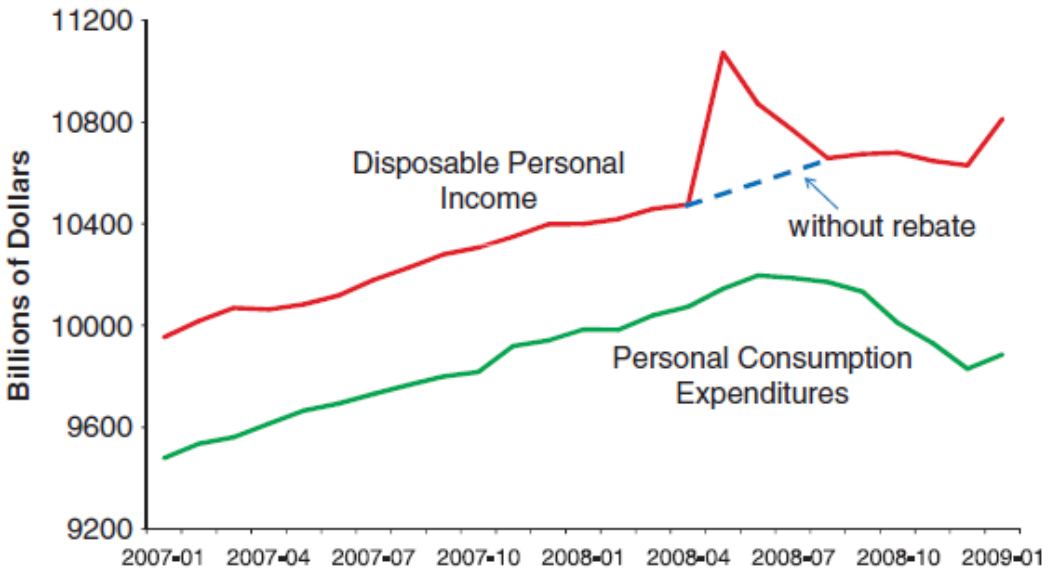


Figure 2.1: Impact of Tax Shocks

Source: Taylor (2009)

The finding presented here are agreement with the theory of permanent income, which suggests that people react marginally income increases that are temporary. In different words, the results indicate that tax rebates negatively affect the expenditure of personal consumption and therefore, does not foster economic growth.

For the business investment question, Auerbach and Kotlikoff (1987) carried out simulations of policy, depending on the effect of short-term lowering of income tax on the accumulation of private capital. It was concluded that there is a small effect in the short run on private investment. For example, it was found that short term lowering of income tax rates in a four to five-year period

could affect approximately twenty percent increase in savings in the initial year. However, in a state of stability, there would be a fall in the per capita capital by 7, 5 percent (Auerbach & Kotlikoff, 1987). This proposes that there is a small positive effect on business investment.

2.6.2 IMPACT OF GOVERNMENT SPENDING

According to Spilimbergo *et al.* (2009: 3), the shocks of government spending estimate the variation in the national income as an outcome of a change in government spending. Many results by Keynesians anticipate a positive impact on the output of an economy, resulting in government expenditure. The Organisation for Economic Co-operation and Development (OECD) presented results from different economies, which indicated that there was a significant positive economic effect which resulted from government spending (Fatas & Mihov, 2009). Barrell *et al.* (2004: 899) also found a significant and positive effect of government spending in an economy.

However, all the above claims are rejected by anti-Keynesians. Barro (1981) differentiated between the effects of government expenditure on the national income, out of an economy for military and non-military. The author concluded that an increase in the military spending would affect a small economic growth, as compared to government spending on non-military, which would have a negative effect on the national income. The author further explains that exports would be negatively affected, following high government expenditure.

Fatas and Mihov (2009) argue that the results explained above relied on the spending shocks of military equipment in a period where the output was actually above potential. In other words, the rate of unemployment was so low. In such a scenario, spending by a government would tend to create a little effect on economic growth. Fatas and Mihov made use of the neoclassical methodology by Barro (1981), to give an estimation of the impact of spending in the late 1900s. Initially, they discovered that there was a positive effect, even when there was output below potential. They attempted this later and again found an even larger positive effect. In addition, Ramey and Shapiro (1999) despise the view of the Keynesians when they conducted investigations of fiscal deficits in an economy. Their results concur with the neoclassical anticipations, that shocks of spending have zero effect on consumption and wages. However, a question can be raised concerning their results, since they do not talk of the impact of government spending on economic growth, in different times. In other words, they only carried out their investigations during war times, so it does not imply the results would be similar in times of peace, for instance.

2.6.3 SHORT-RUN AND LONG-RUN EFFECTS OF FISCAL DEFICITS

Various studies have inquired into either the long-run or short-run effects, or for both, of expansionary fiscal policy. There are great variances in the results. Perotti (2005) discovered that short-run shocks to the expenditure by the government would raise consumption, national output, as well as real wage, which is in agreement with Keynesianism. However, Hemming et al. (2002) discovered that there is a zero effect on output resulting from government expenditure, in the short-run.

Most of the literature reveals that there is a negative outcome on the analysis of economic growth and fiscal policy in the long run (Fatas & Mihov, 2001). There is only one study which indicated a positive outcome in the long run, and the study was conducted on a Chinese company (Li, 2010).

Various studies provided assorted results concerning the impact of fiscal deficits on the short and long run. Edelberg *et al.* (1999) demonstrated that there is a positive impact by expenditure of the government in the short run. However, after a period of one year, the impact would begin to fall continuously. The model of the neoclassical was used by Barro and Redlick (2009) in arguing that the effect of government expenditure in the short run could be positive, however, the impact tends to be near to zero. According to a study by Ilzetzki *et al.* (2010), a negative effect was found in the short term and for the long and medium term, the impact varies greatly on the basis of the characteristics of an economy.

2.7 FISCAL POLICY AND ECONOMIC GROWTH IN DEVELOPING COUNTRIES

Studies on the impact of fiscal policy in developed economies have been done extensively, as compared to developing countries. As already discussed, the effect of fiscal policy in developed economies varies. Romer and Romer (2007) discovered a positive link between tax rebates and spending on consumption. House and Shapiro (2008) further explained that there is a positive result on investment, following tax cuts.

In opposition, Taylor (2009) discovered that spending consumption is negatively affected by tax cuts, whereas Aurbach and Kotlikoff (1987) found that it is private investment which is negatively impacted by tax cuts.

In view of the shocks in government spending, a study was carried out in various countries including Japan, the U.S. and the Euro area, and it was reported that spending has a positive effect on GDP. In the Germany economy, there was a positive result in GDP, as a result of government spending (Barrel *et al.,* 2004). On the contrary, it was concluded that an economy's GPD is negatively affected by government spending (Barro, 1981; Shapiro, 1999).

The above gives the impression that fiscal policy may be an effective tool in fostering the growth of an economy in many cases. Spilimbergo *et al.* (2009) argued that the reason could be that the impact of fiscal policy depends on diverse characteristics of an economy, which also include the extent of economic openness, the extent of fiscal deficit, as well as the monetary policy regime followed. This is the reason why in examining developed countries, the effects of fiscal policy on the economy are both negative and positive. To some extent, similar reasoning can be implemented for developing countries such as South Africa, and this is illustrated in the following section.

2.7.1 FISCAL POLICY AND DEVELOPING COUNTRIES

This section highlights that different economies are differently affected by economic policies and the extent depends on the strength of an economy. Most times during the suggestion of global economic policies, there is an assumption that the impact of the policies would be similar across economies (Martins, 2010). It is noted in this section, that the economic, social and institutional features of economies differ between developing and developed economies. South Africa is one of the developing countries and this may make the results of fiscal policy in developed countries inapplicable. For this reason, empirical evidence is given, of the impact of fiscal policy and economic growth in developing countries.

In general, many developing countries depend on fiscal deficits for growth acceleration (Chowdhury, 2004). It is because most of them are not equipped with sufficient resources to effect growth. In addition, there is uncertainty in developing countries, when it comes to capital flows and investment (Chowdhurry, 2004). Therefore, fiscal deficits become the sole or primary means of fostering economic growth. The evidence relating to the impact of fiscal deficits is also mixed. Ilzetzki *et al.* (2010) conducted a study, making use of a Vector Auto Regression (VAR) in order to give differences and similarities in the effectiveness of fiscal policy and economic growth between developing and developed economies. It was found that in developing economies, the reaction of output to the increase consumption by the government would be less compared to countries of high income (Ilzetzki *et al.,* 2010).

Several other studies forward the idea of making use of fiscal policy in developing countries. Chowdhurry's (2004) study concluded that more fiscal deficits should be used in developing countries, as compared to the developed, since the deficits do not cause investment crowd, but also do not negatively affect the exchange rate. The conclusions of the neoclassical economists are dismissed by Vegh (2012) who argued that they do not consider the differences in institutions between developing and developed countries.

The foregoing results give a strong insight relating to the Keynesian model between developing and developed countries. It has been explained above, that investment crowd out can be a result of fiscal deficit (Eisner, 1989). Largely, the effect of fiscal policy on economic growth, as well as investment in developing countries, is positive. This would then give the need for the theoretical framework of the Keynesians, which is focused on the economic and institutional features of developing economies. It is indicated above, that a framework as such would allow the establishment that assuming a large capacity of production and less aggregate demand, there would be positive effects from the fiscal policy. This is more likely when it results in any type of spending, either investment or infrastructure. This study considered the impact of fiscal policy and fiscal deficits in South Africa, by applying the Keynesiman perspective on developing countries.

2.8 FISCAL POLICY IN SOUTH AFRICA

South Africa is known for the best prolonged economic stability (Spilimbergo *et al.*, 2009). It was pointed out that the inflation level was stable and very low, and that there was also stability in interest rates, fiscal debt and deficit, and the growth of GDP (Aron & Muellbauer, 2005).

Du Plessis *et al.* (2008) agreed to the finding that significant improvements in an economy can be a result of smooth transition in politics, which also occurred following after the initial democratic election of the country in 1994, and this gave more certainty in the investors. However, this significant growth was disrupted by the catastrophe of 2008, the global recession which negatively affected the global economic growth. Steytler and Powel (2010) explained that the country had an overall decline in GDP of about 2% in the year 2009, as a result of the recession and around a million citizens were left unemployed. It has been discussed that the monetary policy may be ineffective because of the liquidity trap. According to the Keynesians, the main choice available is fiscal policy. A stimulus package was released by the country and amounted to US$ 7,5 billion to be used in a three-year period, as a reaction to reaction.

Earlier in time, be the exercising of the discretionary policy in 2008, it was pointed out by the then Finance Minister, Trevor Manuel, that the discretionary fiscal policy be implemented. However, Calitz and Slebrits (2003) indicated that the authorities of South Africa have never wanted to implement counter-cyclical fiscal policy ever since the eighties. Discretionary fiscal policy was not only shunned by South Africa; it was also deserted by numerous economies as they grew into preferring a more market approach, because of the experiences of stagflation which occurred in the late 1900s (Blinder 2001).

The assessment of the effectiveness of discretionary fiscal policy in the country is mixed. According to Ocran (2009), fiscal policy has a small impact on the growth of an economy, while

the consumption by the state, as well as spending on investment, gave positive effects on the outcomes of output. Jooste et al. (2012:) indicated that in the short run, GDP is lowered by tax increases and the effect in the long run is of consideration. According to the South African government spending, at times there are positive results produced in the short-run, as well as non-important long-term impact.

2.9 CONCLUSION

It has been indicated that there is no conclusive argument to give a general conclusion regarding the relationship between fiscal policy and economic growth. However, to a larger extent, evidence proposes that in the case of developing countries, such as South Africa, fiscal deficits are effective, as concluded by Jooste et al. (2012:). This is because of a variety of elements such as time horizon, the characteristics of policies used in the economy, and the assumptions applied. The economic situation has a great impact on the working of fiscal policy on the growth of an economy. The assessment of the effectiveness of discretionary fiscal policy in the country is mixed. According to Ocran (2009), fiscal policy has a small impact on the growth of an economy, while the consumption by the state, as well as spending on investment, gave positive effects on the outcomes of output. Jooste et al. (2012:) indicated that in the short run, GDP is lowered by tax increases and the effect in the long run is of consideration. According to the South African government spending, at times there are positive results produced in the short-run, as well as non-important long-term impact.

Chapter 3 presents the research methodology which followed the quantitative approach in order to analyse the effects of fiscal policy on the economic growth of South Africa.

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter has given a description of literature on the components of economic growth and fiscal policy. The chapter also described how the variables are related, as well as the objectives of fiscal policy, including their impact on economic growth. The effectiveness of fiscal policy was highlighted, and the chapter also included other elements which are related to fiscal policy such as monetary policy. This chapter describes the research design undertaken to answer the study's research questions. The chapter proceeds as follows: it describes the research paradigm informing the study, the research design, data collection and analysis, ethical considerations, as well as issues of validity and reliability.

In order to determine the impact of fiscal policy on the growth of the economy, an evaluation of the functions of impulse response and the decomposition of error variance in forecasting would be required. This would be the research design for the study. This study also makes use of time series data of the macro economy, as well as the Structural Vector Auto Regression method (SVAR). The method was initially used by Blanchard and Perotti (2002) when they studied the economy of the US. The method has also been used widely in the recent years in the same and related fields. This chapter include the methodologies which are used to assess the relationship between fiscal policy and economic growth, the evaluation of time series data that was used in this study, the methods of econometrics which are used for measuring the impact of fiscal policy, and then the conclusion for the chapter would follow.

3.2 RESEARCH DESIGN

Lewis *et al.,* (2011) define research design as a method that is used by a researcher in carrying out the study. Throughout the process of research design, the stages and the sequence of the research process should be made clear by the researcher so that the researcher may be able to predict and forecast any eventual bias.

3.2.1 QUANTITATIVE RESEARCH

For this study, the quantitative approach was followed, as the study aimed at establishing the relationship between variables, as well as the effects of the fiscal policy on economic growth in South Africa. Gurns and Grove (1993) define quantitative research as a formal, objective,

systematic process to describe and test relationships and examine the cause and effect interactions among variables.

Welman (2011) defines quantitative research as being descriptive in nature and is widely used in the answering questions concerning links between variables. The analysis comes from making tables which display occurrence frequencies by making statistical connections among different factors, that is, dependent and independent variables of the study. Cooper and Schindler (2006) expand on this, arguing that quantitative research is often used to measure knowledge, opinions or attitudes, questions concern 'how much, how often, how many, when and who'. White and McBurney (2012) explain that quantitative research has various advantages which include the following:

- ✓ Quantitative data is statistically- driven and more information can be provided;
- ✓ Compiling the data into graphs or charts is easier because of provided figures (numbers);
- ✓ The time of the respondents is saved; and
- ✓ It makes it possible for the research to be carried out on a wider scale, therefore providing vast information.

However, the quantitative methodology has its own flaws. White and McBurney (2012) indicate the following as some of the disadvantages of quantitative research:

- ✓ It costs much, in comparison to the qualitative research method; and
- ✓ The numbers that are used in the quantitative research change more often, that is, they are not always the same.

3.3 GEOGRAPHIC AREA

The research was conducted on the economy of South Africa. The study analyses secondary data pertaining to fiscal policy and its effect on Economic Growth in South Africa.

3.4 DATA COLLECTION

The study made use of time series secondary data obtained quarter yearly from the periods of 2013 first quarter up to the second quarter of 2017. There are many advantages of quarterly data as compared to annual data. According to DeCastro and Garrote (2012), fiscal policy decisions which are made for a year are often derived from data that is obtained from a quarterly, or even a monthly basis. Therefore, this gives quarterly data the advantages. Ilzetzki *et al.,* (2010) also

confirm that precise estimations cannot be made by annual data, the same way quarterly data do. The other advantage of quarterly data is that it assists in preventing the chances of structural breaks and it amplifies the count of observations.

There are several structural breaks in South Africa, due to various changes in the economic regime. These breaks are minimised by the use of quarterly data (Martins, 2010).

The study analyses secondary data, using local sources. The data being taken was both current and historical data, data used is from the period of 2013 up to 2017. The data was easy to obtain without much cost and at the same time. The other advantages of this data are that it can be easily analysed since it was readily available and compiled (Martins 2010).

The South African Reserve Bank (SARB) was used as the source of data, the reason being that it has vast data that cover the time series of South Africa relevant to this research and there is a high degree of consistency in the measurement units that are used. The data collected included the primary variables of the study that is, real GDP log at market prices. The other variable used was the real fiscal deficit, which is shown as a percentage of GDP, in form of rates. Secondary data was collected from Statistics South Africa (Stats SA) in 2017 which is the national statistics agency of South Africa established under the Statistics Act (Act No.6 of 1999) with the aim to produce timely, accurate and accessible official statistics. Stats SA provides records and statistics pertaining to the economy of South Africa.

3.5 METHODOLOGIES

Boussard *et al.,* (2012) explain that the methodology used in the study of the relationship between fiscal policy and economic growth is of great impact. In addition, Kirchner (2011) explains that the impact of fiscal policy on economic growth varies, despite similar techniques being used. The Structural Vector Auto Regression (SVAR) method is used in this study as already mentioned, to measure the impact of fiscal policy on economic growth. The method was invented by Sims (1980) as a way to overcome the identification restrictions which are undesirable in large scale models used in economics.

Sims (1980) had the belief that there should be equality in treating every variable, and also that there should be no assumptions about the variables being exogenous or endogenous. Therefore, VARs were made, which assumed all variables to be endogenous. Any causal effects can as well be accommodated.

3.5.1 TYPES OF VAR

According to Stock and Watson (2001), VARs exist in three form that is, recursive VAR, reduced VAR and the structural VAR.

3.5.2 RECURSIVE VAR

This represents variables according to their lagged values, as well as the contemporaneous regressors values (Stock &Watson, 2001). It put limits in such a way that the term of error in every equation of regression would not be correlated with the term of error in each equation of regression would not be correlated with the term of error in the previous equation inside the system (Killian, 2011). The precincts imposed in a recursive VAR can include variables being ordered in such a way that the supreme endogenous firstly ordered (Bjonnes, 2012). However, Amarasekara (2008) argues that the imposed precincts aggregate to the impositions created, by use of arbitrary and mechanical ways, and not essentially depending on the economic theory, which can be so with a structural VAR.

3.5.3 REDUCED VAR

In this VAR, the past values of a variable are used to express it as a linear or straight function. This would also take into consideration an error term (Stock & Watson, 2001). The error terms would become the innovations or shocks to variables. This is referred to as reduced since there is no consideration of other variables that are explanatory on the right side of the function, equation. There needs no restrictions on the left side of the equation, so that a VAR in reduced form can be estimated. However, all that has been said would make the model merely fit for forecasting and not evaluating policies and structural analysis (Stock & Watson, 2001).

3.5.4 STRUCTURAL VAR

Stock and Watson (2001) explain that in this VAR, a theory would be utilised in order to obtain causal relationships from correlations in the variables. Models of structural VARs are obtained from VAR of shocks, which are reduced so as to get an interpretive equation of a response (Ravnik & Zilic, 2011). Structural VAR models are able to forecast, carry out structural analysis and evaluation of policies, for the reason that they are derived from reduced VAR.

3.6 COMPARISON OF VARS WITH OTHER LARGE-SCALE SIMULTANEOUS MODELS

Generally, VARs are more prevalent in comparison with other models. The reason for this is that they do not rely more on economic theories which already exist, and they do not have the labour of making distinctions between endogenous and exogenous variables (Kilian, 2011). The case with the other models is that they depend on economic theories and this would make them looked over, even though they are significant in terms of statistics (Hakkio & Morris, 1984). According to Sims (1980: 2), there is not an economic theory which can be defined sufficiently. It is concluded by Hakkio and Morris (1984) that the main drawback of big structural models is that their accuracy in the estimations is compromised, since variables are eliminated on the basis of explanations of theory.

Moreover, the Keynesian kind of large-scale functions are less appealing than VARs. According to Kilian (2011), they need to put many 'incredible' to interpret variables into the equation. Bahovec and Erjavec (2009) explain that there are less equations and variables in VARs. For this reason, five variables that are endogenous were used for this study. The main advantages of the VARs include that they have simplicity in their estimations, their simplicity in the interpretation of coefficients and results and they prevent multicollinearity. In addition, if it happens that a crucial variable has been omitted in the VAR model, this would be reflected by means of serially correlated error terms (Bjonnes, 2012).

Using VARs is more suitable in countries that are still developing, such as South Africa, as opposed to large-scale models. The reason for this is that in developing countries, there is a lack of markets that are well developed and high-quality data which clearly demarcates between exogenous and endogenous variables (Bernanke & Mihov, 1995; Kirchner, 2011). This is why the SVAR model was chosen for this study.

VARs are used by numerous researchers for the reason of their simplicity in managing. The SVAR models have been used in many economies, as well as in a single economy, by several researchers and it was proven that the results were consistent (Jooste et al., 2012).

3.7 THE SVAR MODEL CAUSAL CHAIN

VARs are not purely theoretical because they need an economic theory to be used (Kilian, 2011). In various situations, it is difficult to get a theoretical model that is fully developed so that the causal chain can be based on. It is argued that in scenarios such as that, extraneous information should be used in order to achieve identification. The use of SVARs, as mentioned earlier, assists in generalising the relationship of the causal chain.

The suggestion of Killian (2011) was followed and was used together with the procedure of basic identification by Fatas and Mihov (2001: 10), as well as the suggestion by Blanchard and Perotti (2002), who put the variables of fiscal measures before national output. Therefore, the variables are ordered as **F** – **T** – **X** – **O** – **B**, where **F** = fiscal deficit, **T** = trade which would be expressed as a percentage of GDP, **X** = real exchange rates which are effective, **O** = real GDP log, and **B** = base rate.

The consequence of this causal order is that all the system variables would be affected by fiscal deficit, simultaneously in the beginning period. In the second period, all variables would be affected by the shock. The lags of every variable are included in other variables' equations. In other words, all variables can be affected by any shock if they have a delay lag.

3.8 ANALYSIS OF SVAR RESULTS

Granger-causality tests practice of reporting results was followed, as well as impulse responses and the variance decompositions of forecast error. The E-views package was used for the study, as well as the RATS and TSP for the automatic computation of the statistics. Stock and Watson (2001) argue that since there are complicated dynamics in VARs, it is more informative to report the statistics, than making use of R2 statistics or the coefficients of regression.

3.9 RELIABILITY AND VALIDITY

Researchers need to ensure that the work they undertake is credible, and part of being credible is to ensure absolute honesty when presenting the research methods and the results. Parasuraman (2007) explains reliability as the extent to which an instrument under use can produce similar outcomes if a research survey is re-conducted using the same study sample. A Cronbach Alpha was carried out so that the study reliability can be ensured. Malhotra and Birks (2011) explain that there are two kinds of Cronbach Alpha and these are; the Cronbach's Alpha for items that are standardised and the Cronbach Alpha for raw variables. The Cronbach Alpha for raw variables considers covariance between units, while the Cronbach Alpha for standardised items uses correlations between units. The Cronbach Alpha for standardised items assumes that the variances in every item are equal, which in practice, is not true (Reynaldo & Santos, 2011).

Maree (2010) explains that in determining if there is an association between items, the coefficient of Alpha should approximately be equal to one, and if there is a bad correlation between items, the coefficient of Alpha would be nearing zero. This implies that an acceptable coefficient of reliability would range from 0.70 and above (Muijs, 2011)

3.10 CONCLUSION

This chapter described the methodology implemented in the investigation of the relationship between fiscal policy and economic growth in South Africa. The SVAR model was used, as it was the most appropriate means in a developing country such as South Africa. The source of data was also described and discussed that is, the South African Reserve Bank (SARB) and the Stats SA. Chapter four presents a detailed analysis of the results, based on the methods outlined in this chapter.

CHAPTER FOUR – RESULTS AND DISCUSSION

4.1 INTRODUCTION

A discussion of the effects of fiscal policy on the growth of the South African economy is provided in this chapter. The questions which were raised in the first chapter, chapter 1, will be answered. The objectives of the study are to establish whether fiscal policy has a positive or negative contribution to economic growth in South Africa, and to identify which variable of fiscal policy (government expenditure, tax revenues or budget deficit), if any, is most effective when the government seeks to grow the economy. The hypothesis which were proposed in the attempt to uncover the research questions for these objectives are as follows:

- Economic growth is positively affected by fiscal policy; and
- The degree to which the economic growth of an economy is affected by Fiscal Policy is approximately equal to zero.

Provided that the outcomes of this chapter indicate significantly positive effect, a conclusion will be given that, the economic growth of South Africa is positively affected by fiscal deficits, policy. Otherwise, the alternative hypothesis would be considered, and the conclusion would be that, fiscal policy does have a positive effect on economic growth in South Africa.

4.2 SVAR MODEL

In order to find out the impact of fiscal policy, the SVAR model is used. The model consists of the real primary fiscal deficit as a GDP percentage **(F)**, the percentage real trade, of GDP **(T)**, the real effective exchange rate **(X)**, and the short-term real interest rate of the central bank **(B)**, as endogenous variables. It also comprises exogenous variables.

4.3 UNIT ROOT TESTS

4.3.1 THE ADF TEST

A formal hypothesis testing approach for unit roots is required, as the above analysis is not objective enough, due to the stationarity or nonstationary of the variables. The approach used to test for unit roots as discussed in Chapter 3 is the ADF test, whose null hypothesis states that unit roots are present in the series. Data is considered stationary when the mean and variance are constant, which is not the case in this study, hence the need for the ADF test. This approach requires the use of trend deterministic assumptions. Econometric Views 7.0 package was used, by arriving at the variable titled 'exchange' and then select 'Series Statistic' followed by 'Unit Root Test'. The name of the variable 'exchange' is entered to then test the unit root in the data. EViews can be used for general statistical analysis and econometric analyses, such as cross-section and panel data analysis and time series estimation and forecasting. The results of the ADF test are shown in Table 4.1.

Table 4.1: Results of the ADF Test

	ADF Test		
Variables	**Level**		**Robust deterministic trends**
Fiscal deficit as % of GDP (F)	**-0.65**	**-11.69***	**None**
Trade as % of GDP (T)	**1.41**	**-5.56***	**None**
Effective Exchange rate (X)	**-8.96***	**-**	**None**
Real GDP (O)	**0.12**	**-4.06***	**Intercept**
Base rate (B)	**-6.20***	**-**	**Intercept**

Table 4.1 shows the results from the unit roots tests done for each of the five endogenous variables.

4.3.2 AUGMENTED DICKEY-FULLER UNIT ROOT TEST

This indicates that the null-hypothesis at 5% level of significance should be rejected. The Schwarz Information Criterion is used to determine the lag order. The ADF table above shows that except for the real effective exchange-rate, other variables are nonstationary at level. The nonstationary variables all become stationary after the first difference. Contrary to the trend deterministic assumptions based on our visual graphical analysis, the ADF test reveals that our series

predominantly exhibit the no constant/no trend and constant deterministic assumptions. Because of this pattern, in all the VAR estimations, it is assumed that there is no deterministic trend in the model and choose the option in E-views which states that there is 'no intercept or trend'.

4.3.3 TEST FOR COINTEGRATION

A researcher cannot run a model based on variables that are non-stationary. Doing so would produce spurious regression. However, as indicated in Chapter 3, if the series in the model, even if some are non-stationary, are able to form stationary residuals I (0) when they are regressed together, their regressions will not be spurious (Johansen, 1991: 1560). This is because those series form a long-run equilibrium relationship, and they integrate, which is desirable. The Johansen integration test was used to ascertain if the model forms a long-run equilibrium relationship. Before applying the Johansen co-integration test, however, it is imperative to determine the optimal lag length for our model, as the Johansen co-integration test is sensitive to the number of lags chosen.

4.4 LAG ORDER

The lag length selection criteria to determine the optimal lag length was used for the model. As mentioned earlier, the researcher used the option of 'no intercept or trend' as out trend deterministic assumption for this test.

VAR LAG ORDER SELECTION CRITERIA

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-588.2858	NA	2.956052	15.27306	15.72295	15.45330
1	-181.1271	731.8548	0.000186	5.598155	6.797875*	6.078800
2	-134.4354	78.01663	0.000109	5.048996	6.998542	5.830044*
3	-106.6264	42.94548*	0.000104*	4.977883	7.677254	6.059334
4	-81.44483	35.70045	0.000108	4.973287*	8.422483	6.355140
5	-59.75784	28.00093	0.000127	5.057160	9.256182	6.739417
6	-41.11828	21.70683	0.000167	5.218184	10.16703	7.200844
7	-24.08847	17.67651	0.000240	5.419961	11.11863	7.703024
8	3.932467	25.53806	0.000278	5.343482	11.79198	7.926947

Figure 4.1: Lag Order Outcome

*** indicates lag order selected by the criterion**

LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

The lag length of 4 was chosen based on the result suggested by the Akaike Information Criterion (AIC). This was done because this lag length is the generally accepted lag order choice in empirical fiscal policy studies. This can be verified in studies by Blanchard and Perotti (2002), Ilzetzk et al (2010) and Kamps and Caldara (2008). A smaller lag length, as suggested by other criteria, can be rejected on economic grounds. This is because theoretically, it takes more than one quarter for the effects of fiscal policy to be registered in the economy.

4.5 COINTEGRATION APPROACH

Having decided on the lag order choice and the trend deterministic assumptions, the investigation of whether the model forms a long-run equilibrium relationship using the Johansen cointegration approach was conducted. Suffice to mention that the unit root tests in Table 4.1 reveals that the series exhibit I (0) and I (1) variables. Typically, the Johansen cointegration approach was designed to handle variables that are integrated I (1). However, Johansen (1995: 1560) argues that there is still no problem with combining I (0) and I (1) variables when testing for cointegration. This, he argues, is because if some variables are I (0) instead of I (1), they will reveal themselves through cointegrating vectors whose space is spanned by the stationary variables in the model (Johansen, 1991: 1560). As mentioned in Chapter 3, the Johansen cointegration approach has two tests for cointegration: These are the Trace test and the Maximum Eigenvalue tests.

4.5.1 TRACE TEST

Figure 4.2 shows the results from the trace test for cointegration

Trace test: Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.307877	74.70842	60.06141	0.0018
At most 1 *	0.266434	44.53317	40.17493	0.0171
At most 2	0.151509	19.12646	24.27596	0.1946
At most 3	0.059812	5.654240	12.32090	0.4794
At most 4	0.007252	0.596833	4.129906	0.5012

Figure 4.2: Trace test for cointegration

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

In this test, the null hypothesis is rejected, that there is no co-integrating vector in the model. This is because at this rank (number of co-integrating vectors), the trace statistic value of approximately 74.71 is greater than the 5% critical value of about 60.06. Next, the null-hypothesis that there is at most 1 co-integration relationship, is also rejected because at this rank, the trace statistic value of approximately 44.53 is greater than the 5% critical value of about 40.17. The researcher, however, does not reject the null hypothesis which states that there are at most 2 co-integrating relations.

This is because at this rank, the trace statistic value of approximately 19.13 is less than the 5% critical value of about 24.28.

4.5.2 MAXIMUM EIGENVALUE TEST

Figure 4.3 shows the results from the maximum Eigenvalue cointegration test.

Maximum Eigenvalue test: Lags interval (in first differences): 1 to 4

Hypothesized No. of CE(s)	Max-Eigen Eigenvalue	0.05 Statistic	Critical Value	Prob.**
None	0.307877	30.17525	30.43961	0.0539
At most 1 *	0.266434	25.40671	24.15921	0.0338
At most 2	0.151509	13.47222	17.79730	0.1990
At most 3	0.059812	5.057407	11.22480	0.4692
At most 4	0.007252	0.596833	4.129906	0.5012

Figure 4.3: Maximum Eigenvalue test: Lags interval (in first differences): 1 to 4

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

In this test, the null hypothesis is not rejected, that there are no cointegration relations. This is because at this rank, the maximum Eigen statistic of approximately 30.18 is less than the 5% critical value of about 30.44

Based on the two Johansen cointegration tests, there are two conflicting numbers of cointegrating relations. The trace tests give 2, while the maximum Eigenvalue test gives 0. Literature indicates that either of the two tests can be used as a benchmark to determine the number of cointegrating vectors in the model (Lutkepohl *et al.,* 2001: 305). These researchers conclude that the Trace test produces more robust results than the Eigenvalue test. This is because the trace test has more power when analysing more than one cointegrating relations, while the Eigenvalue test is more suitable for analysing relationships (Luktepohl *et al.*, 2001.305).

Based on the above analysis, one can conclude that 2 is the total number of cointegrating relations found in the model. This is desirable, as it is now known that the model forms an equilibrium relationship in the long run, and that we can run a VECM to use for determining causality in the model without getting spurious regressions. The other interesting finding in this test is that the researcher discovered that I (0) and I(1) variables are able to give cointegration relations. This conforms to the argument by Johansen (1991: 1560), that variables with different levels of integration may be cointegrated (Harris 1995:80).

4.6 RESIDUAL DIAGNOSTIC CHECKS

Before the results were illustrated, it is necessary to begin by analysing the residuals from the estimated SVAR model. This analysis determines whether the results shown in the next section are efficient and reliable. The following residual diagnostic tests were taken;

- Serial correlation based on the Breusch-Godfrey serial correlation test
- Normality based on the Jarque-Bera test and
- Heteroskedasticity based on the White heteroskedasticity test.

The null hypotheses for these diagnostics tests are that there is no serial correlation, no normality and no heteroskedasticity, respectively. In addition, the researcher undertakes inverse roots of AR characteristic polynomial in order to analyse the stability of the VAR.

4.6.1 TEST FOR SERIAL CORRELATION OR AUTOCORRELATION

Correlation of a variable with itself over successive time periods (serial correlation) is a normal problem faced in time series analysis. Serial correlation can lead to the underestimation of standard errors, thereby making t-values to be overestimated. Out VAR estimates are suspect if the

model exhibits serial correlation. In Chapter 3, it was highlighted that the presence of serial correlation in the residuals is one indication that there could be an omitted important variable. Figure 4.4 is the Breusch-Godfrey serial correlation test with the null hypothesis stating that there is no serial correlation in our model. The test shows a value of about 1.015 for the observed R-Squared, which is statistically insignificant at 5% level. Based on this finding, we cannot reject the null hypothesis of the serial correlation in the model. In other words, there is no serial correlation between the residuals and we do not have an important omitted variable in our model.

Figure 4.4 shows the Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test for our model

F-statistic	0.173335	Prob. F(4,56)	0.9512
Obs*R-squared	1.015060	Prob. Chi-Square(4)	0.9075

Figure 4.4: Breusch-Godfrey Serial Correlation LM Test

4.6.2 NORMALITY TEST

The normality test is carried out to make sure that the estimated residuals are normal. A model with residuals that are not normally distributed cannot produce efficient estimates. The figure below shows the Jarque-Bera test for normality, with a value of about 5.05, which is statistically insignificant at 5% level. Based on this test, the null hypothesis is not rejected, which states that the model is normal. In other words, the residuals in the model are normally distributed and this is desirable in making our estimates efficient and unbiased.

Normality test

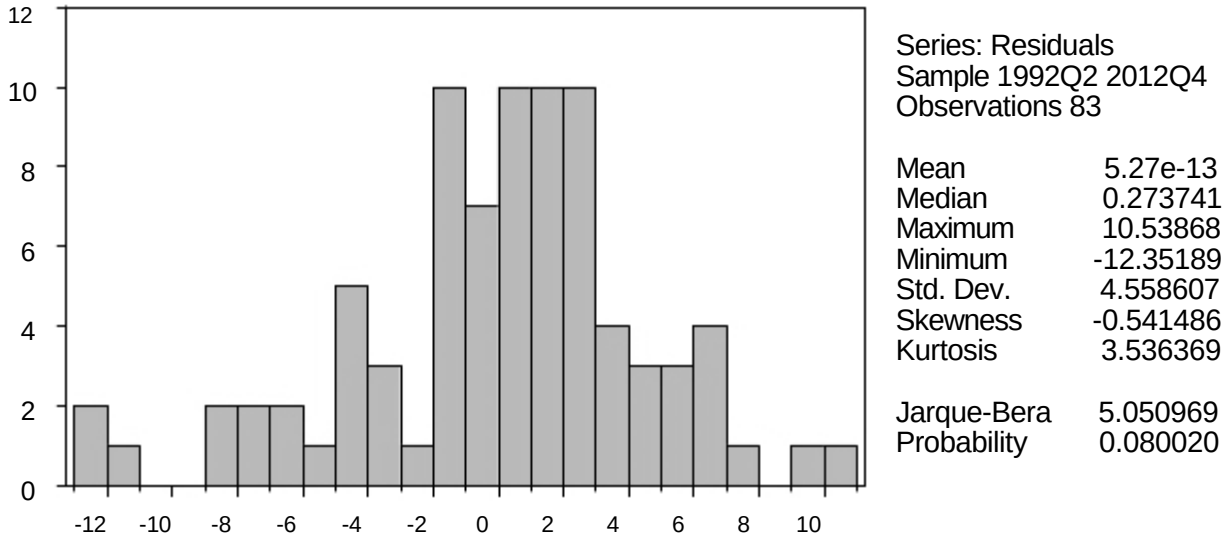


Figure 4.5: Jarque-Bera test for normality

4.6.3 HETEROSKEDASTICITY TEST

Heteroskedasticity means that residuals do not have a constant variance. This results in a model having different probability distributions. We use the Breusch-Pagan-Godfrey test to test for heteroskedasticity. Based on the test in the figure 4.6 below, with an observed R-squared of about 17.95, which follows a Chi-square probability, we cannot reject at 5% level of significance the null hypothesis that the model has no heteroskedasticity. In other words, the residuals in the model are constant and this is desirable in rendering the estimates efficient.

F-statistic	0.752450	Prob. F(22,60)	0.7669
Obs*R-squared	17.94779	Prob. Chi-Square(22)	0.7091
Scaled explained SS	11.89433	Prob. Chi-Square(22)	0.9595

Figure 4.6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

4.6.4 INVERSE ROOTS OF AR CHARACTERISTIC POLYNOMIAL

As discussed in Chapter 3, the VAR models need to be tested for stability, in order for their estimates to be credible. Figure 4.7 shows that all the reported inverse roots of the AR polynomial have roots with modulus which are less than one and they lie within the unit circle. This indicates that the estimated VAR is stable and stationary. This is a very desirable result, due to the fact that if VAR were not stable, results such as the impulse response standard errors, would be invalid, thereby making the results and conclusions of the model unreliable.

Figure 4.7 shows inverse roots of AR characteristic polynomial

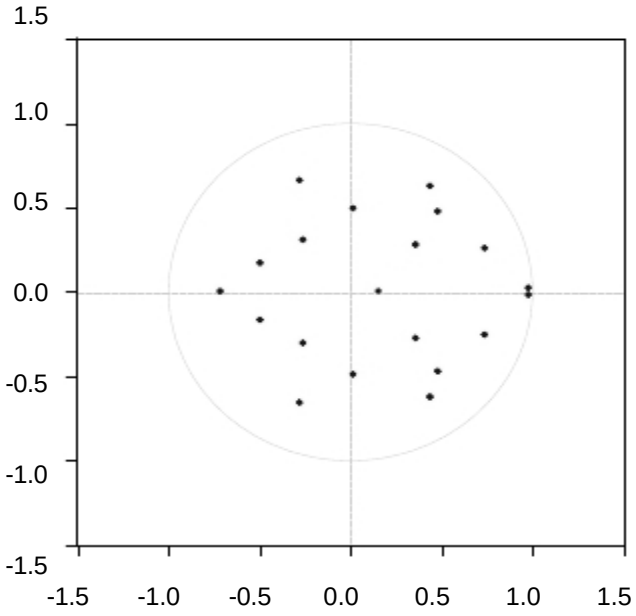


Figure 4.7: inverse roots of AR characteristic polynomial

4.7 EMPIRICAL RESULTS

The standard practice in VAR analysis is followed which requires reporting results on causality in the model, impulse responses and forecast error variance decomposition.

4.8 CAUSALITY

In this section, the intent was to discover whether the independent variables are useful in predicting the values of the dependent variable, which is real GDP. These variables include the real primary fiscal deficit as a percentage of GDP, real trade as a percentage of GDP, real effective exchange rate, real short-term interest rate, exchange-rate regimes dummy and the 2011 structural break. Of particular interest is to find out whether this relationship exists in both the short and the long-run. In Chapter 3, it was ascertained that the normal Granger causality test is not effective in multivariate models. As a result, we use the procedure suggested by Maddala and Kim (1998:297), of using the Vector Error Correction Model (VECM) to determine causality for the short-run and the long-run. To determine short-run causality, a Wald-coefficient restriction test is undertaken using the joint lagged coefficient values of the independent variables derived from the VECM model (excluding the coefficient of the error correction term). On the other hand, to determine long-run causality, the Error Correction Term (ECT) of the VECM model is used. If the ECT is statistically significant and its coefficient value is negative, it means that in the long run, the independent variables can jointly predict the values of the dependent variable.

4.8.1 SHORT-RUN CAUSALITY TEST

The table below shows the results of the Wald-coefficient restriction test derived after running a VECM. The null hypothesis in this test states that the dependent variable (real GDP) is in the short-run, not jointly caused by all the independent variables, c(77) to c(100). Based on the statistical significance at 5% of the Chi-square value of 271.9875, the null hypothesis is rejected because the independent variables [c (77) to c (100)] jointly, cannot cause a short-run change in the dependent variable. In other words, the independent variables, jointly, can cause a short-run change in real GDP. This is a desirable result.

Wald Test:
Equation: Real GDP as caused by other variables

Test Statistic	Value	Df	Probability
F-statistic	11.33281	(24, 57)	0.0000
Chi-square	271.9875	24	0.0000

Null Hypothesis: C(77)=C(78)=C(79)=C(80)=C(81)=C(82)=C(83)=C(84)=C(85)=C(86)=C(87)==C(89)=C(90)=C(91)=C(92)=C(93)=C(94)=C(95)=C(96)=C(97)=C(98)=C(99)=C(100)=0

Figure 4.8: Wald-coefficient restriction test results

4.8.2 LONG-RUN CAUSALITY TEST

Table 4.9 below shows the regression involving real GDP, as explained by the lagged coefficients of other variables in the model. The regression was obtained from the VECM, which was ran. The researcher was interested in coefficient 73, which corresponds to the Error Correction Term (ECT). Asstated earlier, this test is based on the statistical significance of the ECT. The null hypothesis for this test is that the independent variables jointly cause the dependent variable in the long run. In order for the ECT to be accepted as a determinant of long-run causality in the VECM model, its coefficient must have a negative sign. From table 9 below, the ECT coefficient of about -2.54 has a correct sign which is desirable. However, this coefficient is not statistically significant at 5% level. The conclusion therefore is that in the long-run, there is no causality from the independent variables to the dependent variable.

0.780286327946*B(-1)) + C(74)*(T(-1) - 4.7261647684*X(-1) - 0.268526560153*O(-1) - 0.097226364125*B(-1)) + C(75)*D(F(-1)) + C(76)*D(F(-2)) + C(77)*D(F(-3)) + C(78)*D(F(-4)) + C(79)*D(T(-1)) + C(80)*D(T(-2)) + C(81)*D(T(-3)) + C(82)*D(T(-4)) + C(83)*D(X(-1)) + C(84)*D(X(-2)) + C(85)*D(X(-3)) + C(86)*D(X(-4)) + C(87)*D(O(-1)) + C(88)*D(O(-2)) + C(89)*D(O(-3)) + C(90)*D(O(-4)) + C(91)*D(B(-1)) + C(92)*D(B(-2)) + C(93)*D(B(-3)) + C(94)*D(B(-4)) + C(95)*DUMREG

Figure 4.9: Regression table involving real GDP

Dependent Variable: D (real GDP)
Method: Least Squares
Date: 16 October 2017 Time: 15: 00
Sample (adjusted): 1992Q3 2012Q4
Included observations: 82 after adjustments
D(real GDP) = C(73)*(F(-1) - 4.75019623249*X(-1) - 1.04059138528*O(-1) +

Correction of error

Term	-2.54E-05	5.54E-05	-0.458245	0.6485
C(74)	-2.53E-05	9.89E-05	-0.255391	0.7993
C(75)	0.000344	0.000750	0.458914	0.6480
C(76)	-0.000137	0.000844	-0.161919	0.8719
C(77)	0.000674	0.000852	0.790882	0.4322
C(78)	0.001640	0.000720	2.278041	0.0264
C(79)	-0.008392	0.029767	-0.281904	0.7790
C(80)	-0.034423	0.027967	-1.230848	0.2233
C(81)	0.000381	0.028127	0.013548	0.9892
C(82)	-0.018567	0.030466	-0.609419	0.5446
C(83)	-9.03E-05	0.000288	-0.313504	0.7550
C(84)	-0.000229	0.000251	-0.910946	0.3661
C(85)	6.88E-06	0.000211	0.032654	0.9741
C(86)	5.62E-05	0.000142	0.395632	0.6938
C(87)	0.842154	0.134229	6.273988	0.0000
C(88)	-0.173720	0.176822	-0.982457	0.3300
C(89)	0.028957	0.182892	0.158327	0.8747
C(90)	-0.045461	0.156101	-0.291229	0.7719
C(91)	1.70E-05	4.22E-05	0.402234	0.6890
C(92)	-6.46E-06	3.60E-05	-0.179152	0.8584
C(93)	1.34E-05	3.09E-05	0.434186	0.6658
C(94)	-9.24E-06	2.68E-05	-0.344705	0.7316
C(95)	0.003021	0.001533	1.970776	0.0535
C(96)	0.000217	0.002946	0.073579	0.9416

R-squared	0.527462	Mean dependent var	0.007558
Adjusted R-squared	0.340076	S.D. dependent var	0.006368
S.E. of regression	0.005173	Akaike info criterion	-7.451489
Sum squared resid	0.001552	Schwarz criterion	-6.747084
Log likelihood	329.5111	Hannan-Quinn criter.	-7.168681
Durbin-Watson stat	1.944941		

Figure 4.10: Vector Error Correction Model results for the ECT

4.8.3 IMPULSE RESPONSE FUNCTIONS (IRFS) ANALYSIS

SVAR models are easily interpreted with Impulse Response Functions (IRFs). The study investigated the short-run and long-run IRFs. In line with Boussard et al (2012:5), the short-run represents a time gap of one year (four quarters) from the time the fiscal shock first occurred, and the long-run represents the period of three years (12 quarters) from the time the fiscal shock first took place.

In the interpretation of the IRFs, we take the procedure of reporting responses, using the 'cumulative impulse response measure'. Hereafter, we refer to the cumulative impulse response measure as the 'cumulative response' or 'accumulated response'. The cumulative response analysis investigates the cumulative change in a variable, say, real GDP over a given time horizon N, in response to the cumulative changes in a variable like primary fiscal deficit over the same time horizon N.

Since the economic results of fiscal deficits depends not only on the increase in fiscal deficits, but also on other variables, the researcher included in the model, other variables that are most important in influencing the effectiveness of fiscal deficits in stimulating economic growth. The mechanism through which those variables influence the potency of fiscal deficits is incorporated in the analysis of the IRF results.

4.8.4 SHORT AND LONG-RUN CUMULATIVE RESPONSE OF REAL GDP TO PRIMARY FISCAL DEFICIT

The analysis of the short and long run cumulative response of real GDP to primary fiscal deficit was conducted by investigating the short-run IRF for the relationship between the key variables in the model. In this relationship, the researcher analysed the response of real GDP to a one standard deviation positive shock in the primary fiscal deficit. The results based on the accumulated response measures in the figure below indicate that in the short-run, the response of real GDP to a one standard deviation positive shock in the primary fiscal deficit is negligible or zero.

Accumulated Response of real GDP to Primary Fiscal Deficit

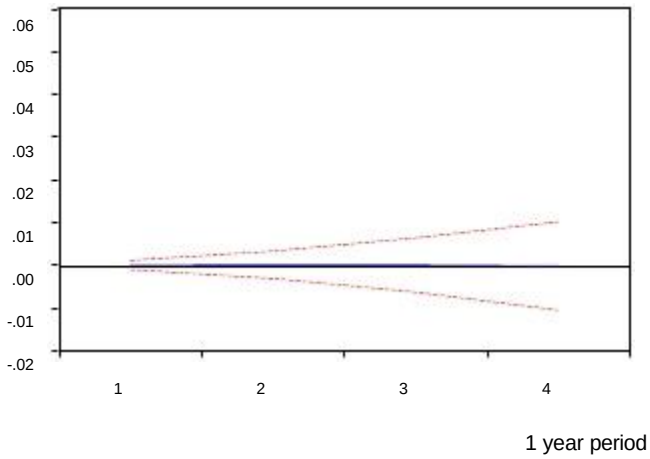


Figure 4.11: Short run response of real GDP to primary fiscal deficit

Since in the above analysis, there is no important change in real GDP to a change in the primary fiscal deficit, it can be stated that there is a zero short-run response of real GDP to an increase in the primary fiscal deficit.

In the long-run, the IRF in the figure below shows that just as in the case of the short-run, the long-run response of real GDP to a one unit positive standard deviation shock in the primary fiscal deficit is almost zero.

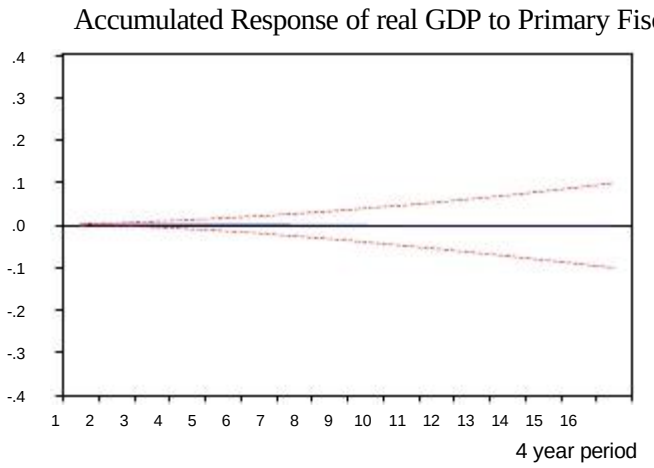


Figure 4.12: Long-run response of real GDP to primary fiscal deficit

The results show that the response of real GDP to the primary fiscal deficit is negligible. We can therefore state that there is a zero long-run response of real GDP to an increase in the primary fiscal deficit. Fiscal deficits lead to a positive effect on economic growth, the null hypothesis (H0). The alternative hypothesis (H1), states that a fiscal deficit has an effect on economic growth, which is equal to or less than zero. These results provide an answer to the research hypotheses which, once again, state as follows: Fiscal deficits lead to a positive effect on economic growth in South Africa, as the null hypothesis; and fiscal deficits in South Africa have an effect on economic growth which is equal to or less than zero, as the alternative hypothesis.

Based on the above results, we reject the null hypothesis and conclude that fiscal deficits are not effective in stimulating both short-run and long-run economic growth in South Africa. This conclusion is quite similar to the results established by other studies. Jooste et al (2001:1), using the same methodology as the one employed in this study, concluded that fiscal deficits in South Africa have a negative effect, sometimes negative, while also positive at other times. The results of this study fall between the Jooste et al (2001:1) results. In terms of the long-run impact, the results are consistent with those of Jooste et al (2001:1), who also found a negligible effect. Clearly, these results bring questions to the potency of discretionary fiscal policy in South Africa. The following factors are found to be credible in explaining the impotency of discretionary fiscal policy in South Africa.

4.8.5 SHORT AND LONG RUN UNCUMULATIVE RESPONSE OF PRIMARY FISCAL DEFICIT TO REAL GDP

In this section, an analysis of the state of automatic stabilisers in South Africa, and how it impacts on the effectiveness of discretionary fiscal policy. The state of automatic stabilisers in our model is captured by the response of the primary fiscal deficit to a change in real GDP. Our interest is more in establishing whether automatic stabilisers in South Africa are strong.

Based on figure 4.13 below, a one unit positive standard deviation shock in real GDP causes a rise in the primary fiscal deficit. This outcome portrays a scenario of small or weak automatic stabilisers in South Africa. If automatic stabilisers were strong, an increase in real GDP should have been associated with a fall in the primary fiscal deficit. Interestingly, this study is not the first one to make such a claim. Swanepoel and Schoeman (2003:566) found no significant evidence of automatic stabilisers in South Africa.

Suescun (2007:29) points out that small fiscal automatic stabilisers tend not to be responsive to cyclical conditions and thus, have a weak anti-cyclical capacity to business fluctuations. Hoppner (2002:16) points out that weak automatic stabilisers render discretionary fiscal policy ineffective in smoothening out business cycles. Discretionary fiscal policy works well when it is reinforced by automatic stabilisers. This is because, with strong automatic stabilisers, spending through transfer payments increases, while taxes automatically fall during economic downturns. This helps to stimulate the economy.

In view of the fact that the study finds weak short-run automatic stabilisers, it is claimed that this could explain why a zero response was obtained in economic growth to changes in fiscal deficits.

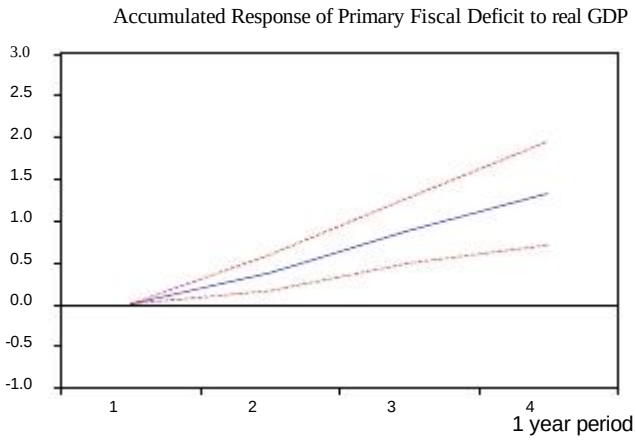


Figure 4.13: Short-run response of primary fiscal deficit to real GDP

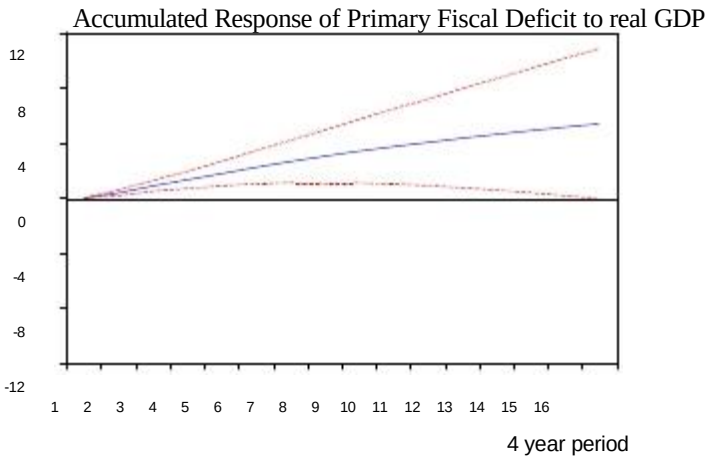


Figure 4.14: Long-run response of primary fiscal deficit to real GDP

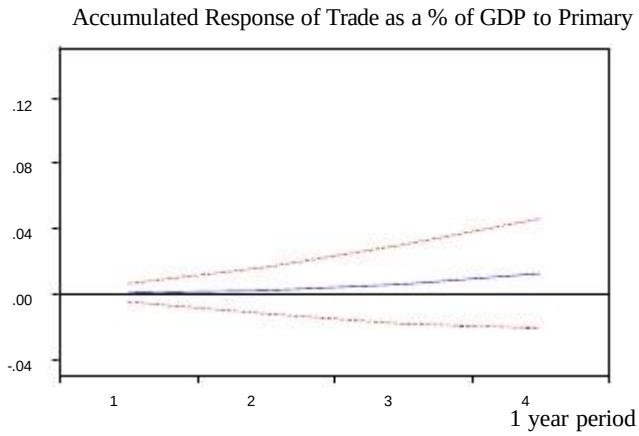
4.8.6 SHORT AND LONG RUN CUMULATIVE RESPONSE OF TRADE AS A PERCENTAGE OF GDP TO PRIMARY DEFICITS

The next analysis refers to the extent to which the degree of openness to trade can offset the economic simulative effect of fiscal deficits. The more open economies render fiscal policy ineffective because fiscal stimuli may be leaked out of the economy through imports (Spilimbergo *et al.*, 2009:2; Ilzetzki *et al.*, 2010:6).

Utilised is trade as percentage of GDP to assess whether fiscal deficits are leaked out of the economy through increased imports. An increase in trade as a percentage of GDP due to a positive shock in the primary fiscal deficit indicates that the fiscal deficit is leaked out of the economy through imports. We are aware that trade as a percentage of GDP can increase due to an increase in exports as well. However, it is contended that if trade as a percentage of GDP increases due to the rise in exports, this

effect should lead to a positive impact on real GDP. Failure to do so makes us claim that the increase in trade as a percentage of GDP emanates from the rise in imports.

Figure 4.15 below shows the short-run response of trade as a percentage of GDP to a one unit positive standard deviation shock in the primary fiscal deficit. We find a positive IRF. We claim that this outcome is attributed to the leakage of the fiscal deficit through increased imports. Because of that, the economic results of fiscal deficits were offset by leakages through increased imports. This possibly explains why we obtained a zero response in economic growth to changes in fiscal deficits.



.Figure 4.15: Short-run response of trade as a % of GDP to primary fiscal deficit

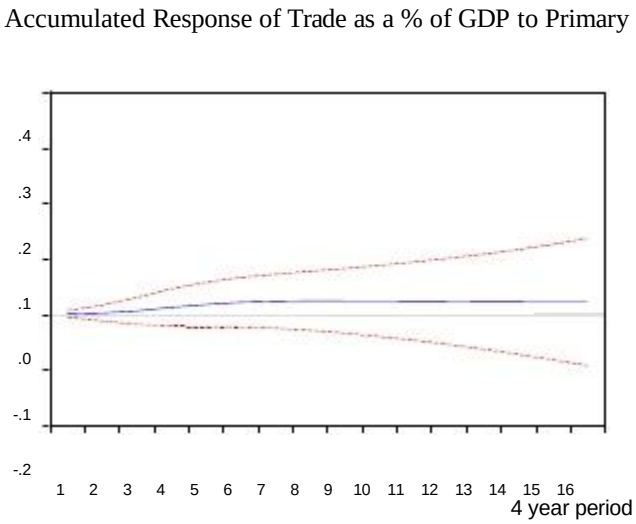


Figure 4.16: Long-run response of trade as a % of GDP to primary fiscal deficit

4.8.7 SHORT AND LONG RUN CUMULATIVE RESPONSE OF THE REAL INTEREST RATE TO THE PRIMARY DEFICIT

In this section, the assessment of whether fiscal deficits lead to the rise in interest rates is described. Perhaps the most cogent argument against fiscal deficits, particularly by the neoclassical economists, is that they lead to an increase in interest rates, which then dampen or crowd-out private investment. The crowding-out of private investment offsets the economic results of fiscal deficits. Interestingly, the new Keynesians, like Eisner (1989:89), acknowledge that fiscal deficits do raise interest rates. However, to them, fiscal deficits are important for improving business confidence, such that

regardless of the level of interest rate, private investment would still occur, guaranteeing an increase in GDP.

From the two schools of thought, the figure below helps to ascertain the claim which conforms to the empirical results. From the figure 4.17 below, a one unit short run positive standard deviation shock in primary fiscal deficit leads to a positive change in the short-term real interest rate. So far, both schools of thought are correct in their predictions. However, it is argued that the neoclassical prediction is consistent with the results of the study, that is, there is a rise in interest rates, which is associated with a fall in real GDP. On the other hand, the new Keynesian prediction fails on the basis that the rise in the interest rate is, in this case, not associated with an increase in real GDP. The conclusion is that the short-run economic results of the primary fiscal deficit was offset by the dampening effect of the rise in interest rates on private investment. This further explains the zero response of economic growth to changes in fiscal deficits.

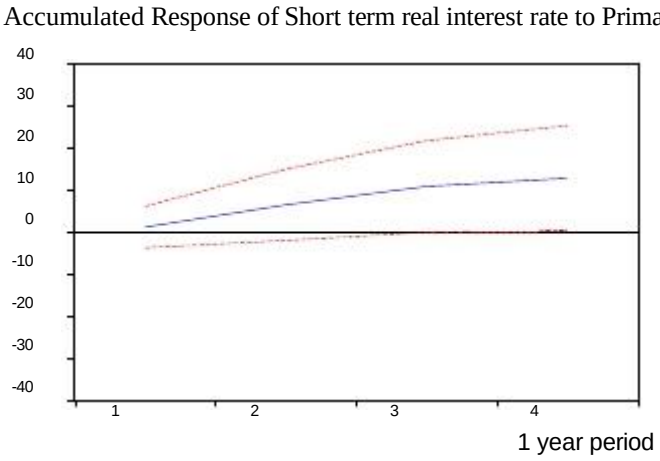


Figure 4.17: Short-run response of the short-term real interest rate to primary fiscal deficit

In terms of the long-run relationship for these variables, the figure 4.18 below indicates an increase in the short-term real interest rate to a one unit positive standard deviation shock in the primary fiscal deficit. It is therefore concluded that the long-run economic results of fiscal deficits was offset by the crowding-out of private investment. This could potentially explain the finding of a long-run fiscal multiplier which is less than one.

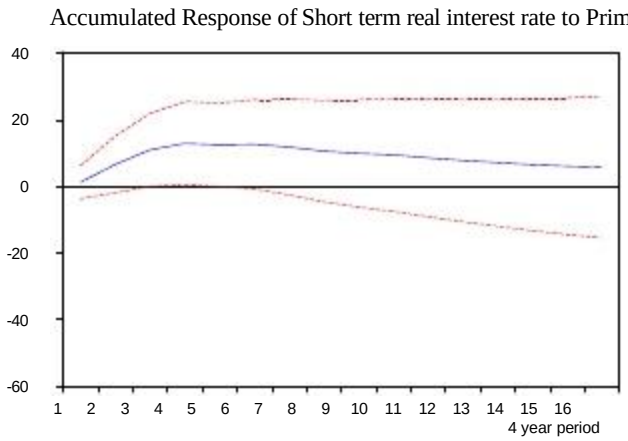


Figure 4.18: Long-run response of short-term real interest rate to primary deficit

4.8.9 SHORT AND LONG RUN CUMULATIVE RESPONSE OF REAL EFFECTIVE EXCHANGE RATE TO REAL INTEREST RATE

In this section, the analysis shows that fiscal deficits lead to the rise in interest rates. The rise in interest rates creates room for the appreciation of the real exchange-rate, which then causes a trade deficit, and hampers GDP. In Chapter 2, reference was made to the Mundell-Fleming framework, which posits that fiscal policy is ineffective in economies where capital is mobile. The justification for this argument was that fiscal deficits lead to the rise in interest rates, which have already been established in the previous section. This rise in interest rates leads to increased capital inflows, which causes the real appreciation of the exchange rate. The appreciation of the real effective exchange-rate leads to a trade deficit, in addition to the fiscal deficit, ending in what is called the "twin deficit hypothesis" mentioned in Chapter 2. These reactions offset the economic results of fiscal deficits.

Focusing on the results from the SVAR, figure 4.19 below shows the response of the real effective exchange-rate to a one unit short run positive standard deviation shock to the short-term real interest rate. There is a noticeable amount of appreciation of the real effective exchange-rate, although not throughout the entire short-term period. This appreciation of the real effective exchange-rate could have led to a trade deficit, thereby offsetting the short-run economic results of the fiscal deficit. Barro (1981:1109) reaches the same conclusion about the economic effect of fiscal policy. This could therefore explain why we obtained a zero short-run fiscal impact of fiscal deficits on economic growth.

Accumulated Response of real Exchange rate to Short term real interest rate

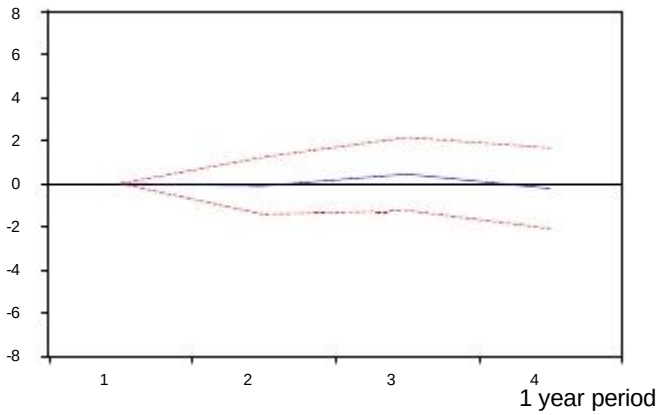


Figure 4.19: Short-run response of real effective exchange-rate to short-term real interest rate

As for the long-run relationship for these variables, the figure 4.20 below shows that the change in the real effective exchange-rate, due to a one unit positive standard deviation shock, is almost negligible. It can be concluded that the relationship between these variables had a negligible effect on the long-run effect of fiscal deficits.

Accumulated Response of real Effective exchange rate to Short term real interest rate

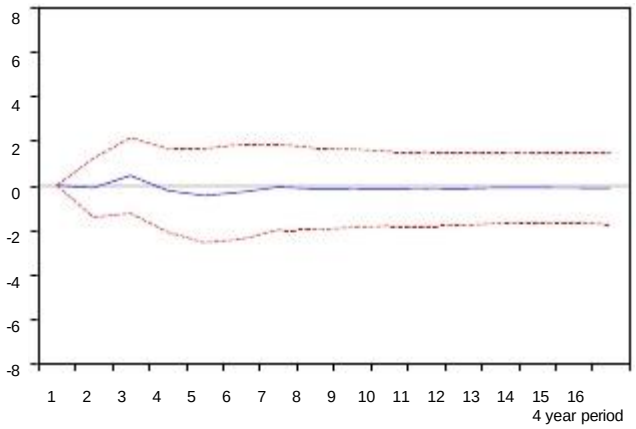


Figure 4.20: Long-run response of real effective exchange-rate to short-term real interest rate

4.8.10 SHORT AND LONG-RUN CUMULATIVE RESPONSE OF SHORT-TERM REAL INTEREST RATE TO REAL GDP

This section assesses the impact of the monetary policy framework of inflation-targeting on the effectiveness of fiscal policy. Christiano et al (2009: 80) and Spilimbergo et al (2009:3) argued that fiscal stimuli are a failure under inflation targeting monetary policy. This is because, under inflation-targeting, the monetary authorities adjust the short-term interest rate in response to deviations of GDP and inflation from their steady-state levels (Jooste et al, 2012:7). In this case, the active role of

monetary policy to maintain a certain desired level of inflation or output through changes in the interest rate might offset the economic results of fiscal deficits.

The SARB follows this approach. Because of that, it is expected that an increase in real GDP should result in an increase in the short-term real interest rate, in order for the SARB to maintain inflation and GDP in their steady state. In other words, we expect an offsetting effect of the economic results of fiscal deficits through the raising of interest rates by the SARB.

Figure 4.21 below, confirms the active role of the SARB. The short-term real interest rate rises due to a one unit positive standard deviation shock in real GDP. We argue that this active role of the SARB had an offsetting economic result of the primary fiscal deficit. Thus, inflation-targeting monetary policy of the SARB could have contributed towards the ineffectiveness of fiscal deficits on economic growth.

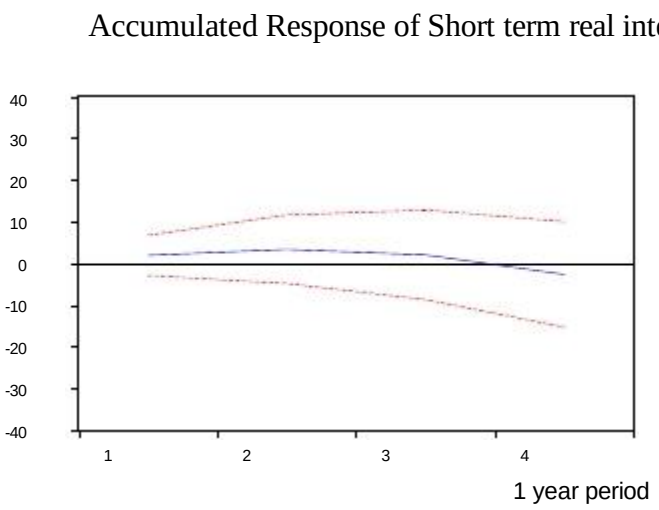


Figure 4.21: Short-run response of the short-term real interest rate to real GDP

In the long-run, we find results which do not confirm our expectations, as can be seen in figure 4.22 below. There is a negative response of the short-term real interest rate to an increase in real GDP. This result reveals that the SARB was more interested in the continued stimulation of long-run economic growth. This could also explain why South Africa's inflation rate has been bordering the upper limit of the targeted range over the years.

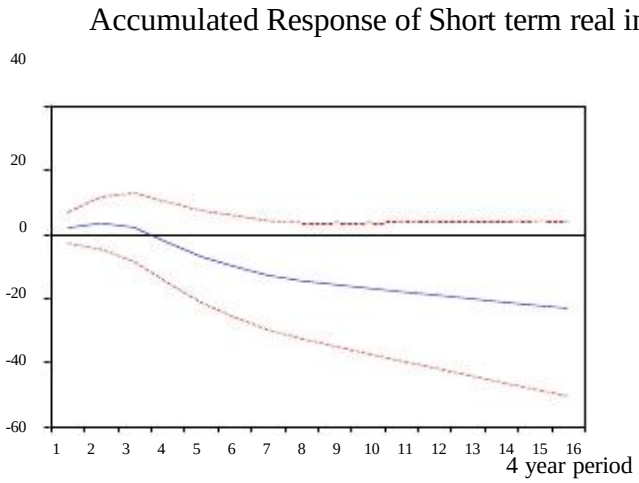


Figure 4.22: Long-run response of short-term real interest rate to real GDP

4.8.11 SHORT AND LONG-RUN CUMULATIVE RESPONSE OF PRIMARY DEFICIT TO SHORT-TERM REAL INTEREST RATE

This section discusses the consistency of relationships in the model. This is done by analysing the response of the primary fiscal deficit to an increase in the short-term real interest. In Chapter 3, it was mentioned that one of the reasons for ordering the interest rate variable after the primary fiscal deficit variable was to assess whether the primary fiscal deficit can react to interest rate changes. Since the primary fiscal deficit excludes interest payments, if the estimates are consistent, it means that this variable should not react to changes in the short-term real interest rate.

Figure 4.23 below demonstrates that the primary fiscal deficit has a negligible short-run response to a one-unit positive standard deviation shock in the short-term real interest rate. This result is in accordance with what was expected. It is an indication of consistency in the model.

Accumulated Response of Primary Fiscal Deficit to Short term real interest rate

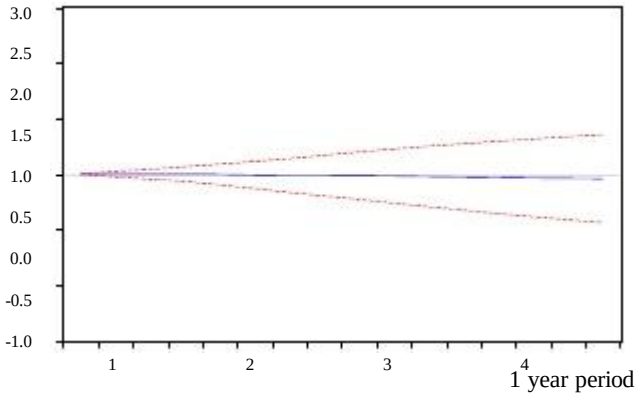


Figure 4.23: Short-run response of primary fiscal deficit to short-term real interest rate

In the long-run, figure 4.24 below shows a slight negative response of the primary fiscal deficit to a one unit positive standard deviation shock to the short-term real interest rate. This result is contrary to what was expected. However, undertaking an experiment of testing the consistency of the estimates from data series in this manner comes at a risk. This is because national accounts data are never objective enough and thus, will often fail the type of consistency test that we have just applied.

Accumulated Response of Primary Fiscal Deficit to Short term real interest rate

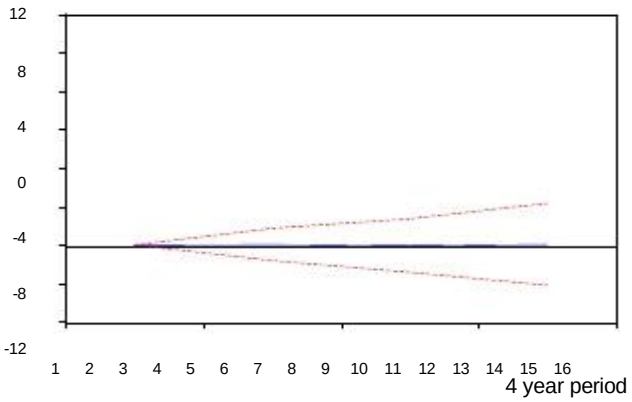


Figure 4.24: Long-run response of primary fiscal deficit to short-term real interest rate

4.9 FORECAST ERROR VARIANCE DECOMPOSITION (FEVD)

In consonance with the standard practice when showing results for VAR models, we also report results from the Forecast Error Variance Decomposition (FEVD). Once again, this reports the strength of a given shock in explaining the changes that occur in another variable. This is necessary as it helps us to gauge the relevance of a given variable in influencing another variable. It also helps us assess the consistency of the analyses made under the IRFs. The researcher reports the short-run and long-run FEVD for each relationship using the same graph. As before, the short-run is a period up to 4 quarters (1 year), while the long-run is a period of 12 quarters (3 years) and beyond. A tabular FEVD is provided at the end of this section, particularly to analyse the variables that had the greatest influence in offsetting the economic results of fiscal deficits.

4.9.1 SHORT AND LONG-RUN REAL GDP VARIANCE DUE TO PRIMARY FISCAL DEFICIT

This section describes the extent to which the primary fiscal deficit can influence changes in real GDP. As can be seen in figure 4.25, the primary fiscal deficit has almost a 0% influence on real GDP, both in the short and long-run. This tallies well with the results in which it is reported using the IRFs, where the real GDP remained zero after an increase in the primary fiscal deficit in South Africa has no results on real GDP.

4.9.2 SHORT AND LONG-RUN PRIMARY FISCAL DEFICIT VARIANCE DUE TO REAL GDP

Real GDP explains over 35% of variations taking place in the primary fiscal deficit. As established while analysing the IRFs, this variation relates to the increase in the primary fiscal deficit, which explains the case of very weak automatic stabilisers. As can be seen in the figure 4.25 below, the results are almost in line with those of Swanepoel and Schoeman (2003: 256), who found no evidence of the presence of automatic stabilisers in South Africa. Because of that, theweak automatic stabilisers could therefore explain why it was found a zero short-run and long-run response of economic growth to changes in fiscal deficits.

Percentage of Primary Fiscal Deficit variance due to real GDP (Short and Long run)

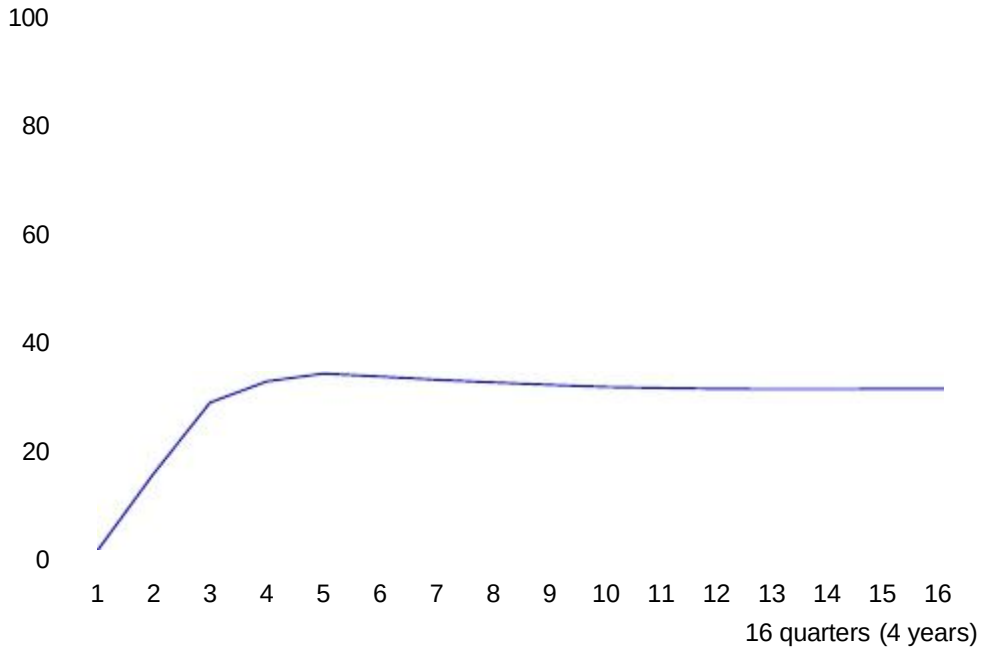


Figure 4.25: Primary fiscal deficit variance due to real GDP

4.9.3 SHORT AND LONG-RUN TRADE AS A PERCENTAGE OF GDP VARIANCE DUE TO PRIMARY FISCAL DEFICIT

The discussion of this part aims to assess if the primary fiscal deficit has an influence on the increase in trade as a share of GDP. In this context, it has already been established that the increase in trade as a percentage of GDP may have possibly been as a consequence of the primary fiscal deficit being leaked out through imports. In analysing the FEVD, it is essential to therefore look at the extent to which the primary fiscal deficit might have led to leakages through increased imports.

Figure 4.26 below shows a positive contribution of the primary fiscal deficit towards leakages through increased imports. This is in line with the analysis made under the IRF analysis. The conclusion is that this outcome could explain why we found a zero short-run and long-run impact of fiscal deficits on economic growth.

Figure 4.26 below shows Trade as a % of GDP variance due to primary fiscal deficit

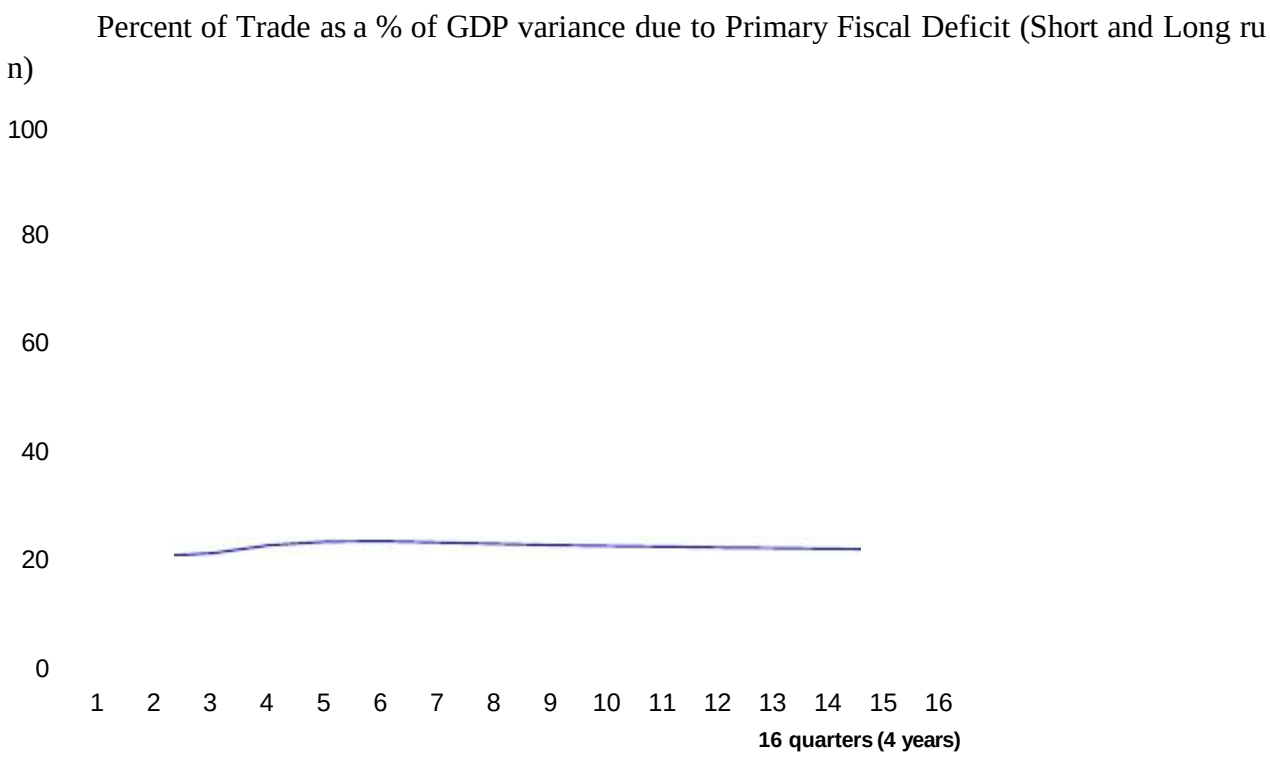


Figure 4.26: Trade as a % of GDP variance due to primary fiscal deficit

4.9.4 SHORT AND LONG-RUN SHORT TERM REAL INTEREST RATE VARIANCE DUE TO PRIMARY FISCAL DEFICIT

This section analyses the extent to which the primary fiscal deficit could explain the rise in interest rates, thereby possibly causing what is commonly known as the crowding-out of private investment. The figure 4.27 below shows that a shock in the primary fiscal deficit does contribute about 8% of the rise in the short-term real interest rate. Once again, this is consistent with the arguments under the IRF analysis, that an increase in the primary fiscal deficit leads to a rise in the short-term real interest rate. Since the study found a zero change in real GDP, one can therefore claim that the economic results of the primary fiscal deficit could have been offset by the dampening effect of the rise in the short-term real interest rate, both in the short-run and long-run.

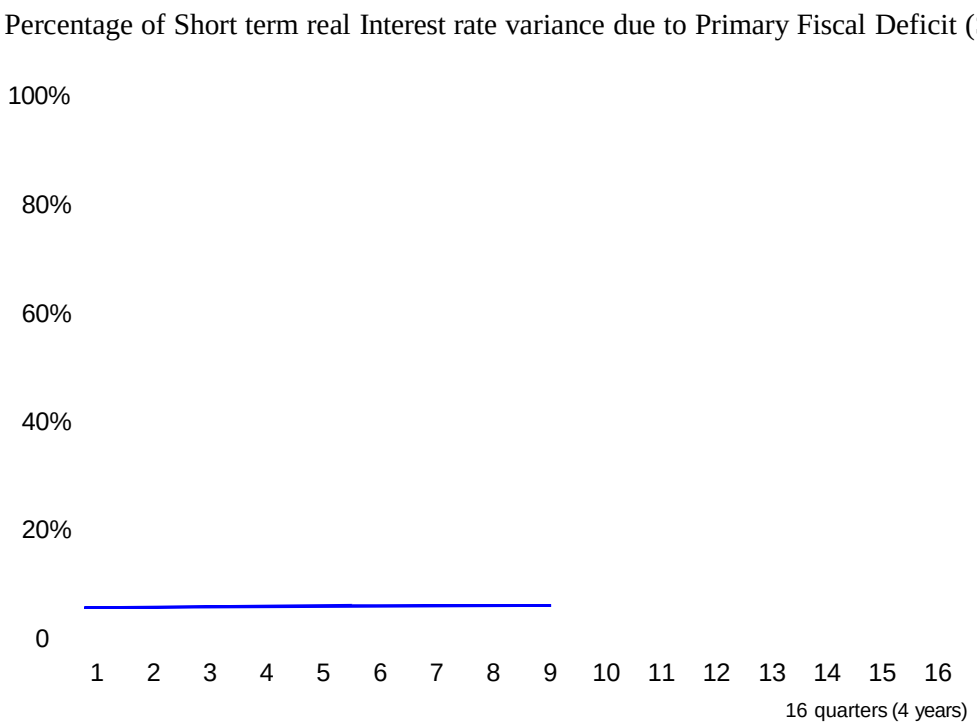


Figure 4.27: Short-term real interest rate variance due to primary fiscal deficit

4.9.5 SHORT AND LONG RUN REAL EFFECTIVE EXCHANGE VARIANCE DUE TO REAL INTEREST

This section is an assessment of the extent to which the short-term real interest rate could have influenced changes in the real effective exchange-rate. This assessment comes as a result of the Mundell-Fleming argument made above, that fiscal deficits lead to a rise in interest rates. If capital is mobile in the economy, this could lead to an increase in capital inflows which then causes an appreciation of the real exchange-rate.

The figure 4.28 below shows that a shock in the primary fiscal deficit has a positive contribution towards the appreciation of the real effective exchange-rate, both in the shortand long-run. This is in line with the analysis under the IRFs, where it was noted that an increase in the short-term real interest resulting from a fiscal stimulus would lead to the appreciation of the real effective exchange-rate. The appreciation of the real effective exchange-rate could have led to a trade deficit, thereby thwarting real GDP. As a result, one can conclude that the economic results of the fiscal deficit could have been offset by the increase in the trade deficit emanating from the appreciation of the real effective exchange-rate.

Percentage of real Effective Exchange rate variance due to short term real interest rate (Short and Long run)

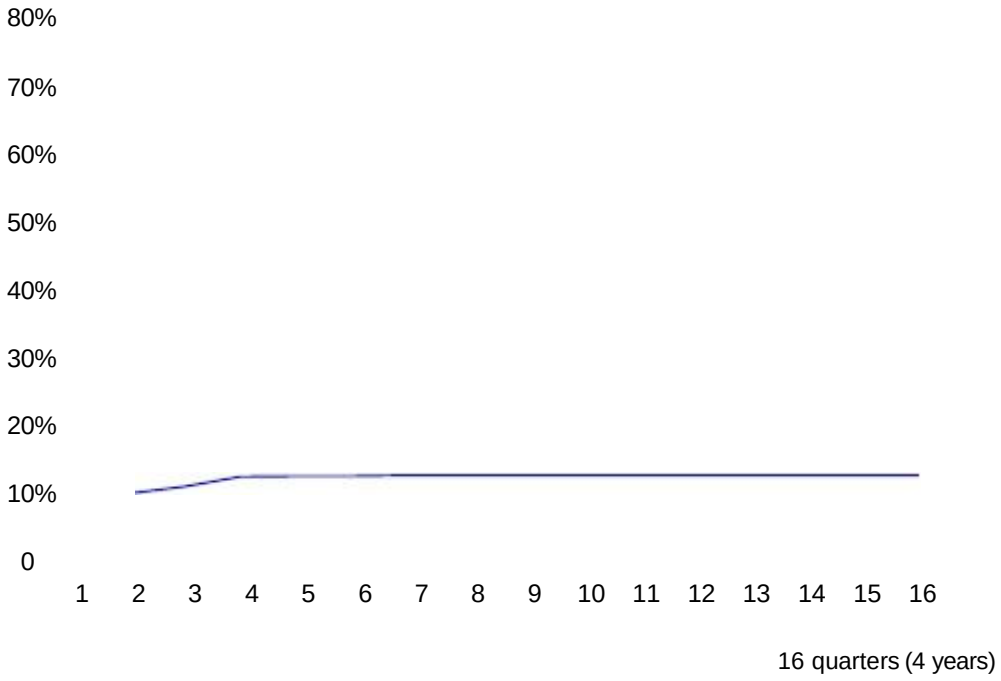


Figure 4.28: Real effective exchange rate variance due to short-term real interest rate

4.9.6 SHORT AND LONG-RUN REAL INTEREST RATE VARIANCE DUE TO REAL GDP

Once again, South Africa pursues an inflation-targeting monetary policy. As established earlier, the SARB adjusts the short-term real interest rate in response to deviations of real GDP and inflation from their steady state. In this study, the aim was to establish the extent to which real GDP influences the SARB to change the short-term real interest rate.

From the above figure, it can be seen that the percentage impact of real GDP on changes that take place in short-term real interest rate is positive, both in the short-run and long-run. This implies that real GDP contains information upon which the SARB bases its inflation-targeting monetary policy. As mentioned earlier, the SARB reacts to this information by changing the short-term real interest rate, as can be seen in the figure below. Therefore, it can be concluded that the zero response of real GDP to changes in fiscal deficits obtained could be attributed to the offsetting effects of the SARB's need to comply with the inflation-targeting monetary policy.

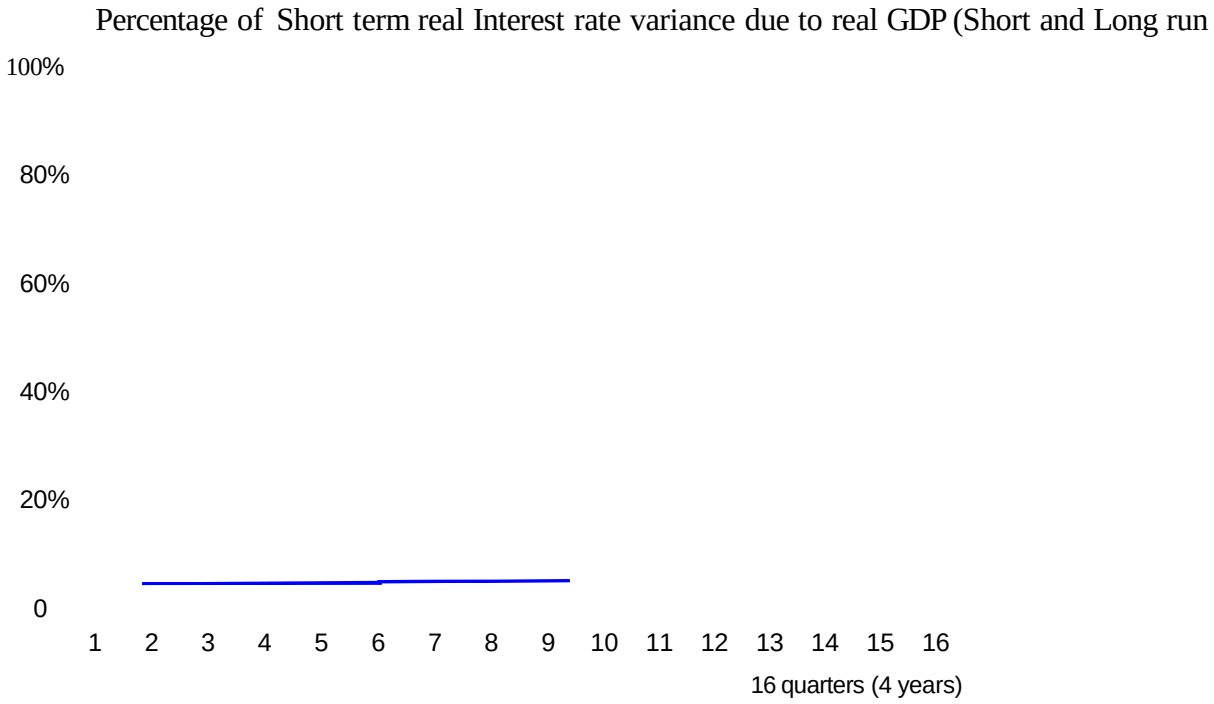


Figure 4.29: Short-term real interest rate variance due to real GDP

4.9.7 SHORT AND LONG-RUN PRIMARY FISCAL DEFICIT VARIANCE DUE TO SHORT-TERM REAL INTEREST RATE

Finally, this section attempts to assess the consistency of the estimates through gauging the extent to which the short-term real interest rate can influence the primary fiscal deficit. Since we calculate the primary fiscal deficit by subtracting interest payments, it is expected that the short-term real interest rate should have a 0% influence on the primary fiscal deficit.

The figure 4.30 below shows exactly what was expected. This proves that our estimates between the primary fiscal deficit and the short-term real interest rate are consistent. In addition, the FEVD results help to clarify the unclear results obtained under the IRF analysis, where there was a slight response of the primary fiscal deficit to a change in the short-term real interest rate.

Percentage of Primary Fiscal Deficit variance due to Short term real Interest rate (Short and Long run)

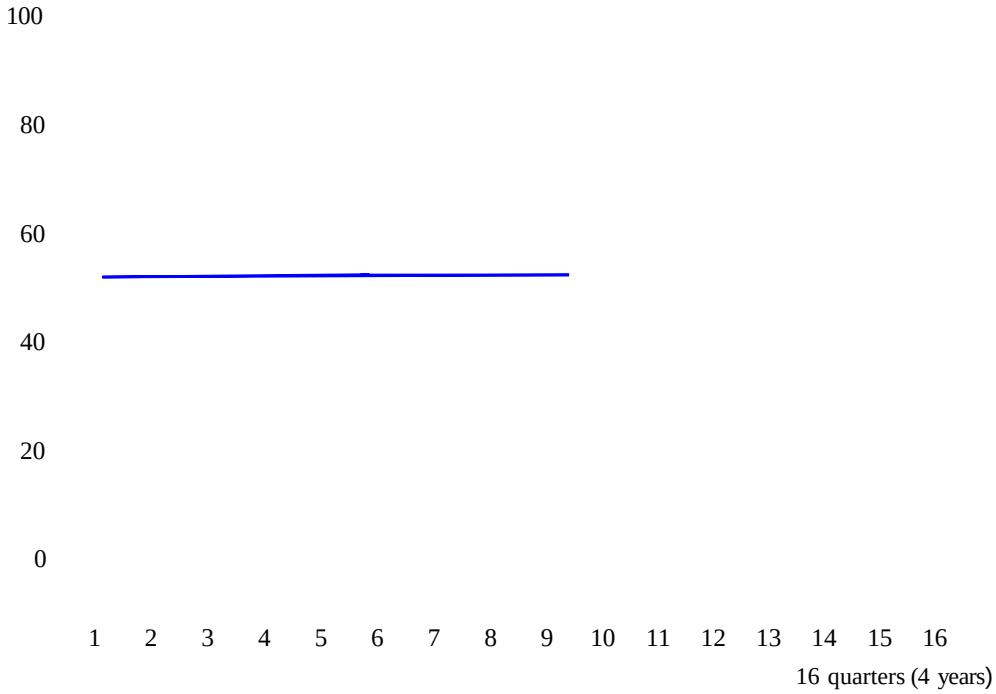


Figure 4.30: Primary fiscal deficit variance due to short-term real interest rate

4.9.8 VARIANCE DECOMPOSITION TABLE FOR REAL GDP

This section describes the variables which had the greatest influence in the variations of real GDP. The variables that had the greatest influence are taken to have had a dominant offsetting effect on the simulative effort of the primary fiscal deficit. Figure 4.31 shows percentage contributions of each variable shock towards changes in real GDP at different forecast periods.

Variance decomposition of real GDP:

Period	S.E.	Deficit	Trade as % GDP	Effective exchange rate	real GDP	Interest rate
1	0.004967	0.088613	5.225305	0.004531	94.68155	0.000000
2	0.009877	0.023607	2.631257	0.159388	97.16347	0.022281
3	0.014398	0.011601	1.238955	0.114694	98.62114	0.013608
4	0.018589	0.020282	2.451430	0.096163	97.41165	0.020473
5	0.022722	0.018786	5.839806	0.083378	94.03788	0.020152
6	0.026651	0.023880	9.252071	0.065732	90.63263	0.025688
7	0.030347	0.038119	11.95656	0.051668	87.92511	0.028544
8	0.033757	0.053688	13.88540	0.063217	85.96785	0.029839
9	0.036930	0.062067	15.29862	0.089850	84.52219	0.027279
10	0.039943	0.064886	16.41420	0.122034	83.37496	0.023916
11	0.042866	0.062052	17.35487	0.153523	82.40878	0.020767
12	0.045714	0.056842	18.13869	0.181079	81.60507	0.018320
13	0.048496	0.050990	18.78876	0.205007	80.93890	0.016345
14	0.051209	0.045743	19.33151	0.227530	80.38053	0.014683
15	0.053852	0.042291	19.80048	0.247265	79.89666	0.013299
16	0.056431	0.041540	20.22654	0.263539	79.45623	0.012147

Figure 4.31: Variance decomposition of real GDP

In the table above, it can be seen that real GDP had the greatest short-run (4 periods) influence on itself, explaining about 97% of fluctuations in itself. It is followed by Trade as a percentage of GDP, with about 2% contribution. After that, the real effective exchange rate follows. The last ones are the short term real interest rate and the primary fiscal deficit.

In the long run, the influence of real GDP on itself declines, while the influence of trade as a percentage of GDP, real effective exchange-rate, primary fiscal deficit and short-term real interest rate increase, in that order. It can be claimed therefore, that the economic results of fiscal policy was offset by the influence of other variables. The influence of those variables can be ranked, starting with the strongest, as follows: trade as a percentage of GDP, which captures leakages through imports; real effective exchange-rate, which captures the trade dampening effect of the appreciation of the exchange-rate; fiscal deficit, and the short-term real interest rate, which captures the crowding out of private investment.

4.10 CONCLUSION

This chapter provided the answers for the research hypotheses. The findings of the study indicated that a positive economic growth is effected by fiscal policy, which represented the null hypothesis. The other hypothesis was that there is no growth, or there might even be a negative growth of the economy, following the use of fiscal policy. From the FEVD and IRF analysis, the null hypothesis was demeaned, that is, it was proven not to be true that fiscal policy/deficits in the South African economy, like any other, cannot lead to a positive economic growth. Hence, it can be concluded that fiscal policy has no effect in both the long and the short-run, on the economy of South Africa.

A variety of factors were analysed, which could have effected this outcome to be obtained. In general, these factors explain how the impact of the fiscal policy to the economy was offset. These factors mainly comprise automatic stabilisers that are weak, trade openness, appreciation of the real exchange rate, the effect of crowding-out on private investment, and the reason that the SARB stick to monetary policy that targets inflation. It can also be concluded that these results are reliable, taking this from the success in the checking of diagnostics which were carried out; and these included residual diagnostic and model stability test. Similar studies were conducted for the same economy and it appears they indicated corresponding results. According to Jooste et al. (2012), the impact of fiscal policy can sometimes be positive and in equal times, it can be negative, therefore supporting the idea that there is a zero effect by the fiscal policy instruments on the economic growth of the country. The author also explains that the multiplier of the long-run, that real GDP does not vary in response to increased in the main fiscal policy/defict. This is also forwarded by Ocran (2009) who asserts that there is no significant impact by fiscal policy/deficits to the growth of an economy.

The following chapter discusses and elaborates on the results of the previous chapter, followed by conclusions and recommendations.

CHAPTER FIVE – CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter discusses and elaborates on the results presented in the previous chapter, followed by conclusions and recommendations. This study investigated the impact of fiscal policy in effecting the economic growth of South Africa. The effectiveness of fiscal policy was determined by the use of the impulse response functions and the decomposition of error variance was determined by the use of the SVAR model. Prior to the model's estimations, an intensive literature review was done to discuss the various variables.

5.2 RESULTS BASED ON THE LITERATURE

5.2.1 IMPACTS OF TAX SHOCKS

From the literature reviewed, there is mixed evidence concerning the impact of changes in tax on the growth of an economy. Although the Keynesians argued that tax cuts foster economic spending, as there is an increase of disposable income, other studies found tax cuts to have no impact on economic growth. Shapiro and Slemrod (2009) undertook a survey to investigate the reaction of consumers on tax cuts, and whether or not it led to increased economic consumption. The survey revealed that twenty percent of the participants aimed to raise their spending on consumption because of the tax rebates reason. Taylor (2009: 551) presented data which also indicate that the tax rebates have a negative effect on the expenditure for personal consumption, although it leads to an increase in the disposable income.

5.2.2 IMPACTS OF GOVERNMENT SPENDING

According to a study by Spilimbergo *et al.,* (2009), the shocks of government spending estimate the variation in the national income as an outcome of a change in government spending. Keynesians anticipate a positive impact on the output of an economy resulting in government expenditure.

Fatas and Mihov (2009) made use of the neoclassical methodology by Barro (1981) to give an estimation of the impact of spending in the late 1900s. Initially, they discovered that there was a positive effect even when there was output below potential. They attempted this later and again found an even larger positive effect.

5.2.3 IMPACT OF BUDGET DEFICITS

Various studies inquired into the either the long-run or short-run effects, or for both, of expansionary fiscal policy. There are great variances in the results in the both the short-run and long-run outcomes. A study by Perotti (2005), discovered that short-run shocks to government expenditure would raise consumption, national output as well as real wage. This finding is in agreement with the Keynesianism theory. Contrary to this is the study by Hemming *et al.*, (2002: 23) which concludes that there is a zero effect on output resulting from government expenditure, in the short-run.

According to a study by Ilzetzki *et al.*, (2010: 15), a negative effect was found in the short term and for the long. It was found that the impact varies greatly on the basis of characteristics of an economy.

Based on the results of the study , there is no empirical argument to give a general conclusion regarding fiscal policy and economic growth. However, to a larger extent, much evidence proposes that in the case of developing countries such as South Africa, fiscal deficits are effective Spilimbergo *et al.* (2009).

5.3.1 OBJECTIVE ONE

This objective sought to determine the extent to which fiscal policies contributed towards the economic growth of South Africa.

In this view, it was also found that there is no agreement in the various schools of thought concerning the impact of fiscal policy measures in effecting the growth of an economy. The results of the study indicated that fiscal policy had a zero impact on the economic growth of an economy. In other words, fiscal policy measures are not effective in effecting economic growth to the economy of South Africa. It is therefore concluded that the impact of the fiscal policy is zero, due to the crowding-out effect, leakages by means of increased imports, rand appreciation, to mention a few.

5.3.2 OBJECTIVE TWO

This objective sought to identify which variable of fiscal policy (government expenditure, tax revenues or budget deficit), if any, is most effective when the government seeks to grow the economy.

The findings of the study indicated that there is no single variable which is most effective when

government seeks to grow the economy.

5.4 CONCLUSION

Based on the findings discussed in the previous chapter, I can therefore be concluded that fiscal policy has no effect in both the long and the short-run, on the economy of South Africa.

The results of the study indicated that fiscal policy had a zero impact on the economic growth of an economy. In other words, fiscal policy measures are not effective in effecting economic growth to the economy of South Africa. It is therefore concluded that the impact of the fiscal policy is zero, because of the crowding-out effect, leakages by means of increased imports, rand appreciation, to mention a few.

In the long run, the influence of real GDP on itself declines, while the influence of trade as a percentage of GDP, real effective exchange-rate, primary fiscal deficit and short-term real interest rate increase, in that order. It can be claimed therefore, that the economic results of fiscal policy was offset by the influence of other variables. The influence of those variables can be ranked, starting with the strongest, as follows: trade as a percentage of GDP, which captures leakages through imports; real effective exchange-rate, which captures the trade dampening effect of the appreciation of the exchange-rate; fiscal deficit, and the short-term real interest rate, which captures the crowding out of private investment.

The results of the study further indicated that primary fiscal deficit has almost a 0% influence on real GDP, both in the short and long-run. In view of the fact that the study finds weak short-run automatic stabilisers, it is claimed that this could explain why a zero response was obtained in economic growth to changes in fiscal deficits.

5.5 SUGGESTIONS FOR FURTHER RESEARCH

It is suggested that further and intensive research be conducted on the effect of either one of the three fiscal policy variables, government expenditure, tax revenues or budget deficits on the economic growth of South Africa. The reason for this is that this study examined the effect of each variable in conjunction.

In addition to the above, further research can be conducted on government expenditure and its effect on economic growth in South Africa. South Africa is heavily reliant on government

expenditure as a tool which will stimulate economic spending and thus, foster economic growth. This can be seen in the high number of social grants offered by the government, as well as the high expenditure on roads, development and infrastructure.

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