THE EFFECTS OF FISCAL POLICY IN MALAWI

MASTER OF ARTS (ECONOMICS) THESIS

By

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DECLARATION

I, the undersigned, hereby declare that this thesis is my own work which to the best of my knowledge, has never been submitted to this or any other institution of higher learning for similar purposes. Where other people's work have been used, proper acknowledgements have been made. I am solely responsible for any errors contained herein.

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CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and that it has been submitted with their approval.

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DEDICATION

This thesis is dedicated to my family: my late dad (Omar Charles Karim), my mom (Rosemary Karim), my sisters (Heather Karim, Miranda Sinjani and Joy Karim), my brother (Ralph Karim) and my girlfriend Tiyanjane Namisao, who have been so supportive to me throughout the course of my post graduate level studies.

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ABSTRACT

The study analyzed the effects of fiscal policy on the Malawian economy. This was achieved in two stages: first, an analysis was done on the effect of a change in fiscal policy variables, i.e. tax revenue or government expenditure, on output and inflation. Second, the study examined the existence of a fiscal policy transmission mechanism by assessing the impact of a change in the fiscal variables on private consumption and private investment channels. After a review of the different quantitative techniques, the study used Structural Vector Auto Regression (SVAR) model where shocks of fiscal policy variables were recovered to analyze their impact on output, inflation, private consumption and investment. The study used quarterly data covering the period 1990 to 2014. The results showed that an increase in government expenditure and government revenue leads to a positive and negative impact on output respectively. Further, government revenue and government spending were found to negatively affect inflation. In terms of the transmission mechanism, evidence was found that private consumption and private investment are channels through which fiscal policy effects pass through. Both private investment and private consumption were found to be negatively affected by an increase in government spending. Whilst a rise in government revenues was found to be negative on consumption, one result had a non-standard flavor. An increase in government revenue was found to positively affect private investment. All in all, it was observed that the method used in fiscal deficit financing remains crucial in determining economic activity in Malawi.

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CHAPTER 1

INTRODUCTION

1.1 Background

Fiscal policy's macroeconomic effects, the channels through which these effects are transmitted, and the variations in these effects and channels with respect to economic conditions has long been a central part of fiscal policy analysis (Auerbach and Gorodnichenko, 2012). Optimal fiscal policy in developing countries plays a crucial role in the growth process and thus, serves as a vital instrument for economic growth (Ali and Ahmad, 2010). This is in line with Ocran (2009) who stipulated that the intent of fiscal policy is essentially to stimulate economic and social development by pursuing a policy stance that ensures a sense of balance between taxation, expenditure and borrowing that is consistent with sustainable growth.

In Malawi, fiscal policy is mainly determined by the medium term goals set to be achieved such as the Malawi Growth and Development Strategy (MGDS) and requirements set by development partners as conditions for credit facilities and donor budget support. Given that Malawi is a third world country, economic policies continue to be aimed at reducing poverty through sustainable economic growth and infrastructure development as espoused in the Malawi Growth and Development Strategy (MGDS) II

which sets the priorities in the short to medium term. However, government's action and commitment to poverty reduction through social expenditure is done whilst ensuring fiscal consolidation, (GoM, 2015). These goals are in line with the above intent of fiscal policy which incorporates both economic and social development.

As pointed out earlier, fiscal policy stance has to ensure a sense of balance between taxation, expenditure and borrowing that is consistent with sustainable growth (Ocran 2009). The Malawi case is a unique one as it is a low income economy and has had to heavily depend on foreign aid. Overtime, government expenditure has persistently exceeded total revenues, resulting in substantial fiscal deficits even after the inclusion of grants in most periods. Consequently, the government has had to increase domestic borrowing to finance the remaining deficit which has had the tendency of destabilizing the macro economy. This is because of the high and volatile inflation and interest rates, which in turn have crowded out private sector credit, curtailed investment and discouraged savings (Fagernas and Schurich, 2004). This has in turn resulted in a slowdown in economic growth and increased levels of external debt.

The government of Malawi has therefore attempted to implement several reforms to solve this persistent problem and enhance economic growth. Following the structural adjustment programs in the early 1980s which were aimed at reducing the fiscal deficit, the quality of budgetary planning started to deteriorate because these efforts proved unsustainable (Fagernas and Schurich, 2004). The medium term expenditure and the cash budget system followed by establishment of a revenue authority and efficient tax reforms

were also some of the measures taken to stabilize the economy. Recently, government adopted a prudent fiscal policy stance by adopting more efficient systems in revenue collection and strong fiscal consolidation measures to contain expenditure within the available resources and reduce domestic borrowing. However, the problem of fiscal position deterioration has persisted.

Practically, fiscal policy affects aggregate demand, the distribution of wealth and the economy's capacity to produce goods and services (Kopcke et al, 2005). It basically does this dynamically as it carries longer policy lags for different macroeconomic variables and this impact could differ across economies depending on their structure. It can have direct or indirect effects on the levels and growth rates of demand side and supply side variables such as output, prices, exchange rate, interest rate, balance of payment, debt, consumption, investment, labor supply and the future fiscal policy variables (Khalid et al, 2008). In the short run, variations in the fiscal variables, such as taxes and government spending, affect both the magnitude and level of demand for goods and services. In the long run, the level of aggregate demand affects both the allocation of resources and productive capacity of an economy and eventually output. For instance, a cut in personal taxes is a classic countercyclical fiscal policy action which affects how much is spent or saved (due to a change in disposable income) in the short run, altering consumption and investment patterns and ultimately affecting economic activity, given household decisions and the prevailing macroeconomic conditions. Similarly, a tax cut may lead to an increase in the budget deficit which may in turn lead to an increase in public debt. In

the long run, this may have an impact on interest rates, capital investment and future economic welfare through higher future taxes (Kopcke et al, 2005).

However, the effect of fiscal policy on economic agents may not always be straight forward. Macroeconomic theories, such as the neoclassical approach predict that economic agents can be Ricardian or forward looking in their consumption and labor supply decisions. In this case, tax changes, holding government spending unchanged, will not affect their intertemporal budget constraint and therefore will not affect their consumption patterns. In terms of government expenditure, increases in government spending especially financed by monetization, may fuel inflation and thus create a negative income effect thereby decreasing household consumption and increasing their labor supply and therefore output via production (Jooste et al, 2013). This has been the case in Malawi in times where revenues to meet expenditures have been significantly less. Some models with neo-Keynesian features predict instead the opposite pattern of responses: government spending causing a shift in labor demand, for instance, because of countercyclical markups generated by nominal price rigidities or other reasons. The resulting increase in the real wage can induce higher consumption, via a substitution effect or because of the presence of credit constraints, (Perotti, 2007).

The above review shows how complex fiscal policy may be and thus calls for appreciation of specific country characteristics of economic agents in the analysis. On top of this, as stated earlier on, developing countries such as Malawi present a unique case because of their reliance on donor budget support. This implies that apart from internal

shocks to taxes and government expenditure, the Malawi economy is also vulnerable to the risk of deterioration of the fiscal position due to any shortfall in donor financing (AfDB, 2014). This again is critical since it may result in the accumulation of domestic debt which leads to poor performance in the other macroeconomic aggregates such as GDP depending on the method of financing used.

Thus far, it can be seen that fiscal policy affects an economy at two levels: first is on its effect on any macroeconomic aggregates such as output and inflation and second is on its effects on the specific output components, which are in essence the channels in its transmission mechanism. However, the role and objectives of fiscal policy have only gained prominence in the recent financial crisis as governments have stepped in to support financial systems, jump-start growth, and mitigate the impact of the crisis on vulnerable groups, (Horton and Al-Ganainy, 2009). Before this period, several studies were made on fiscal policy effectiveness but many of them paid more attention on developed economies with the inclusion of developing countries, in case of cross-country studies, mainly to generate enough degrees of freedom in the course of statistical analysis (Aregbeyen, 2007).

Therefore, much as there is available theory on fiscal policy, it remains an area which has not been extensively studied. However, empirical studies are necessary given that real life situations are usually more complicated than theory would typically suggest. Different sets of results may, for instance, arise depending on the level of development of the economy and how reactive economic agents are to policy. It is important, then, to

appreciate the unique dynamics of each economy in assessing the effects of fiscal policy (Mangani, 2010). This renders a study on the effects of fiscal policy worthwhile especially in developing economies so that the impact of any fiscal policy shock on the economy is evaluated for effective decision making by fiscal authorities.

1.2 Problem Statement and Justification of the Study

According to Shaw (2005), fiscal policy is the heart of fiscal management and it provides the central framework for the mobilization, allocation and control of government financial resources. Fiscal policy making can therefore be divided into three: allocation, distribution and stabilization- as first categorized by Musgrave (1959) over five decades ago and these remain useful in the assessment and analysis on which fiscal policy tools to use given the more complex environment we live in this day.

Of much interest to policy makers is: first, efficient utilization of resources which enhances economic growth and development; second, equity in income distribution which improves socio-economic development across individuals; and third, control of cyclical fluctuations which helps cushion economic agents from the negative side effects by stabilizing the economic environment (Tanzi and Zee, 1997). Much as there seems to be potential tension between short-run stabilization and longer term growth goals of fiscal policy (Kopcke et al, 2005), there is need for a balance between the two to ensure both economic growth and stability of the economy.

In Malawi for example, total revenues have not been able to meet all government expenditures thus resulting in persistent government deficits. Consequently, this has led government to resort to domestic financing which has dwindled private investment due to increased interest rates (Fozzard and Simwaka, 2002). This eventually has led to a reduction in the output levels and in the process slowing down economic growth, and deterioration of the current account. Some of the imbalances which had to be stabilized have been as a result of unstable oil and export prices, droughts and drops in aid inflows (EIU, 2001). Given this critical and important scope that fiscal policy affects, it is imperative to empirically investigate how various fiscal policy measures affect the economy.

On top of this, most studies which have been done on macro-level policy related issues in Malawi (e.g. Mangani (2010), Kwalingana (2007), Mughandira (2011), Kumwenda (2013)) are bent towards monetary policy effectiveness and its associated channels. Only few studies have been done on the fiscal part and have concentrated on the interaction between central bank behavior and fiscal policy (Phiri, 2001) and the impact of foreign aid on government's fiscal aggregates (Khonje, 2005). The study of fiscal policy and its transmission mechanism, therefore, remains a gap to be filled. This is because having available potentially powerful instruments to influence the economy, policy makers should realize the consequences of their actions and the exact magnitude of the effect of their decisions on the economy (Rarytska, 2003). After all, while good macroeconomic policy is a prerequisite of good macroeconomic performance, bad macroeconomic

policies may stall the economy. As such, given this and the complexity of issues in developing countries, the Malawi economy poses a very interesting case study.

This paper therefore, analyzes the effect of the patterns of fiscal policy on output, inflation, private consumption and private investment. This is done by focusing on both the effect of fiscal policy variables on output and prices and by tracing whether private consumption and private investment are channels through which the impact passes. The contribution of this study then is a thorough documentation of the effects of fiscal policy on the Malawian economy, a question which to the best of my knowledge has not been attempted.

1.3 Objectives of the Study

In assessing the effects of fiscal policy on the Malawian economy, this study uses government expenditure and tax revenues as policy tools and assesses their impact on GDP and inflation. The paper extends to trace if the two GDP components (private consumption and investment) are indeed channels through which tax revenue and government expenditure affects output in the Malawian setting.

The main objective of this thesis, then, is to analyze the effects of fiscal policy on the GDP.

To achieve this, the paper addresses on the following specific objectives:

- To investigate the effect of a change in tax revenue and government spending on GDP and inflation

- To assess the effectiveness of private consumption and private investment channels in fiscal policy transmission

1.4 Hypotheses Tested

To achieve the above stated objectives, the following hypotheses will be tested:

- Tax revenue and government spending do not affect GDP and inflation
- Private consumption and private investment channels are not effective in fiscal policy transmission

1.5 Significance of the Study

Given that a study on fiscal policy effects has not been done in Malawi, it is imperative that an empirical investigation be carried out on the topic. This is because policy makers have to take into consideration any unique dynamics in the economic environment they operate in and be aware of how economic agents will respond to any change in the fiscal policy variables their actions affect (Rarytska, 2003). In addressing the objectives of the study, this paper will help contribute to the body of knowledge on how fiscal policy in Malawi and in other similar rated economies affects macroeconomic aggregates. In addition, it will also aid in understanding to what extent or magnitude the relevant channels are affected in the transmission mechanism.

1.6 Organization of the Study

The rest of the paper is organized as follows. The next chapter presents an overview of the fiscal policy framework in Malawi. Chapter 3 reviews theoretical and empirical literature on how fiscal policy affects the economy. Chapter 4 outlines the econometric

methodology of the paper in estimating the impact of fiscal policy on the Malawian economy. Chapter 5 presents the results of the econometric analysis, and chapter 6 provides concluding remarks.

CHAPTER 2

OVERVIEW OF FISCAL POLICY IN MALAWI

2.0 Introduction

This chapter gives an overview of fiscal policy in Malawi by providing trends of relevant macroeconomic variables and fiscal policy challenges faced by the Malawian economy overtime. The discussion is mostly based on different reports from the World Bank and African Development Bank covering the period under study, the work of Fagernas and Schurich (2004), and similar studies which have provided a comprehensive discussion on the economy performance and fiscal policy. Data used for construction of the graphs was provided by the Reserve Bank of Malawi.

2.1 The Macroeconomic Background

Since independence in 1964, macroeconomic stabilization in Malawi has remained elusive (Fagernas and Schurich, 2004). Malawi has had volatile real GDP growth coupled with persistent budget deficits and high inflation and interest rates. Figure 1 below shows the budget deficit both before (Fiscal Def BG) and after (Fiscal Def AG) grants as a share of GDP over the period 1980 to 2014. The budget deficit has been growing overtime due to increases in government spending which exceeded revenue growth.

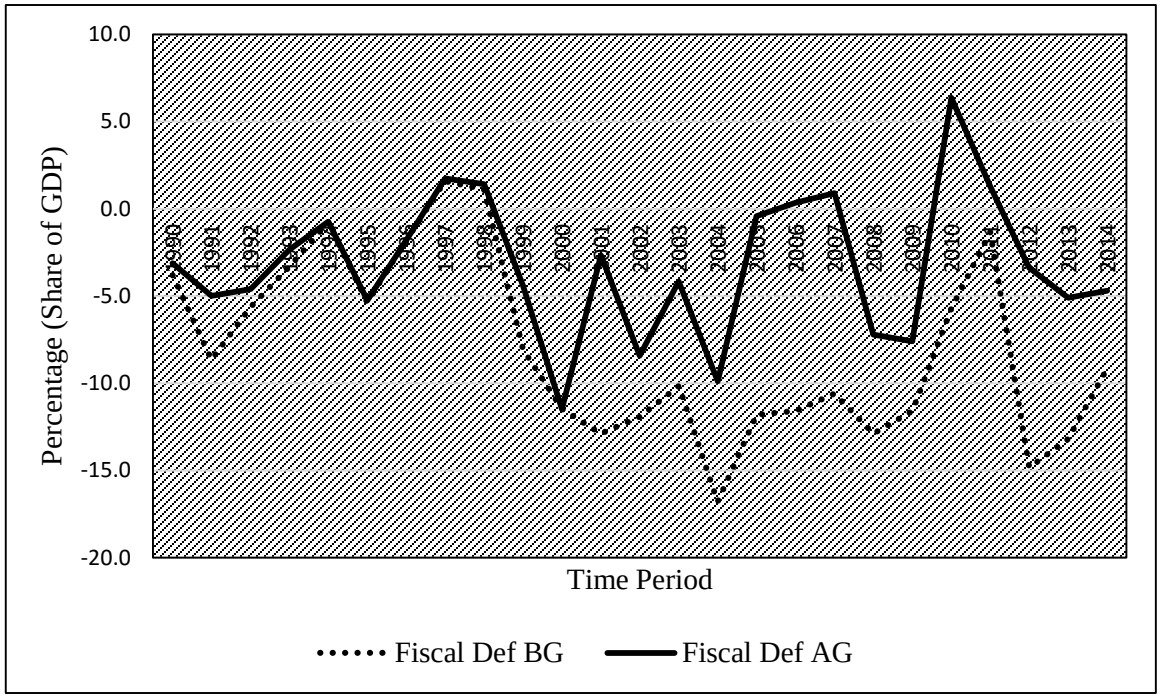

Figure 1: Budget Deficit Trend

The budget deficit remains a crucial aspect in fiscal policy analysis because in most cases it leads to reduction in national savings, investment, net exports and may create a corresponding flow of assets oversees (Ball and Mankiw, 1995). In the long run, due to their effect on investment through high interest rates, budget deficits may cause an ultimate decrease in total output and total wealth. Bernheim (1988) also found that evidence corroborates the view that fiscal deficits significantly contribute to a deterioration of the current account. This has been the case in Malawi where the current account deficit has been very persistent and private investment crowded out. The budget deficit graph only provides very few instances where Malawi had a surplus of which most of those were on account of grants.

In terms of real GDP growth, unlike in the past especially 1970-1979 when it was relatively high due to easy access to the international capital markets just to mention one, Malawi experienced an overturn of events starting from the 1979/80. This is because in 1979 the world price of tobacco fell and oil prices rose, combined with poor domestic policy, which disrupted the pattern of growth. Further, Malawi lost its principal trade route (used for 80-90% of exports and imports), due to the closure of the rail link in neighboring Mozambique which led to an increase in transport costs (EIU, 2001). Due to the unrest in Mozambique, defense spending also increased substantially. This resulted in further deterioration in the budget and current account deficits. The deterioration in the budget deficit occurred despite a concerted effort on the part of the government to increase tax effort (Shalizi and Thirsk, 1990). Figure 2 below shows the GDP growth trend in Malawi from 1990 to 2014.

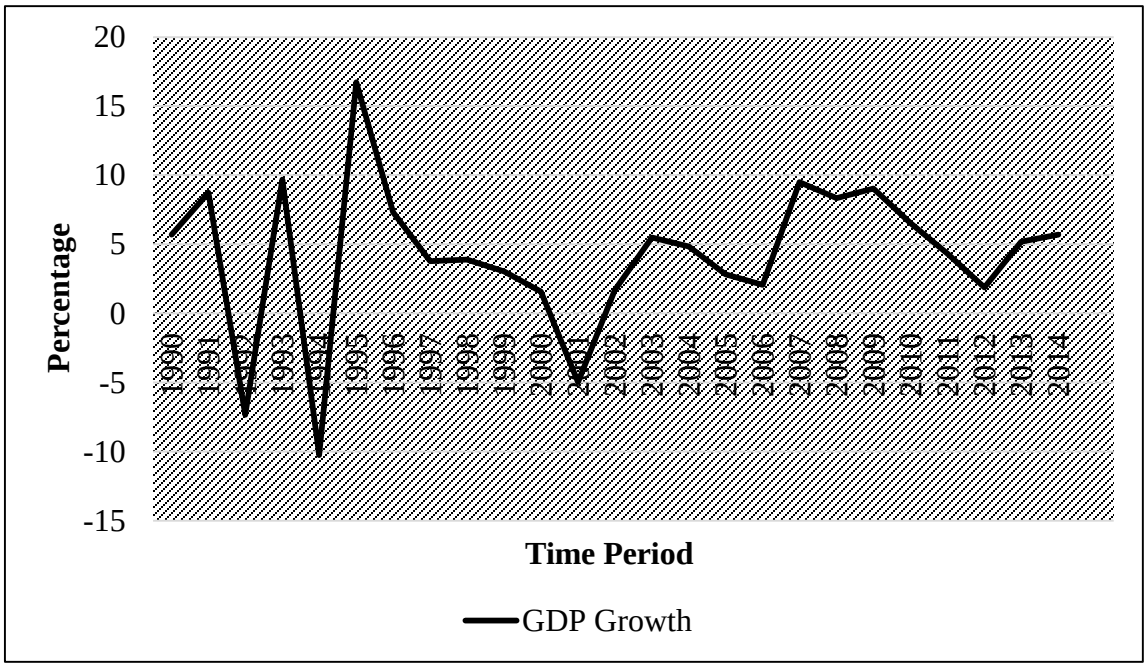

Figure 2: GDP Growth Trend in Malawi

Growth was extremely volatile between 1992 and 1994. This was caused by two major droughts experienced in those years, continual decline in tobacco prices and uncontrolled fiscal spending in the last months of the one party regime. The drought forced the new government in 1994 to maintain high expenditure on drought relief. In addition, the government delivered campaign promises to make primary education free for all. As a result, school enrolment rose by over 60%, government had to hire almost 20,000 new teachers (EIU, 2001). After aid inflows dropped, government responded quickly to control the budget deficit to manageable levels through the introduction of the Medium Term Expenditure Framework (MTEF) in 1995, giving each ministry a rolling three-year resource envelope to be spent according to medium-term strategies (Fozzard and Simwaka, 2002).

As a result of these helpful policies coupled with a good rains and stable economic prices, economic growth recovered after 1995. On the other hand, however, the fiscal deficit started to deteriorate again in 1997 partly because of lower than projected revenue growth and administrative failures in tax collection. In 1999, the government also bailed out the debt of the Electricity Supply Corporation of Malawi (World Bank, 2003a). Spending on public services prior to the 1999 elections also contributed to an increasing fiscal deficit.

Increased agricultural production contributed to and benefited from macroeconomic stabilization, low interest rates and controlled inflation. There had been a two-way causality, a mutual reinforcement. Between 2004 and 2010, macroeconomic policy focusing on fiscal discipline contributed to Malawi's high economic growth (World

Bank, 2009). The macroeconomic policy during the Mutharika regime is one area that helped to anchor growth. Loose fiscal and monetary policy under Muluzi (prior to 2004) resulted in a widening fiscal imbalance, real interest rates exceeding 20% and inflation reaching almost 80% in early 1995. This resulted in the retreat of donors from the country and a collapse in private investment (World Bank, 2009).

The Mutharika regime, which gained power in 2004, brought about rapid change in public finance. For the first time since 1994, Malawi remained within its planned budget, and consequently enjoyed a drastic improvement in its fiscal position (AfDB, 2008; World Bank, 2009). The positive implication of fiscal discipline was an increase in donor inflows, which reduced the crowding-out effect of government borrowing and freed up resources for private sector investment. The private sector was reported to have resumed growth in 2004.

Malawi had reduced its inflation rate, reported at 7% per annum at the end of July 2010 (NSO). The Reserve Bank of Malawi had therefore not considered it necessary to tighten monetary policy, which would entail increasing interest rates (AfDB, 2008). The base rate was cut from 15% to 13% in August 2010. From a base rate that reached 60% in 2002/03, this was a notable achievement. A large component of the Consumer Price Index basket is food, which represents 58% (largely maize). Thus adequate maize supplies in recent years have contributed to stabilizing inflation.

Economic growth was therefore at 6.3% in 2010 which was a reduction from 7.6% in 2009. This was attributed to reduced agricultural output for maize and tobacco in the 2009/10 season though agriculture remained the highest contributor to the country's GDP at 32% share partly owing this to the Fertilizer and Input Subsidy Program (FISP). Around the same time, Malawi had started experiencing the effects of the financial crisis which were limited but mostly affected the export sector because of fluctuating international prices resulting in worsening of terms of trade (AfDB, 2011).

Malawi faced serious macroeconomic challenges in 2011 and 2012 which were a result of inappropriate policies which led to a growing fiscal deficit, rising inflation and a depletion of international reserves in the context of an overvalued exchange rate. Mid 2011, due to these policy slippages coupled with governance and human rights concerns, the Malawi program with the International Monetary Fund (IMF) under the Enhanced Credit Facility (ECF) went off-track and donors suspended aid. The new government which took over in April 2012, renewed commitment to sound macroeconomic policies and good governance which led to approval by the IMF of a new ECF program and resumption of donor support. It instituted key policy reforms to address the macroeconomic balances and revive the economy and these included devaluation of the Malawi Kwacha by 49%, move to a flexible exchange rate regime, tightening of monetary and fiscal policy and the removal of subsidies on fuel (AfDB, 2012).

2.2 Trends in Fiscal Variables

Figure 3 below summarizes the trends in the fiscal variables in the Malawian economy. Over the period of analysis, government expenditure had persistently exceeded total revenue, resulting in substantial fiscal deficits before aid. Even after including the large aid inflows, the total revenues were not able to close the revenue-expenditure gap in most periods. As a result, the government has had to resort to high levels of domestic borrowing to finance the remaining deficit. High and volatile levels of borrowing had destabilized the macro economy, as they had resulted in high and volatile inflation and interest rates, which in turn had crowded out private sector credit, curtailed investment and discouraged savings.

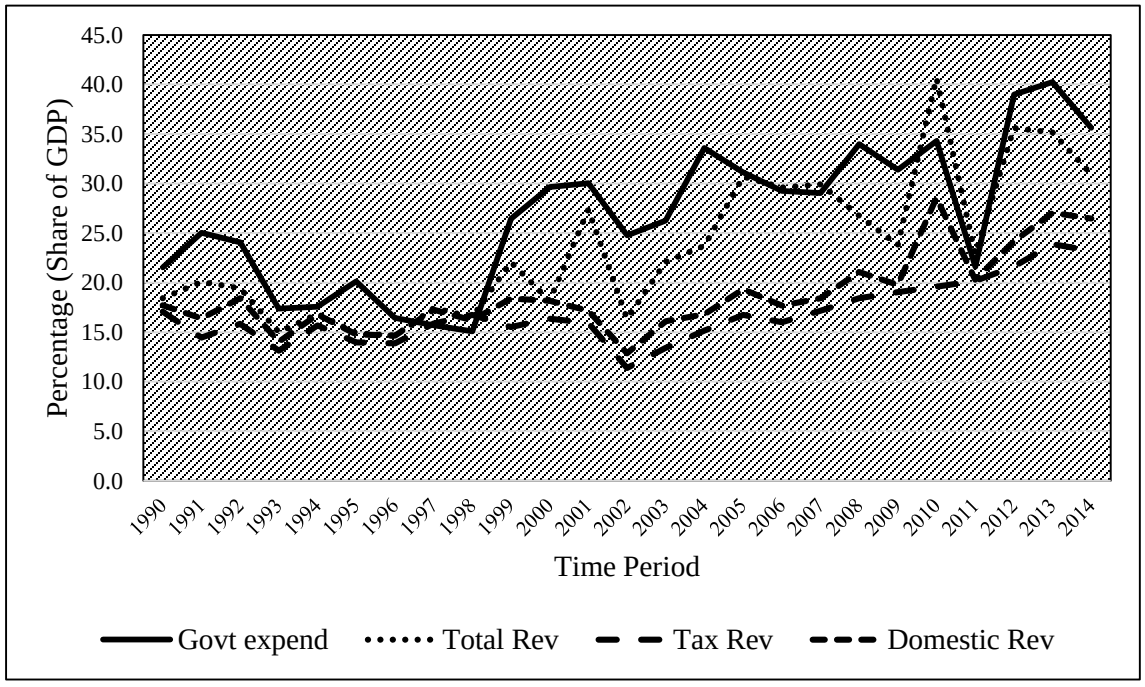

Figure 3: Trends in Fiscal Policy Variables

Inevitably, this has seriously undermined economic growth, and caused a build-up of external debt (Fagernas and Schurich, 2004). The spending observed here is related to recurrent spending which has been normally financed by domestic resources, whereas development expenditure is largely externally financed.

2.3 Fiscal Policy Challenges and Efforts

Malawi attempted several reductions in its fiscal deficits under the structural adjustment programs but these efforts proved difficult to sustain. The quality of budgetary planning started to deteriorate in the 1980s. While external shocks, such as terms-of-trade shocks in tobacco commodity prices, droughts and floods, have played an important part in derailing fiscal adjustment efforts, domestic policy failures and institutional weaknesses have probably played a more important role (Fagernas and Schurich, 2004).

A Medium Term Expenditure Framework (MTEF) was introduced in 1995 to improve public spending. This was designed to implement a system of forward resource budgeting. However, the impact of the MTEF on public expenditure outcomes has been modest, largely due to weak budgetary compliance and oversight, but also to design weaknesses and reluctance to move towards medium-term planning. To date, the public expenditure framework practice is still characterized by an annual cycle (Fozzard and Simwaka, 2002) though slowly the MTEF is being adopted.

The cash budget system introduced in 1996, whereby cash is disbursed for spending according to revenue yields, was effective, but undermined service delivery and led to the

administrative capture of scarce resources (Fagernas and Schurich, 2004). As a result, the emphasis shifted from budgetary resource planning to expenditure control via capacity-building in accounting, treasury management and auditing as well as implementing a computerized financial management database. Cash budgeting did, however, manage to reduce the in-year deviation between actual and planned levels of voted expenditure in 1995, following the excess expenditure of election year 1994, and 2000. However, variance has continued to remain large in statutory expenditure (largely debt), due to exchange rate and interest rate fluctuations (Fozzard and Simwaka, 2002). In some sense, cash budgeting also loosened budgetary discipline as it allowed in-year changes to be made to the budget, by the presidency and the more powerful ministries at the expense of the less powerful ones. The allocation of resources became more informal and formal institutions started to play a smaller role, despite the somewhat opposite intention of the MTEF (Rakner et al., 2004). The effect may, however, be relatively small at the aggregate level of fiscal management.

Overall, progress in expenditure reform remained slow, as political commitment to overcome vested interest had been lacking and reforms had been imposed by development partners to a greater extent. There also had been a lack of high-level political commitment to fiscal discipline. The Ministry of Finance (MoF) lacked the necessary independence from the Cabinet to effectively control agency spending (and spending by the Cabinet itself). In general, the budgetary process was characterized by almost routine recourse to supplementary budgets that are normally only accounted for to the parliament ex-post in the estimates for the following financial year (Fozzard and

Simwaka, 2002). Deficiencies in budgetary discipline led to large expenditure overruns and arrears. Poor forecasting also contributed to spending out-turns that persistently exceeded budget estimates, or shortfalls in domestic revenue against projected forecasts (World Bank, 2003a). These factors introduced a randomness to the budgetary process, which is clearly reflected in the time series on fiscal aggregates in the 1990s.

The government of Malawi, with support from development partners, had been implementing a number of reforms since 2006 to improve fiscal management. These reforms were been implemented within the framework of the Public and Economic Management (PFEM) action plan. Reforms included rolling out of Integrated Financial Management Information System (IFMIS) to local assemblies, tax administration in areas of improved VAT and introduction of the Electronic Tax Register (ETR). The 2009/10 budget estimates were prepared based on the MTEF principles, (AfDB, 2011). Domestic revenue increased to 33.9% of GDP in 2009/10 from 31.9% of GDP in 2008/09. Domestic debt rose from K154.7 billion in December 2009 to K172.6 billion in December 2010. Grants experienced a gradual decline resulting in a rise in the fiscal deficit which was financed by domestic and external concessional borrowing. The trade deficit grew in 2009 owing to higher import costs of fertilizers and petroleum fuel. Despite the uranium exports, higher growth in imports than exports in 2010 further contributed to the widening of the fiscal deficit.

Due to the overvalued exchange rate, which led to depletion of international reserves (plummeting to less than one month of import cover in March 2012), coupled with the

growing fiscal deficit and rising inflation, the country was greatly challenged. The new government (which came in April 2012) brought policy reforms whose results started to materialize in the second half of 2012. These were donor budget support resumption, forex availability, fuel availability and gradual restoration of supply credit lines. Fiscal performance however weakened on account of lower than expected domestic revenues and external grants. As part of the adjustment effort, government implemented prudent fiscal measures aimed at boosting domestic revenue, restraining expenditure growth and reducing domestic debt. In September 2012, government officially launched of the Malawi Growth and Development Strategy (MGDS II) which would run from 2011-2016 stating the critical areas to focus on. In addition, the Economic Recovery Plan (ERP) was launched which aimed at achieving economic recovery and mitigate the impact of the reforms on vulnerable citizens through immediate and short term reforms and interventions to restore growth and reprioritize expenditure towards sectors with potential to boost economic growth and export earnings (AfDB, 2012).

As part of government effort in the adjustment process, implementation of the following was done: automatic fuel price adjustment mechanism to ease the pressure of subsidies on the budget, tightening of expenditure controls, reduction in non-essential recurrent costs and alignment of expenditures with top priorities in the MGDS II including social welfare programs (AfDB, 2013).

Government continued to pursue a prudent fiscal policy stance in the 2012/13 and 2013/14 fiscal years. In the 2012/13 year it anchored the principle of zero domestic

financing budget with focus on strengthening revenue mobilization, improving efficiency in tax administration through tax reform and introduction of the electronic cash register. However, fiscal conditions also deteriorated in 2013/2014 following the withdrawal of donor budgetary support to Malawi in the wake of the cash gate scandal where it was observed that government funds had been stolen. This suspension of budgetary support led to a short fall in both general budget support and dedicated external grants amounting to 4.3% of GDP, rendering the strong domestic performance in 2013/14 insufficient to compensate for the short fall.

In the 2013/14 fiscal year, expenditure adjustments were made by curtailing development expenditure and travel costs, and other austerity measures. However, overspending in the recurrent budget still occurred because of higher than budgeted interest payments on domestic debt which more than doubled from 2% of GDP to 5.9% of GDP in 2013/14. This in turn crowded out budgetary resources for development projects and constrained funding of basic service delivery (AfDB, 2015).

During the 2014/15 fiscal year, government adopted strong fiscal consolidation measures to contain expenditure within the available resources and reduce domestic borrowing. The budget framework assumed a zero aid budget with pro-poor spending as a priority. 70% of the budget was allocated to MGDS II priority areas including social development, food security and social protection (AfDB, 2015).

2.4 Conclusion

All in all, Malawi has faced a lot of challenges in its fiscal sector characterized by growing budget deficit overtime. Recently, the pull out of donors has led to further imbalances in the budget balance. However, the government has been doing several attempts to solve this problem and these include adoption of the MTEF, strengthening revenue mobilization, improving efficiency in tax administration through tax reform, introduction of the electronic cash register and austerity measures in expenditure.

CHAPTER 3

LITERATURE REVIEW

3.1 Theoretical Literature

Modern macroeconomics literature emphasizes both the short run and long run objectives of fiscal policy (Romer, 2006). In the short run, fiscal policy can be used to counter output cyclically and stabilize volatility in macro variables, which is descriptively similar to the effects of the short run monetary policy. Further to this, for the long run, fiscal policy can also affect both the demand and supply side of the economy, which is in essence the level of economic activity. The debt financing methods, expenditure and tax powers of fiscal authorities are therefore critical in affecting economic activity. However, in most traditional analyses, it is assumed that fiscal policy would adjust to ensure the inter- temporal budget constraint to be satisfied, while monetary policy is free to adjust its instruments (Sargent, 1982) such as stock of money supply or the nominal interest rate (Walsh 2003).

3.1.1Fiscal Policy Instruments

Under fiscal policy, the policy instruments used are taxation (taxes) and government spending to regulate the aggregate level of economic activity (Eshaq, 1983). The budget deficit is also of essence mainly because the source of funding can affect other

macroeconomic aggregates. For instance, if the fiscal deficit is monetized, a rise in inflation is expected and this may in turn affect private consumption, owing to the decrease in the disposable income of individuals and firms. On the other hand, if the fiscal deficit is financed by domestic borrowing, then interest rates are more likely to increase and the private sector may be crowded out leading to a drop in private investment and consequently low economic growth (Khalid et al, 2008).

3.1.2 Conceptual Framework

Before fiscal policy theories are discussed, breakdown of the real economy is presented. The real economy, which is the sector that fiscal policy directly affects, can be analyzed from three different points of view. These are: value added, expenditure and income. In essence, the three are also approaches to output or GDP measurement.

The Value Added (VA) approach, also known as the production approach, is the most direct method for estimating GDP. Value added is defined as gross output less intermediate consumption. It is executed by computing and cumulating VA along the production chain for each producing unit, and summing up for each industry and across industries (Mankiw, 2009). The income method sums up payments to factors of production in all economic production activities (Abel et al, 2011). The major components of VA in this sense are: compensation to employees or wage bill (WB), operating surplus of corporate enterprises (OS) and consumption of fixed capital or depreciation (DEP).

The last method, expenditure approach, is the one that will be mostly used in this study in analyzing the effects of fiscal policy. The primary aim is to value the domestic output that is accounted for by final expenditures (Mankiw, 2009). Generally, there are four components namely: private consumption (C), private investment (I), government expenditure (G) and net exports (NX, exports less imports). This model, called the national income identity, is given as below:

$$GDP = C + I + G + NX \tag{1}$$

Each of the components in this model is complex and contributes uniquely to the determination of GDP. Of much interest in this study will be private consumption and private investment and government expenditure. This is because tax policies and government expenditure affects these as intermediate channels before having an ultimate effect on GDP (Rarytska, 2003). Since government expenditure is assumed to be exogenously determined, focus shall be on private consumption and private investment as possible channels.

Private consumption represents all consumption by households and firms. It is a function of autonomous consumption, income, taxes and the marginal propensity to consume.

$$C_{it} = \overline{C}_i + c_y(Y_{it} - T_{it}) = \overline{C}_i + c_y DY_{it} \tag{2}$$

where, C_{it} is real expenditure on final private consumption goods and services by household or individual *i* during time period *t*; Y is real gross income, DY_{it} is disposable income defined as gross income net of taxes, T, paid to government; and $\overline{C}_i$ is real consumption spending level that is independent of the individual's own current period

disposable income (Abel et al, 2011). As can be shown, fiscal policy affects private consumption by changing the level of disposable income either through tax changes or via inflation which may be caused by financing of government expenditure by monetization.

Private investment, on the other hand, encompasses investment by the private sector (Mankiw, 2009). It is a function of autonomous investment, real interest rate and expected income.

$$I = \bar{I} + v\Delta Y^{e} - br \qquad (3)$$

Where, I is private investment, $\bar{I}$ is level of planned investment (autonomous), v is the accelerator parameter, Y^{e} is expected income and r is the real interest rate. Any act by the government that affects the interest rate, for instance domestic borrowing to finance the fiscal deficit, or expected income affects private investment (Khalid et al, 2008).

However, it should be noted that fiscal policy effects are rather complex than it has been described thus far. This is because of variations in the dynamics of different jurisdictions. To substantiate the simplified model above, a discussion of fiscal policy theories shall follow.

3.1.3 Fiscal Policy Theories

Different economic schools have different attitudes towards fiscal policy, and derive different inferences about its impact on the functioning of the economy (Rarytska, 2003). Fiscal policy is often evaluated by its effect on investment, since investment is the most direct factor on economic growth. However, it is not well understood what the effect of

fiscal policy on investment and hence output, is. This is because while one view posits that government has no control over private consumption and investment decisions, the other holds that in capitalistic economies subject to ordinary fiscal and monetary controls, government has considerable influence over the investment rate (Phelps, 1965). The same applies to the effect of fiscal policy on consumption decisions. Therefore, I discuss the various theories on the effect of fiscal policy and in the later section, the possible channels through which fiscal policy works.

3.1.3.1 Keynesian vs Neoclassical and Other Theories

In order to measure the effects of shocks in fiscal policy or its reaction to various macro variables (i.e. the automatic stabilizers property of fiscal instruments), one has to see the stance by composition of budget from both the share of components and their classifications. Normally, macroeconomics 'fiscal stance' is analyzed by looking at the consolidated scale of public deficit as mentioned before. However, the dynamic effects of the shocks in government spending, taxes and the consolidated budget deficit (thereby implying the composition of inter-temporal budget constraint) can be altogether different in magnitude and lags in implementation (Khalid et al, 2008).

For example, as Blanchard and Perotti (2002) noted, there is persistent effect of government spending on private consumption, which is consistent with the Keynesian models but opposite in the neoclassical approach. Further, there is new literature on the theory of 'expansionary fiscal contraction', in which the reduction in provision of those public goods which are in the utility function of households (by virtue of reduction in

government expenditures) leads to increased spending by households to meet that gap and thus components of aggregate demand increases.

The effect of an increase in government spending on macroeconomic activities and the way these effects are transmitted have long been a subject of analysis and debate as two different theories have been proceeded to elaborate this issue. According to Javid and Arif (2010), the main reason for the disparity between these two theories lies in how the consumer is implicit to behave in each case. The Keynesian framework treats expansionary fiscal policy as exclusively an exogenous increase in aggregate demand making demand constrained firms to sell more output that ultimately boost income, employment and through multiplier effect enhance consumption as short run phenomena of price stickiness make output demand determined prices to alter steadily and firms mainly follow the cost push from increasing wages. The consumers in this model are assumed to behave in non-Ricardian fashion with consumption depending on their current disposable income and not on their lifetime income. Therefore, the effect of increase in government spending depends on the way it is being financed with the multiplier escalating with the size of deficit finance.

Contrary to the above, the real dynamic general equilibrium model, presented by Baxter and King (1993), with optimizing agents and flexible prices, takes fiscal policy as influencing the economy through negative wealth effect commenced by the tax financing of increasing government expenditure. The model featured infinitely lived Ricardian household with consumption decisions determined by intertemporal budget constraint at

any point in time. This phenomenon would provoke a fall in private consumption coupled with an increase in labour supply therefore resulting in raising output and employment whereas lowering wages. The wealth effect analysis therefore differs from the aggregate demand effect analysis. This is because equilibrium output and employment brought about by fiscal policy results from the optimal response of household labor supply (Javid and Arif, 2010). Thus with respect to wages and private consumption, the findings of neoclassical general equilibrium framework are in contrast with Keynesian framework. However, the empirical facts are not supportive in discriminating the two theories since there are two set of studies implying contrary and opposing results. The reason might be the method of financing used.

3.1.3.2 Government Financing Methods and Channels

The methods of government financing, taxes, borrowing and monetization of debt, determines the outcome of fiscal policy. This is because the effectiveness of fiscal policy is highly dependent on the effects of government spending in crowding out private spending or not. These methods will also assist in transmission mechanism identification by providing first level channels that fiscal policy passes though when government financing is taken into consideration.

First, in theory, a dollar increase in government spending that is financed by an equal increase in taxes or grants in the case of developing countries, increases aggregate demand and, hence, economic activity, i.e., the balanced budget multiplier is positive (Javid and Arif, 2010). In contrast, increase in government spending that is not matched

by an equal increase in taxes or grants creates a budget deficit as in the case of developing countries. Assuming a fiscal policy stance through the tax structure, the supply side of an economy is affected by any change in the household labour supply decisions or the firm's business financing decisions (Khalid et al, 2008). Direct and Indirect tax levels have different transmission mechanism on economic agent's decision makings. For instance, taxes would change the disposable incomes of household and thereby affect the household's consumption, investment, labor supply and savings decisions which ultimately would affect output.

Second, an increase in government spending can be financed by debt. This method of government financing usually increases the demand for domestic credit, raising the interest rate. This debt can either be obtained from the public by issuing bonds through banking system or borrowing from domestic financial institutions. Either way, this leads to a crowding out of private investment because of interest rate rises in the loanable funds market (Khalid et al, 2008) and decreases in the available credit for the private sector. Accordingly, higher government spending is bound to crowd out private investment (Javid and Arif, 2010).

Last, monetization of the fiscal deficit is another option for government financing. This is especially in cases where there are concerns of raising taxes or increasing public debt whereby the central bank accommodates the increased government spending by issuing more credit, creating an increase in the monetary base. In this case of money printing (fiscal dominance) there are increases in price levels and through inflation, consumption

and investment would be negatively affected due to the lower disposable incomes created (Khalid et al, 2008).

Deficit levels, financing patterns and sources therefore have altogether different implications for the macroeconomic variables. Domestic versus external borrowing, multilateral and others, banking versus non-banking and short-term versus long-term borrowing, all have different dynamic effects on the economy. There has been a large volume of literature exploring these issues, for example Barro (1989) explored whether bonds are net wealth or not. So, Ricardian Equivalence (RE) can hold or may be challenged, depending on the types of consumers and policy environments such as imperfect loans market, timing of taxes and uncertainty of incomes

3.1.4 Other Fiscal Policy Transmission Mechanism Channels

On top of the channels discussed above which depend mostly on the way government is being financed, focus boils down to the microeconomic channels of effect via the responses of individual agents to policy. These channels provide additional avenues for fiscal policy to have both aggregate demand and supply effects, though such effects are second-order and distinct from first-order macroeconomic effects. Given the emphasis on so-called “micro founded” macro models over the past three decades, these micro channels have gained increasing attention, (Palley, 2012).

3.1.4.1 Government Spending Channels

With regard to government spending, there are a number of microeconomic channels. The first channel concerns government expenditure on public capital and it operates via the production function. If public capital enters the aggregate production function, additions to public capital (i.e. public investment expenditure) can impact private sector employment and investment expenditures, with the direction impact depending on the sign of cross partial derivatives of the production function. If public capital is a complement to private capital, it has a positive impact on private capital and labor (positive cross-partial derivative) that will induce firms to increase employment, private investment spending, and private capital. On the other hand, if public capital is a substitute for private capital (negative cross-partial derivatives), then the effect will work in the opposite direction. There exists a long-standing empirical literature on this (Aschauer, 1989; Munnell, 1990; Bhatta and Drennan, 2003) that finds the effect of public capital on private sector productivity is positive though the magnitude is subject to dispute.

The second channel is via household consumption choices and it operates through the utility function. If government spending is a complement to household consumption it will increase private consumption spending, and if it is a substitute it will decrease private consumption spending. (Palley, 2012).

3.1.4.2 Tax Channels

Taxes also have important microeconomic impacts via their impact on relative prices and incomes, and it also matters whether tax changes are temporary or permanent. These microeconomic tax incentive effects impact both businesses and households. With regard to households, these tax effects depend on whether tax changes are targeted at liquidity constrained, rich, or poor households, because marginal propensities to consume vary by household type (Palley, 2012).

3.1.4.3 The Neo-Ricardian Hypothesis (NRH)

When considering the microeconomic channels of fiscal policy, there is what is also what is known as the neo- Ricardian Hypothesis which basically asserts that a tax cut in a bond financed fiscal policy is relatively ineffective. Though widely identified with new classical macroeconomics because new classical economists tend to support it, the NRH is in fact fully compatible with Keynesian macroeconomics. That is because the NRH rests on microeconomic theory and if households behave in the manner claimed, it will also hold in Keynesian macro models. Moreover, even if the full set of necessary assumptions is not met, bond financed tax cuts and government purchases will tend to have significantly diminished AD effects to the extent households engage in offsetting saving to pay some part of the implied future tax obligations that are of equal present value to the bond financed stimulus, (Palley, 2012).

3.2 Empirical Literature

Blanchard and Perotti (2002) in their study characterized the dynamic effects of shocks in government spending and taxes on economic activity in the United States in the post-war period. They did so by using a mixed structural VAR/event study approach. Identification was achieved by using institutional information about the tax and transfer systems and the timing of tax collections to identify the automatic response of taxes and spending to activity, and, by implication, to infer fiscal shocks.

The results consistently showed positive government spending shocks as having a positive effect on output, and positive tax shocks as having a negative effect. The multipliers for both spending and tax shocks were typically small. Turning to the effects of taxes and spending on the components of GDP, one of the results has a distinctly non-standard flavor: Both increases in taxes and increases in government spending have a strong negative effect on investment spending.

Rarytska (2003) also did a similar study for the case of Pakistan. This was after recent evidence had found that contrary to the Keynesian theory, fiscal expansion has a negative effect on output. The argument was that in the transition economies, these effects may prevail due to specificity of the fiscal environment. She therefore used Structural Vector Auto Regression (SVAR) to test these conjectures, employing data from the Ukrainian economy. The identification was achieved using institutional information of the Ukrainian fiscal system. She analyzed the dynamic response of macroeconomic aggregates- output, consumption and investment.

No evidence was 4ound for the existence of the negative effect of government expenditures on output. Other tendencies which were also found in the Ukrainian data were as follows: first, consumption followed the output patterns in its movements while investment was influenced negatively regardless of the fiscal policy instrument used, government expenditures or government revenues. Second, sub-sample evolution of responses suggested that the economy was becoming more responsive to fiscal shocks. Finally, analysis showed that fiscal expansion has a positive effect on output when financed by borrowing and the opposite effect is found when fiscal expansion is tax financed.

Khalid et al (2008) studied the fiscal reaction function and the transmission mechanism for Pakistan. Their motivation was that in developing economies such as Pakistan the fiscal transmission mechanism needs to be identified, as active fiscal policy is practiced and large seigniorage revenues exist. In this context, the study aimed at estimating the fiscal policy reaction function and identifying the fiscal policy transmission mechanism. More specifically, the Vector Auto Regression (VAR) model, containing three variables (output gap and inflation as policy objectives and fiscal deficit as a percentage of GDP), was estimated as a fiscal instrument.

Evidence was found of fiscal policy in Pakistan being endogenous over the period 1965 to 2006. Although the response to both the variables was significant, they found only pro-cyclical response of fiscal policy to the business cycle fluctuations specifically in the periods of boom. The effect of fiscal policy changes on output and inflation was not

significant. They also found the evidence of contemporaneous response of policy to the state of the economy, but that the policy was not forward-looking at all.

Mountford and Uhlig (2008) also researched in this area and their study focused on the effects of fiscal policy shocks. They proposed and applied a new approach for analyzing the effects of fiscal policy using Vector Auto Regressions. Specifically, they used sign restrictions to identify a government revenue shock as well as a government spending shock, while controlling for a generic business cycle shock and a monetary policy shock. They explicitly allowed for the possibility of announcement effects, i.e., that a current fiscal policy shock changes fiscal policy variables in the future, but not at present. They constructed the impulse responses to three linear combinations of these fiscal shocks, corresponding to the three scenarios of deficit-spending, deficit-financed tax cuts and a balanced budget spending expansion. They applied the method to US quarterly data from 1955-2000.

They found that deficit-financed tax cuts work best among these three scenarios to improve GDP, with a maximal present value multiplier of five dollars of total additional GDP per each dollar of the total cut in government revenue five years after the shock. Auerbach and Gorodnichenko (2012) in their study focused on output responses to fiscal policy. After, using regime-switching SVAR models to estimate effects of fiscal policies that can vary over the business cycle, they found large differences in the size of spending multipliers in recessions and expansions with fiscal policy being considerably more effective in recessions than in expansions. They then measured the effects for a broader

range of policies by estimating multipliers for more disaggregate spending variables, which often behave quite differently in relation to aggregate fiscal policy shocks.

At last, they provided a more precise measure of unanticipated shocks to fiscal policy. After collecting and converting into electronic form quarterly forecasts, we have collected and converted into electronic form the quarterly forecasts, they included these forecasts in the SVAR to purge fiscal variables of "innovations" that were predicted. They found that the forecasts help explain a considerable share of the fiscal innovations, and that controlling for this predictability increases the size of estimated multipliers in recession.

3.3 Study Focus

In Malawi, much has not been written on the effect of fiscal policy on output and inflation, let alone on fiscal policy transmission mechanism. The current study is therefore an attempt fill this existing gap in literature and investigate on this subject by employing a Structural Vector Auto Regression (SVAR) model. It is expected that he results of this study shall help contribute to the body of knowledge on how effective fiscal policy is both in Malawi and other similar rated economies.

CHAPTER 4

METHODOLOGY

4.0 Introduction

This chapter discusses the analytical tools and estimation technique used in the study. Firstly, a brief review of the different estimation techniques is presented before choosing the most appropriate for the study. This is followed by model development which encompasses model specification and identification, and a discussion on impulse responses. Lastly, the chapter gives a discussion of the diagnostic tests carried, a description of the variables used, and the sources and type of data the study used for estimation purposes.

4.1 Estimation Technique

At this stage, it is imperative to review the different empirical techniques that have been used to evaluate the effects of fiscal policy and choose the best approach for the current study.

4.1.1 Single Econometrics Approach

The single econometrics approach has been used before in some studies. Despite its advantages, this approach ignores interdependency of the determinants or fiscal policy instruments. This is critical since government expenditure and taxes are presumably not

independent. To estimate the effects of one, it is also necessary to include the other. Hence, we focus on two-variable breakdowns of the budget, consisting of an expenditure and a revenue variable, (Blanchard and Perotti, 2002). This, then, justifies the use of a system of equations so that the relationships between the macroeconomic aggregates in an economy is taken care of, (Sultan et al, 2000).

4.1.2 Simultaneous Equation Approach

The simultaneous equation approach makes it possible to estimate multipliers for both fiscal and monetary policy since interdependency between variables is taken into consideration. The setback with such models, however, is that despite stressing on the long run relationships in the economy, they do not take into account the dynamic effects of shocks, (Lukyanenko, 2003). This may be misleading especially in economies like Malawi which are not relatively stable and we cannot rely on long run relationships in short run economic decision analysis.

4.1.3 Vector Auto Regression (VAR) Approach

VAR is another approach whose qualities supersede the simultaneous equation approach. This is because apart from allowing for interdependency between the variables, it takes into account the dynamic effects of shocks. This approach provides a systematic way to capture rich dynamics in multiple time series and provides empirical evidence on the response of macroeconomic variables to various exogenous impulses in order to discriminate between alternative economic theories. Therefore VAR provides a coherent and credible approach to data description, forecasting, structural inference and policy

analysis (Sims, 1980). However, interpretation of VAR based results is only done through use of impulse responses as the individual parameters cannot be recovered and thus, rendering their interpretation meaningless.

4.1.4 Structural Vector Auto Regression (VAR) Approach

The best alternative approach used is the Structural Vector Auto Regression (Structural VAR) as proposed by Blanchard and Perotti (2002). This is because structural VAR has got advantages over the previously discussed models. Structural VAR allows for both interdependency between the variables and also structural interpretation of the estimates. This is done by taking into consideration the structure of the economy and putting the necessary restrictions in the model. Though this method is widely used in the analysis of monetary policy, the authors argue that this method is better suited for the investigation of fiscal policy rather than monetary policy. The motivation behind this is that budget variables move for many reasons, of which output stabilization is rarely predominant; in other words, they are exogenous (with respect to output) fiscal shocks. Additionally, fiscal policy, as opposed to monetary policy, is less responsive to changes in economic conditions (Blanchard and Perotti, 2002). In this paper, therefore, use is made of the Structural Vector Auto Regression model.

4.2 Model Development

Unlike other models used for estimation, in VAR model, all variables are treated as endogenous. This is because of the complexity of relationships that exist in the macroeconomic variables.

4.2.1 Structural and Reduced Form Relationship

The structural relationships in the variables can be given as:

$$AY_t = C(L)Y_{t-1} + DZ_t + Be_t \quad (1)$$

Where, Y_t is a vector of endogenous variables, Z_t is a vector of exogenous variables, $C(L)$ is a matrix lag polynomial and e_t presents a vector of structural disturbances. Matrix B allows each endogenous variable to be affected by more than one shock.

To express the system in (1) in its reduced form, we need to multiply through by the inverse of matrix A represented as follows:

$$Y_t = A^{-1}C(L)Y_{t-1} + A^{-1}DZ_t + u_t \quad (2)$$

Where u_t is a VAR residual vector, assumed to be normally and independently distributed. Note that the assumptions do not restrict cross correlations of elements of u_t to be equal to zero. The relationship between the structural shocks and the residuals from unrestricted VAR system is:

$$Au_t = Be_t \quad (3)$$

In this research, vector Y_t includes three variables $[G_t, T_t, X_t]$ which stand for government spending, taxes and output respectively. The vector u_t consists of $[g_t, t_t, x_t]$ which represent the residuals that correspond to the reduced form of each equation.

4.2.2 Identification of the VAR

The relation between the variance-covariance matrices of reduced and structural residuals is:

$$\hat{\Sigma} = A^{-1}BIB'A^{-1} \tag{4}$$

Where $\hat{\Sigma}$ stands for the variance-covariance matrix of reduced form residuals, and the assumption of orthogonality of structural shocks is used, which means that the variance-covariance matrix of structural residuals is just the identity matrix I. With this assumption, the maximum number of parameters in matrices A and B identified is reduced to $n(n+1)/2$ which equals 6 in this case.

Several types of restrictions on parameter matrices are discussed in the literature by Breitung (2001) and Favero (2001):

a. The identification strategy based on Choleski decomposition i.e. the matrix A is assumed to be of lower triangular form with ones on the main diagonal, and matrix B has diagonal form
b. Contemporaneous restrictions on the elements of A and B matrix, using a priori information about relationship of variables, leading to non-recursive orthogonalization of errors of the system
c. Long run restrictions on the behavior of shocks

Since the goal of VAR analysis and its advantage is often considered to be the ability to distinguish between alternative theories in economics, the assumptions imposed should be as objective as possible. The most independent of the tested assumptions is the first one based on Choleski decomposition, which assumes only ordering in the estimation of structural shocks. But this identification procedure does not eliminate entirely the

drawbacks of the VAR i.e. it does not account for the endogeneity of policy shocks. The second identification scheme presumes that the identifying restrictions are independent from the theoretical predictions of the model of which applicability to the real world is tested.

Finally, the restrictions on the long run behavior of shocks are usually those compatible with a wide range of economic models. Following from Blanchard and Perotti (2002), use will is made of identification scheme (b).

4.2.3 Model Specification

The following system is used to identify fiscal policy shocks:

$$\begin{aligned} g_t &= \alpha_1 x_t + \alpha_2 e_t^t + e_t^g \\ t_t &= \beta_1 x_t + \beta_2 e_t^g + e_t^t \\ x_t &= \delta_1 g_t + \delta_2 t_t + e_t^x \end{aligned} \tag{5}$$

As Blanchard and Perotti (2002) suggest, the first equation states that unexpected movements in government spending within a quarter, *t*, can be due to one of three factors: the response to unexpected movements in GDP, captured by $\alpha_1 x_t$, the response to structural shocks to taxes, captured by $\alpha_2 e_t^t$,and to structural shocks to government spending, captured by e_t^g. A similar interpretation applies to unexpected movements in taxes in the second equation. This relationship is what is presented in system (5).

Presenting system (5) in matrix notation by pre-multiplying the vector of the reduced form residuals and vector of shocks respectively with matrices A and B gives:

$$\begin{pmatrix} 1 & 0 & -\alpha_1 \\ 0 & 1 & -\beta_1 \\ -\delta_1 & -\delta_2 & 1 \end{pmatrix} \begin{pmatrix} g \\ t \\ x \end{pmatrix} = \begin{pmatrix} 1 & \alpha_2 & 0 \\ \beta_2 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} e^g \\ e^t \\ e^x \end{pmatrix} \quad (6)$$

To recover the structural shocks, e_t^i , from this system, Blanchard and Perotti (2002) suggests use of institutional information on tax structure and budget system to estimate the equation system (5). Using high frequency data implies that parameters α_1 and β_1 reflect responsiveness (elasticity) of taxes and government spending respectively to unexpected movements in output. These elasticities are estimated by regressing taxes and government spending on output and inflation using the Ordinary Least Squares (OLS) estimator. However, concentration can only be on the automatic response of the fiscal system to the changes since adjustments of fiscal policy may require more than a quarter to be implemented.

Coefficients α_2 and β_2 of the system (4) are elasticities of unexpected movements in the taxes and government expenditures to the policy shocks in the vis-à-vis variables (government expenditure and taxes respectively). The values of these parameters are dependent on the assumption about which decision about fiscal policy takes place first: the change in taxes $(\alpha_2 \neq 0, \beta_2 = 0)$ or the change in the government expenditures $(\alpha_2 = 0, \beta_2 \neq 0)$. In Malawi, the process of budget planning goes in the direction of searching revenues to meet targeted expenditures. Therefore, the latter case in which the expenditure decisions are made first seems to be a more accurate description of fiscal

policy making in Malawi. However, both assumptions are tested to establish if one variable does not granger cause the other for pair government revenue- government expenditure.

Therefore, the identification procedure is based on the following assumptions:

- Adjustments in fiscal policy are very infrequent, and therefore take place in subsequent to shock periods
- The assumption that the effect of output shocks is fully represented in the seasonal pattern of fiscal variables is that it can be separated from the structural shocks in the tax and expenditure variables.
- Only one (primary) fiscal instrument- taxes or government expenditure- is truly exogenous with respect to counter-part variable

4.2.4 Model Estimation

Estimation of System (5) allows construction of structural residuals, which are exogenous fiscal variables. These are the ones which are used to derive impulse response functions for output. Further analysis comprises the following steps: first, the parameters in the matrices A and B are estimated and responses for the specification derived which include three variables- government expenditure, government revenue and output. Second, price is included in the model. Price is treated depending on whether the series needs to be differenced or not. If it enters the model in differences, the effect of the fiscal policy shocks is treated as the effect on the inflation level, otherwise the effect is treated as the effect on the price level.

In terms of the transmission mechanism, the GDP components which theory indicates that are more likely affected (as channels) have to be added to the four variable specification. Therefore, two components: private consumption and private investment, which respond to the policy changes are used to discriminate between alternative economic theories. The latter is to compare how the impulse response of the variables already included in the model change with the inclusion of the new variables.

When the new variables are added to the specification, the identification procedure is modified in order to be able to recover fiscal shocks. The four variable specification (including the price variable) has the relationship between structural and reduced residuals given as, according to Perotti (2002):

$$\begin{aligned} g_t &= \alpha_1 x_t + \alpha_3 p_t + \alpha_2 e_t^t + e_t^g \\ t_t &= \beta_1 x_t + \beta_3 p_t + \beta_2 e_t^g + e_t^t \\ x_t &= \delta_1 g_t + \delta_2 t_t + e_t^x \\ p_t &= \gamma_1 x_t + \gamma_2 g_t + \gamma_3 t_t + e_t^p \end{aligned} \tag{7}$$

The last equation in the system accounts for the influence of the price level on the fiscal activity and in its turn is subject to influence the fiscal and output shocks.

When the two output components, private consumption and investment, enter the model, the identification is achieved using the following relation between the structural and reduced form residuals:

$$\begin{aligned} g_t &= \alpha_1 x_t + \alpha_3 p_t + \alpha_2 e_t^t + e_t^g \\ t_t &= \beta_1 x_t + \beta_3 p_t + \beta_2 e_t^g + e_t^t \\ x_t &= \delta_1 g_t + \delta_2 t_t + e_t^x \\ x_t^i &= \theta_1 g_t + \theta_2 t_t + e_t^{x^i} \\ p_t &= \gamma_1 x_t + \gamma_2 g_t + \gamma_3 t_t + e_t^p \end{aligned} \tag{8}$$

Where x_t^i is a reduced form residual corresponding to equation of output component (i = Consumption, Investment), and as output is subject to the effect of fiscal policy shocks. Note, that in this last scheme structural residuals e_t^x and $e_t^{x^i}$ may be correlated but this does not impede analysis.

4.2.5 Impulse Responses

To have a more detailed view on the effects of fiscal policy shocks, impulse response functions are derived and discussed. We consider the response of the variables to a shock to taxes and government spending when spending given the scenario that in Malawi, the process of budget planning goes in the direction of searching revenues to meet targeted expenditures. In other words, $\beta_2 \neq 0$ and $\alpha_2 = 0$. We can therefore assess how the response of output would have looked, had taxes not responded within the quarter; this corresponds to putting α_2 also equal to 0. We can go further and ask how the response of output would have looked, had taxes not responded at all; this is done by looking at the subsystem in the VAR composed of the terms in spending and output in the spending and the output equation.

For purposes of this analysis, structural residuals, e_t^t and e_t^g which are elements of structural residuals e_t representing fiscal shocks, need to be estimated. These are used to analyze the effect of fiscal shocks, government expenditure and taxes, on the real economy using impulse response functions.

4.3 Diagnostic Tests

Diagnostic tests are carried out to ensure that the variables used and the model produce reliable results. Three tests are therefore be conducted: test for stationarity, lag structure and VAR stability test.

4.3.1 Stationarity of Variables

A series is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the gap between the two time periods and not the actual time at which the covariance is computed (Enders, 2015). However, macroeconomic time series are mostly not stationary. This could lead to spurious regression and therefore the data needs to be checked for stationarity. Use is be made of the Augmented Dickey Fuller test which assesses if the time series has unit root or not. If found to be non-stationary, the time series will be differenced.

4.3.2 Lag Structure

To determine lag structure of unrestricted VAR, several criteria are used. First criterion ensures that number of lags should be such that the resulting model has non-auto correlated residuals, (Charemza and Deadman, 1997). The second criterion emphasizes the importance of the information criteria in the choice of lag structure, which means that a balance between goodness of fit and the parsimony of the specification should be considered. The third criterion that allows discriminating between different lag structures is the forecast potential of the model. Thus, the choice of the criterion depends on the

goal of the analysis. In the current case, the main criteria is used to determine the number of lags the use of information criterion.

4.3.3 VAR Stability Test

This test tests for stability of the whole VAR system. The test achieves this by ensuring that the VAR does not contain inverse or characteristic roots on or outside the unit circle (Rarytska, 2003). A graph of the test results therefore shall be provided after the test is done.

4.4 Data Description, Variable Definitions and Justification

The data used in this study is quarterly data ranging from 1990 to 2014. The reason for using this high frequency data is that it allows for separating the automatic response of the fiscal system from discretionary fiscal adjustment. Using quarterly data makes it possible since fiscal adjustments cannot be made within such a short span of time, and thus serves identifying the fiscal shocks.

The source of data is the Reserve Bank of Malawi (RBM), Malawi Revenue Authority (MRA), Ministry of Economic Planning and Development (MEP&D) and the World Bank (WDI). Ready quarterly data was found for only Government spending, Consumer Price Index (CPI) and interest rate. For the rest of the variables, use was made of the Lisman and Sandee method of interpolation in stata to convert the data from annual aggregates to quarterly figures.

Lisman and Sandee (1964) method is a method of interpolation through which quarterly data is obtained from yearly aggregates while at the same time, ensuring that variability is present. This method is used if no assumption is made about the pattern of the quarterly figure such that a smooth trend must be obtained. The procedure obtains a fairly good adaptation of the quarterly figures to the annual totals. To a certain extent, the solution contains some arbitrary aspects, but it has the advantage of simplicity, plausibility and practical usefulness. Below is an outline of the variables used in the study.

4.4.1 Government Spending

In the analysis of fiscal policy, the expenditure variable is defined as total purchases of goods and services by government (Eshaq, 1983). We call it "government expenditure", or simply "government spending" for short. Government expenditure shocks are derived from VAR system to observe how they affect the variables of concern. In the SVAR, analysis is done on how shocks to government expenditure affect GDP and inflation and the associated channels.

4.4.2 Taxes

The revenue variable, defined as government revenue variable, is total tax revenues. In the analysis, shocks to the taxes are also analyzed to assess their effects on GDP and inflation and the channels under examination (Blanchard and Perotti, 2002). Due to absence of quarterly figures for taxes, the annual tax revenue aggregates have been converted to quarterly figures using the Lisman and Sandee method of interpolation in stata.

4.4.3 Gross Domestic Product (GDP)

GDP is included as the study aims at assessing the impact of the fiscal shocks on output, i.e. how shocks to government expenditure and taxes, affect the real economy (Blanchard and Perotti, 2002). GDP is also converted from its annual aggregates to the quarterly figures through the Lisman and Sandee method in stata.

4.4.4 Private Consumption

Private consumption is another variable of concern in the study. Its inclusion helps us distinguish between the alternative economic theories in tracing the transmission mechanism through which fiscal policy pass (Rarytska, 2003). This variable is also converted from its annual aggregates to the quarterly figures through the Lisman and Sandee method in stata.

4.4.5 Private Investment

Private investment is the other variable in the assessment of the transmission mechanism of fiscal policy effects. This variable aids us in understanding how government financing, especially domestic financing, affects investment and long term growth (Rarytska, 2003). This variable has also been converted from its annual aggregates to quarterly figures through the Lisman and Sandee method in stata.

4.4.6 GDP Deflator

The GDP deflator variable was used to deflate nominal GDP so that the study uses real GDP.

4.4.7 Consumer Price Index (CPI)

Prices is another variable which affected by changes in the fiscal policy variables (Javid and Arif, 2010). The price level, measured by the Consumer Price Index (CPI), was therefore included in the study. If found to be non-stationary, which is most likely the case, the resulting differenced series will be interpreted as the inflation rate.

4.4.8 Interest rates

The last variable used is interest rate. Essentially, the rate used in the study is the lending rate. This variable helps to capture how interest rate responds to positive government spending shocks given that most government spending, especially the fiscal deficit, is financed by domestic borrowing (Khalid et al, 2008). This helps in tracing fiscal policy effects on private investment.

4.5 Conclusion

This chapter has compared various approaches or models used in studying fiscal effects and has adopted the SVAR model. It also includes step by step information on model development and the diagnostic tests to be undertaken before running the regressions. Lastly, all the variables of interest have been listed and the sources of data for the variables have also been given. As the data used is quarterly, use has been made of the Lisman and Sandee method of interpolation to transform data which was not available on quarterly basis.

CHAPTER 5

RESULTS AND INTERPRETATION

5.0. Introduction

This chapter presents results of the study. It addresses the main objective of the study which is to investigate the effect of fiscal policy on GDP. This general objective is subdivided into two specific objectives namely: to investigate the impact of tax revenue and government spending on GDP and inflation, and to assess the effectiveness of private consumption and private investment channels in fiscal policy transmission. First, therefore, evolution of the macroeconomic aggregates and descriptive statics are presented before a discussion of the diagnostic tests is conducted. Lastly, the regression estimations are presented and discussed.

5.1 Descriptive Results

The figures below, Figure 4, Figure 5 and Figure 6, present the trends in the evolution of macroeconomic aggregates used for estimation in the study for the period 1990 to 2014. In cases of the aggregate variables, they have been presented as shares of GDP.

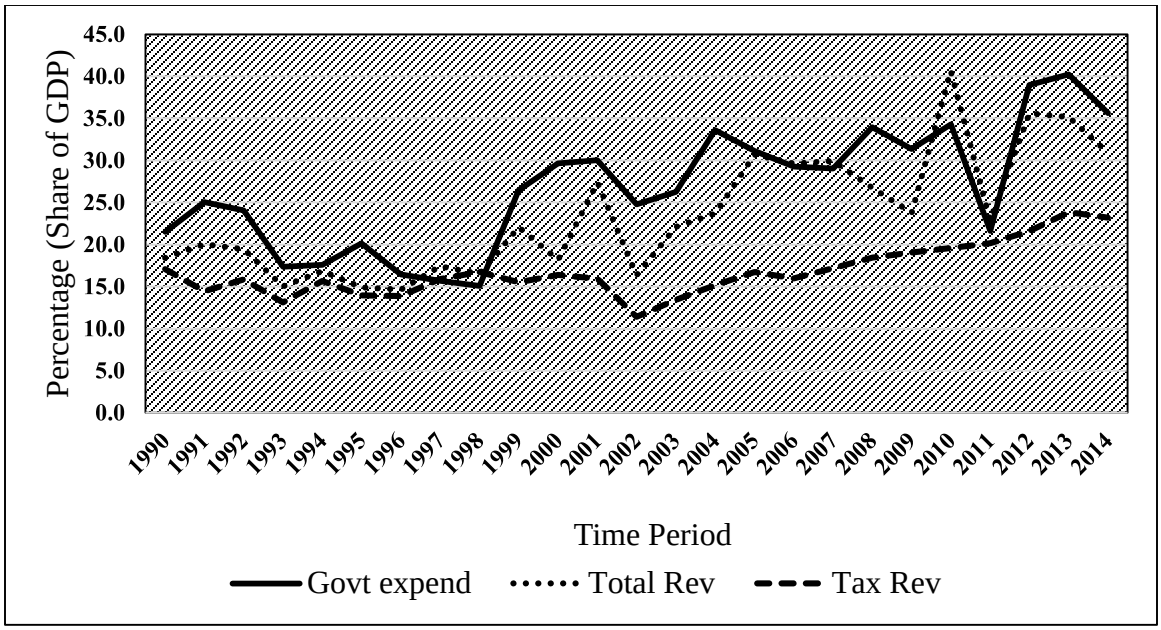

Figure 4: Trends in Government Expenditures and Revenues in Malawi

There has been a general upward trend in the level of government expenditure, tax revenues and total revenues. However, it can be observed from figure 4 that the fiscal deficit has been persistent and growing overtime. The fiscal deficit reached its highest in the year 2014 at 4.7% of GDP after accounting for non-tax revenues and grants, and 9.2% before accounting for grants and non-tax revenues. In 2010, however, Malawi experienced a surplus of about 6.4% of GDP after accounting for grants and non-tax revenues but reached an all-time highest surplus of 1.6% of GDP in 1997 before accounting for non-tax revenues and grants. From 2013, it can be seen that total revenues started to decrease mainly on account of donors pulling out following the cash gate scandal where it was discovered that government funds were being stolen.

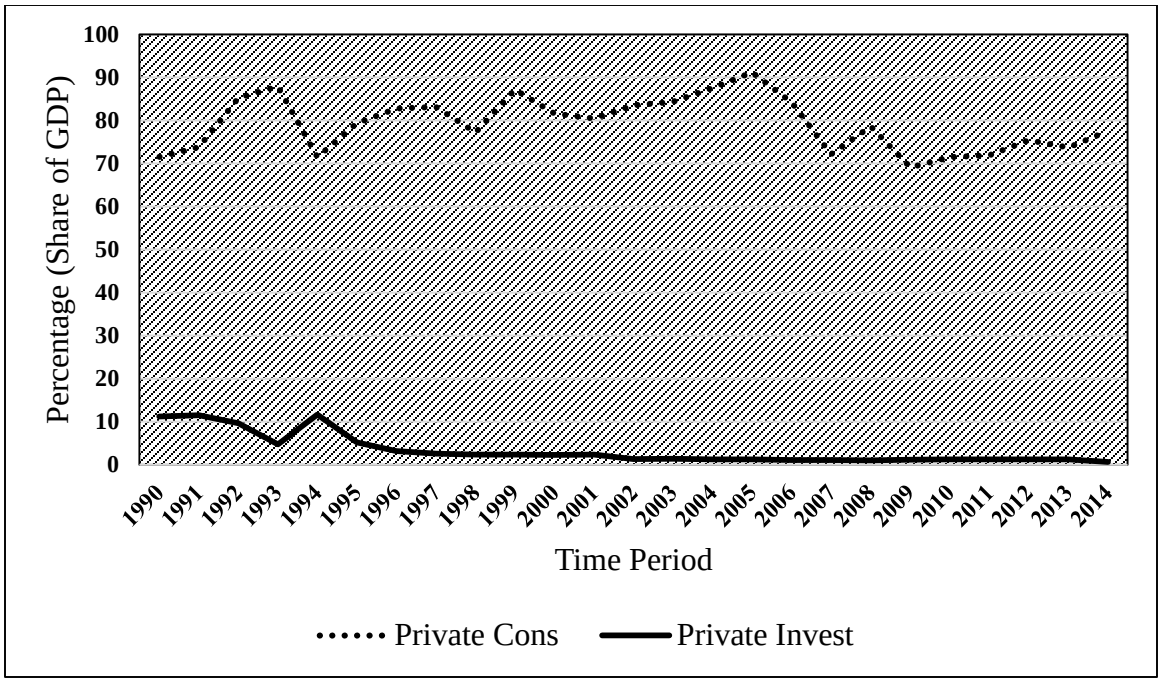

Figure 5: Trends in Private Consumption and Investment in Malawi

Figure 5 shows that consumption has been moving around the same range. It reached its highest in 2005 at around 91% of GDP and registered a record low of 69.1% in 2009. Private investment, on the other hand, has been steadily decreasing over the years. The initial rise in private investment in the 1980s and early 1990s can be attributed to the privatization initiatives which gained prominence during this period. Part of the low growth in private investment can be attributed to the persistent fiscal deficit which is financed by domestic debt and thereby crowding out the private sector through high interest rates.

Economic growth has been erratic over the period under study. It reached its lowest in 1994 at -10.2% and highest in 1995 at 16.7%. Average economic growth rate for the period stands at 4.2%. From figure 6 below, there is a recent downward trend in

economic growth from 2008 to 2012 which is attributed to the fall of tobacco earnings and the hardships the country went through such as shortage of forex, fuel unavailability and donor aid freeze which led to very low economic activity. New policies, however, by the new government such as devaluation of the Malawi Kwacha by 49% and adoption of a free exchange rate regime coupled with commitment to fiscal prudence, saw the country returning back to higher growth rates.

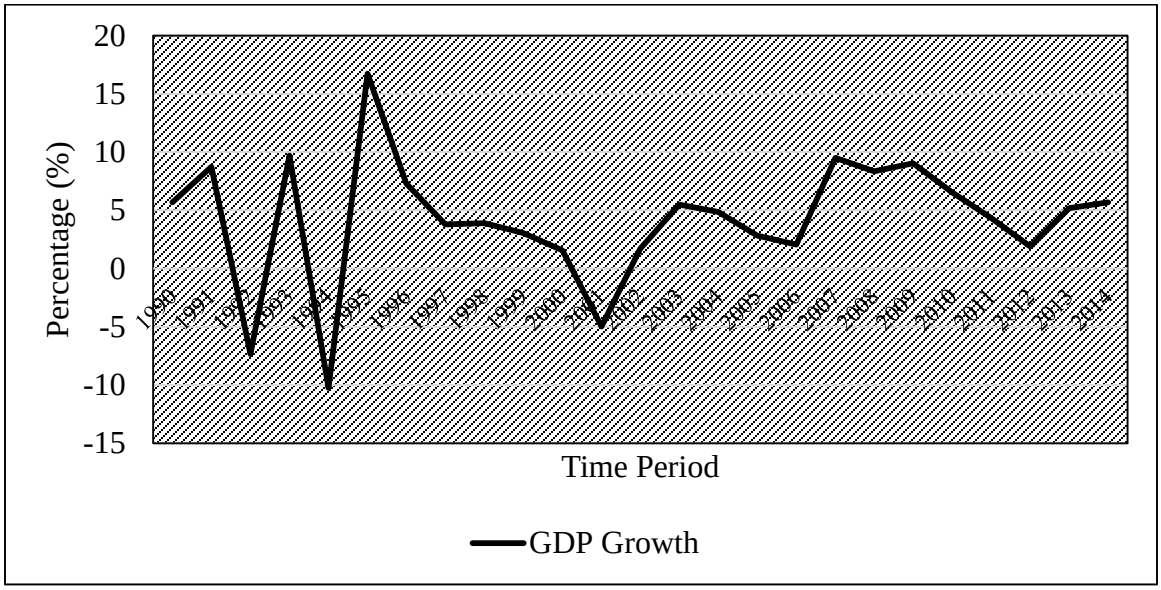

Figure 6: Economic Growth Trend in Malawi

In terms of inflation, as depicted in figure 7, averaged 21.6% during the period 1990 to 2014, reaching an all-time high of 83.3% in 1995 and a record low of 7.4% in 2010. The high rate is attributed to the liberalization of the exchange rate which took place in 1995 and the political transition from one party to multiparty system of government in 1994 where first multiparty elections were held.

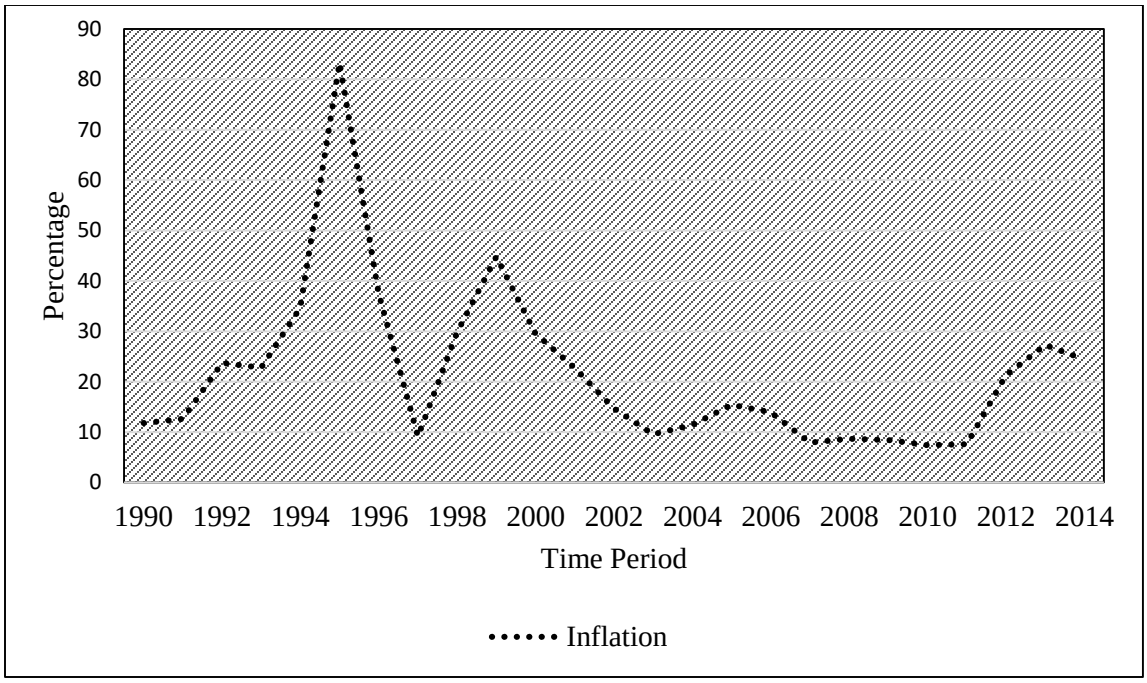

Figure 7: Inflation Trend in Malawi

The most recent upward trend from 2011 is attributed to inflation brought about by the fixed overvalued exchange rate where forex went to the parallel market and brought an increase to import costs which boiled down to consumer goods and services. Further, after the devaluation this upward trend continued up until prices normalized.

5.2 Diagnostic Test Results

This section presents results for the diagnostic tests undertaken. First test for stationarity results are presented, followed by the VAR stability test, and the lag length criteria results come last.

5.2.1 Test for Stationarity

Visual observation suggests that most of the series are not stationary at levels because of the outright upward trend they follow. However, to confirm this, use was made of the Augmented Dickey Fuller (ADF) unit root test. Table 1 below gives the results of the stationarity test:

Table 1: Results of the ADF Test for Stationarity

Variables used in the VAR Analysis	Augmented Dickey Fuller Statistic		
	Levels	Differences	Order of Integration
LGOVTSP	-	-12.91283	I(1)
LTAX	-	-3.791024	I(1)
LGDP	-	-4.160975	I(1)
LCONS	-4.165885	-	I(0)
LINVEST	-4.53635	-	I(0)
LCPI	-	-4.399834	I(1)
IRATE	-	-8.069483	I(1)
McKinnon 1% critical value for rejection of a hypothesis of a unit root is -4.054393			

As shown, only private investment and private consumption were found to be stationary in levels. The rest of the variables are stationary at their first differences, in other words they were found to be I(1). Therefore, all the I(1) variables entered into the system at their differenced values.

5.2.2 Choice of Lag Length

In Vector Auto Regression (VAR), one of the crucial things in estimation is to establish the appropriate lag length. As discussed in the previous chapter, use is made of lag length criteria to determine the optimal lag length. Standard lag length selection criteria used were the sequential modified likelihood ratio (LR) test, the Alkaike Information Criterion (AIC), the Final Prediction Error (FPE), the Hann-Quinn Information Criterion (HQ) and

the Schwarz Information Criterion (SC). The Lag Exclusion criteria test was done to find the lags that were statistically significant given that the test results different lag lengths as optimal. In this regard, optimal lag length is 4. Complete table of results (Table 5) is provided in the appendix 2.

5.2.3 VAR Stability Test

A VAR process was considered stable if its reverse characteristic polynomial had no roots on or outside the complex unit circle. Following the VAR stability test, the results showed that the VAR process is stable and a complete graph (Figure 11) is provided in the appendix 1.

5.3 Econometric Results

In terms of the econometric results, first a three variable VAR was estimated to derive residuals from the reduced form VAR which are used to recover the structural shocks. Second, the relationship between the structural shocks and residuals from the reduced form model was estimated by finding the parameters of the matrices A and B. Third, structural parameters were then recovered to find the effect of the fiscal shocks on output and inflation. This same process was done when CPI was added into the model. Then, consumption and investment were also added into the system to trace the fiscal policy transmission mechanism by assessing if these channels are effective in Malawi. Lastly, impulse responses were analyzed.

5.3.1 Three Variable VAR Estimation

The three variable VAR estimation included gross domestic product (GDP), government expenditure and government revenues and since all variables in the system are assumed to be endogenous, nothing was concluded on the direction and magnitude of the effect of fiscal shocks on output. The major product at this stage were the residuals from the reduced form model which are used to recover the fiscal structural shocks. Given that stability of the VAR was already confirmed, the estimated residuals were used in the next stages. Given that the residuals are correlated (non-zero) as Table 6 in the appendix shows, policy shocks cannot be clearly exogenized when computing impulse responses. Therefore, this leads us to the next step in our procedure.

5.3.2 Output and Price Elasticities of Government Expenditures and Revenues

At this stage, estimation of the relationship between the structural shocks and the residuals from the reduced form model was done. Essentially, this implied determining coefficients of the matrices A and B which represent structural shocks and the residuals from the reduced form model. Therefore, elasticities of government expenditures and revenues with respect to output and prices were estimated. In other words, from equations (5) and (8) in the previous chapter, these elasticities were represented by the parameters α_1, α_3, β_1 and β_3. This was achieved by estimating an auxiliary regression each for government expenditures and revenues as shown in Table 7 and Table 8 in the appendix. From the results, α_1 and α_3 are not significant and therefore they assumed zero values while $\beta_1 = 0.130484$ and $\beta_3 = 0.124701$ were significant at 10% and 5% respectively and entered into the system as such.

Apart from the fact that α_1 (output elasticity of government spending) assumed a value of zero based on the insignificance of the results, it should be noted that this value could also be justified analytically. This parameter is non-zero in the presence of automatic stabilizers which adjust government spending due to changes in output. However, given that government expenditure is planned beforehand, these automatic stabilizers cannot exist since the data used in this study is quarterly, which is a short period and spending has to be approved by the Malawi Parliament. On the other hand, these automatic stabilizers are embedded in the tax system since taxes can be expressed as a percentage of GDP. Therefore, validity of the assumption that $\alpha_1 = 0$ is dependent on the data being of high frequency such as quarterly.

As discussed in the methodology, the estimates of the parameters α_2 and β_2 were obtained basing on the two alternative assumptions on which decision comes first. If government spending decisions are assumed to come first, which is the order of the day in Malawi, then $\alpha_2 = 0$ and $\beta_2 \neq 0$.

5.3.3 Effects of fiscal shocks on output and inflation

Given the information on some of the coefficients, the four variable structural VAR which includes prices was estimated. The parameters of interest here are δ_1 and δ_2 from equation (8) which give respectively the effect of government spending and revenue shocks on GDP and below is a summary of the results.

Table 2: Summarized VAR Results of Fiscal Shocks on Output and Inflation

	Responses		
	GDP	Inflation	Tax
Govtsp	1.04	-14.29	0.02
	[0.0000]	[0.0143]	[0.8613]
GDP	-	-0.05	0.130484
		[0.7585]	[0.0968]
Tax	-55.58	-33.41	-
	[0.0000]	[0.0000]	

These results addressed the first objective of this study which was to investigate the impact of tax revenue and government spending on GDP and inflation. Here it can be seen that an increase in government expenditure leads to an increase in GDP growth while a rise in the tax revenues has an opposite effect on GDP growth. This is consistent with the findings of Blanchard and Perroti (2002) and also Rarytska (2003) in similar studies and is also in line with theory. A rise in government expenditure which is in essence fiscal expansion has been observed to increase the output level. However, this evidence shows that this may only hold if fiscal expansion is financed by either borrowing or grants. Otherwise, if financed by an increase in tax, it may lead to the opposite effect as the negative effect of tax could off-set the positive effect of government spending on GDP.

In terms of the effect on the inflation rate, represented by the parameters γ_1, γ_2 and γ_3 respectively in equation (8), inflation tends to be negatively influenced by an increase in output but the coefficient is not statistically significant. Both government spending and revenues were found to negatively influence inflation. The effect of government spending on inflation somehow produced a non-standard flavor since we expect it to be positive. However, this may be attributed to the fact that the Central Bank may have been implementing initiatives to contain inflation in cases where rises in government expenditure would have contributed to high inflation. Complete set of results (Table 9) is provided in the appendix.

5.3.4 Effects of Fiscal Shocks on Consumption and Investment

In addressing the second objective of this study which was to assess the effectiveness of private consumption and private investment channels in fiscal policy transmission, the two output components are added to the model separately. Starting with consumption, where parameters for fiscal shocks are represented by the parameters θ_1 and θ_3 respectively, Table 3 below shows that both increases in government spending and government revenues have a negative effect on consumption as shown in the table below at 10% level of significance. Rarytska (2003) also found in a similar study on Pakistan that an increase in tax revenues has a negative effect on consumption but found a positive effect on consumption resulting from an increase in government spending. The negative effect of an increase in government spending on consumption in the current study may be justified given that during the period under study the fiscal deficit has been financed in various ways including monetization which may have fueled inflation leading to higher

prices and lower disposable incomes and thus, lower consumption. Taxes also have the expected negative sign as a rise also decreases the capacity to consume. It can therefore be concluded with a considerable level of confidence that there exists a transmission mechanism of fiscal policy via consumption channel. Complete Results (Table 10) are provided in the Appendix 2.

Table 3: Summarized VAR Results of Fiscal Shocks on Consumption

	Response of Consumption	
	Coefficient	Standard Error
Govt. Spending	-0.03*	0.01955
Govt. Revenues	-0.58*	0.30492

****, ** and * indicate statistical significance at 1, 5 and 10% levels, respectively.*

When investment is added, where fiscal shocks are represented by the same θ_1 and θ_2, the results are as shown in Table 4 below. It can be observed that a rise in government expenditure leads to a reduction in investment. This could be attributed to the fact that government borrowing crowded out private investment through a rise in interest rates during the period under study as expected.

Table 4: Summarized VAR Results of Fiscal Shocks on Investment

	Response of Investment	
	Coefficient	Standard Error
Govt. Spending	-0.692***	0.1122
Govt. Revenues	22.696***	5.7283

****, ** and * indicate statistical significance at 1, 5 and 10% levels, respectively.*

Another non-standard flavor however is the effect of government revenues on private investment. As seen from the table, a rise in taxes caused a rise in investment which is not in line with the results from previous studies by Blanchard and Perrotti (2002) and Rarytska (2003) which depict a negative effect. This could be attributed to increases in

capital expenditure. This notwithstanding, it can be concluded that a transmission mechanism of fiscal policy exists via the investment channel through the interest rate effect. Complete results in Table 11 (Appendix 2).

5.3.5 Impulse Responses

In order to get a more detailed pattern of the fiscal shocks on the concerned variables, Figure 8, Figure 9 and Figure 10 below give impulse response graphs. Standard error bands at 95% level of confidence provide information on the significance of the effect.

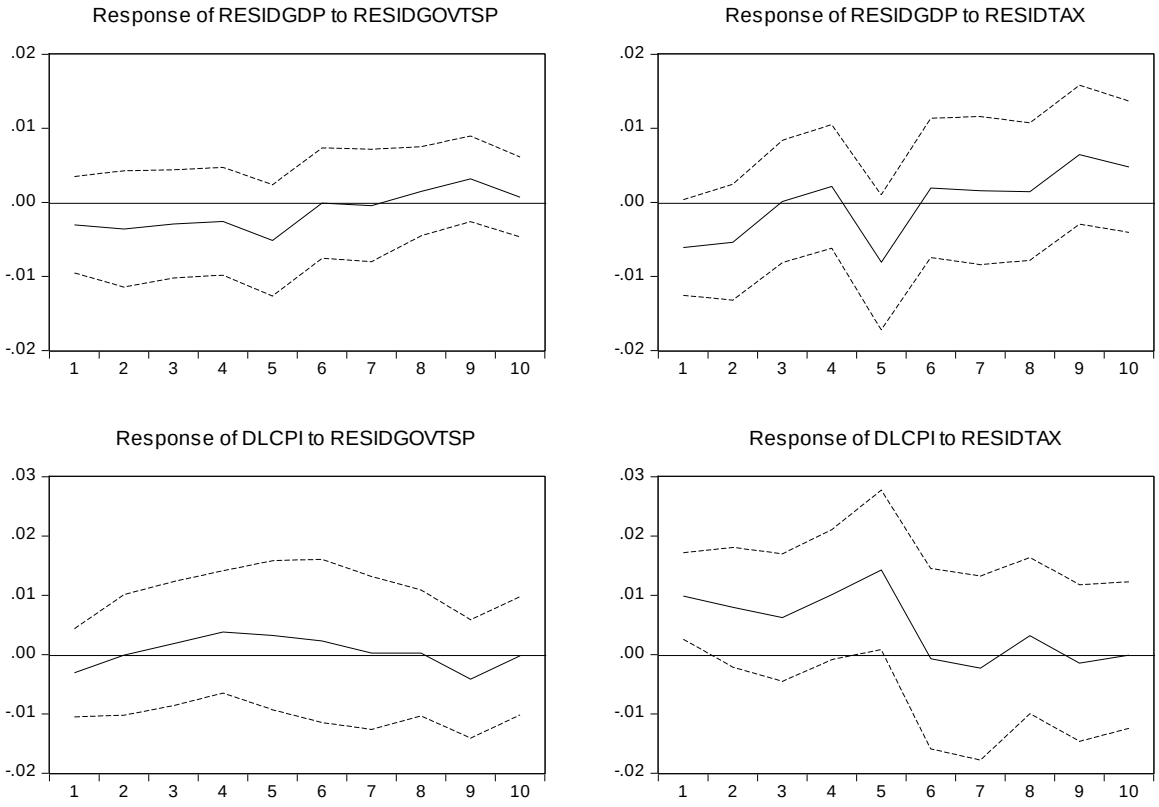

Figure 8: Impulse Responses of GDP and Inflation to Fiscal Shocks

Following figure 8, the response for GDP to government expenditure remains negative up to the sixth quarter and only becomes positive from the seventh quarter. However, the

response is not significant. Tax affects GDP negatively up to the third quarter when it becomes positive, only to decline into a negative effect and reach its lowest point in fifth quarter.

The response again goes upward and becomes positive in the sixth quarter. Government spending shock is also not significant in its effect on the level of inflation but starts off from a negative position after which it becomes positive from the second quarter before turning back to negative in the eighth quarter. Inflation response is positive and significant following a shock in tax revenues up to the second quarter when it becomes insignificant but remains positive before it starts to oscillate and change signs in the sixth quarter.

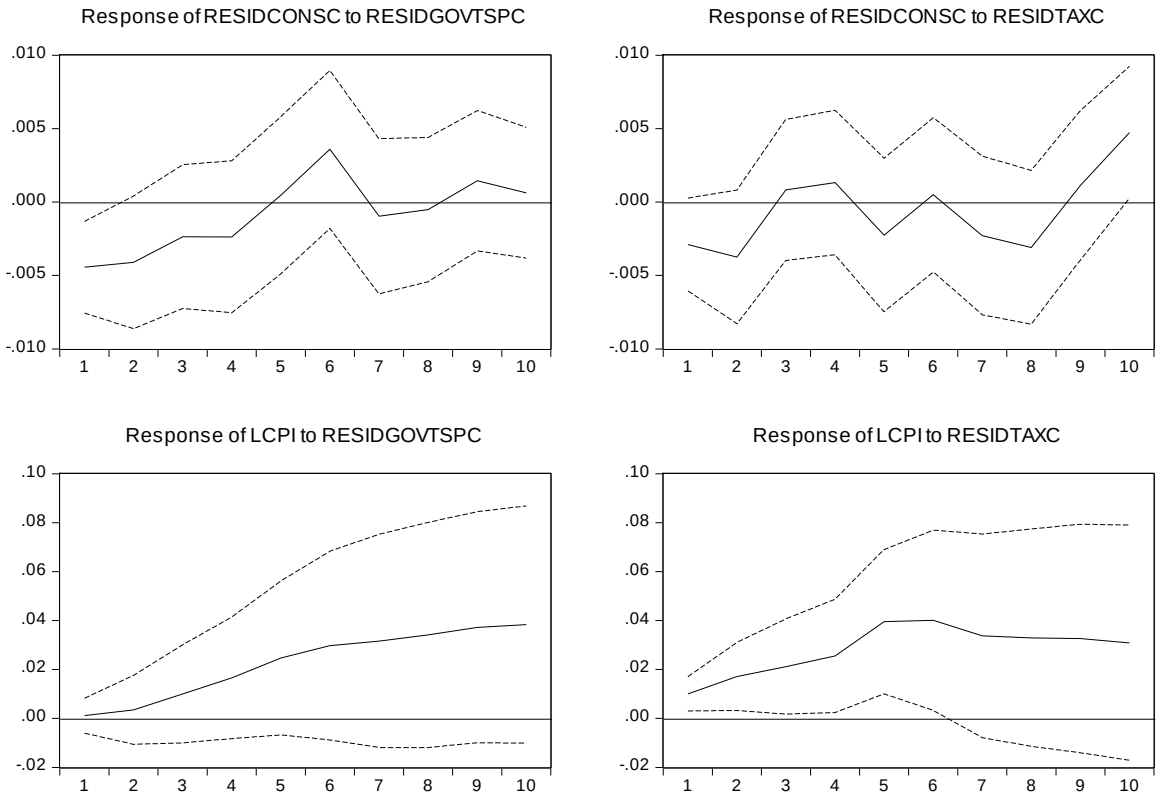

Figure 9: Impulse Responses of Consumption and Inflation to Fiscal Policy

Figure 9 shows a negative response of consumption to government spending remains significant up to the second quarter and remains negative till the fifth quarter when it becomes positive and reaches its highest point in the sixth quarter. It then follows a downward pattern before it starts to oscillate changing signs from positive to negative then positive again. Consumption's response to a rise in tax revenues remains negative up to the third quarter when it also starts to oscillate and change signs from negative to positive and this oscillation continues up to the ninth quarter. The effect of a rise in government expenditure inflation tends to have an upward trend across the quarters but remains insignificant. An increase in tax revenue, on the other hand, is significant up to the sixth quarter and remains positive across all quarters under consideration.

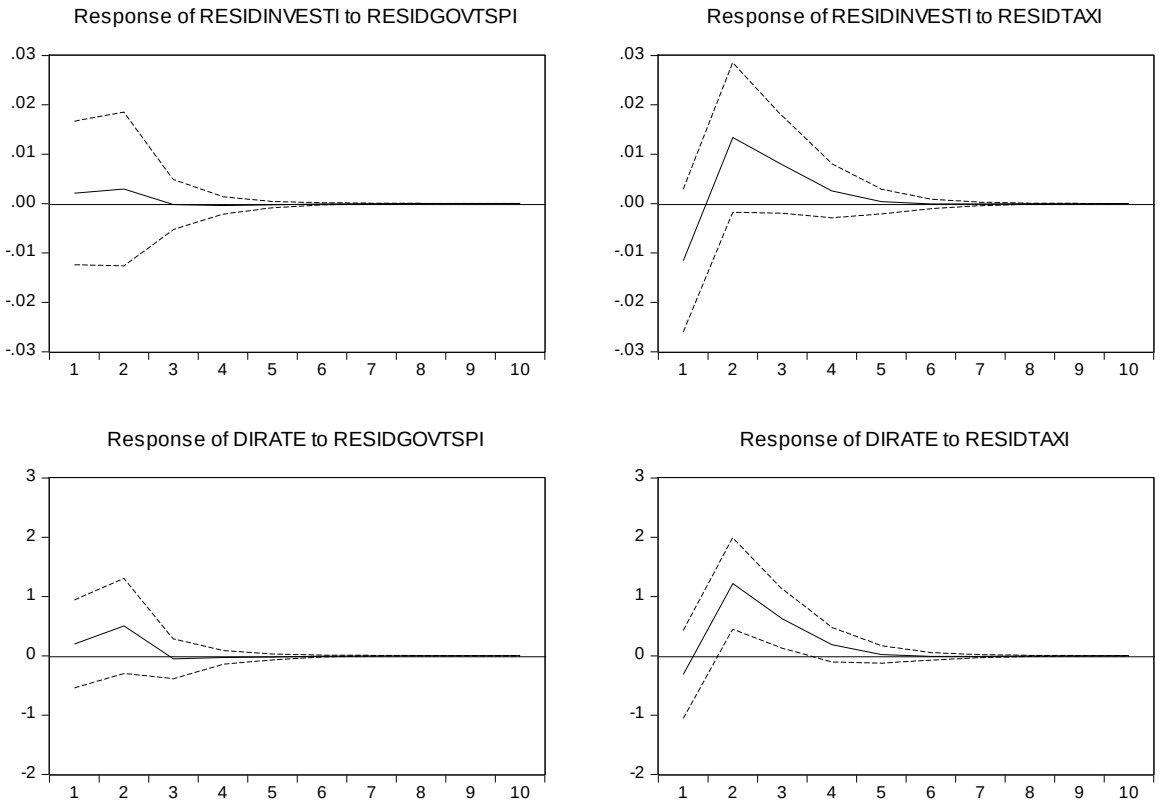

Figure 10: Impulse Responses of Investment and Interest Rate to Fiscal Shocks

As seen in Figure 10 above, the effect of government expenditure on private investment is positive only up to the third quarter when it becomes negative before getting back to an equilibrium. On the other hand, the response of private investment to government revenues is negative up to the second quarter when it becomes positive before reaching its peak in the in the same quarter and starts to die down reaching an equilibrium in the seventh quarter. Interest rate's response to government expenditure is positive and reaches a maximum in the second quarter then gets back to equilibrium by the fifth quarter. The response of interest rates to tax revenues move from negative to positive in the first quarter and is significant between the second and fourth quarters, reaching its highest point in the second quarter before stabilizing in the seventh quarter.

5.4 Conclusion

This chapter has presented the evolution of various macro-economic aggregates and descriptive statistics of the data used in the study. Results of the various diagnostic tests have also been given and appropriate measures have also been taken in cases where the series were not stationary. Econometric results have also been provided. It has been found that an increase in government expenditure leads to an increase in GDP while a rise in the tax revenues has an opposite effect on GDP. However, both government spending and revenues were found to negatively influence inflation. In terms of the transmission mechanism, both increases in government spending and government revenues had a negative effect on consumption. Lastly, a rise in government expenditure was found to lead to a reduction in investment whilst a rise in taxes caused a rise in investment.

CHAPTER 6

CONCLUSION AND POLICY IMPLICATIONS

6.1 Summary

The study aimed at assessing the effects of fiscal policy on the Malawian economy using the Structural VAR Approach. To achieve this, two specific objectives were set: the first objective was to investigate the impact of tax revenue and government spending on GDP and inflation and the second was to assess the effectiveness of private consumption and private investment channels in fiscal policy transmission. Fiscal policy in Malawi is critical given that it sets the pace and monetary policy tends to support the current fiscal stance. As such any decision by policy makers in this regard is crucial as it determines and greatly affects the economic environment and economic growth. Therefore, policy makers need to know to what extent their actions affect the economy.

The results suggested that a positive government expenditure shock positively affects output which is expected and in line with the theory of fiscal expansion in the context of Malawi where government activities are massive. On the other hand, a positive government revenue shock was found to negatively affect output. This can also be justified from theory as any changes in the taxes affects how much people have to spend and save. Both fiscal variables were however found to affect inflation negatively. In

addition to this, the result of an increase in output on inflation was negative but was not significant.

In terms of the transmission mechanism, an increase in government expenditure was found to affect both consumption and investment negatively. This may have been the case because any government spending which is not tax financed tends to fuel inflation especially when the fiscal deficit is monetized leading to a drop in the disposable incomes and thus lower consumption. In addition to this, domestic financing which was often resorted to in the study period, may have contributed to higher interest rates and thereby crowded out private investment. A rise in government revenues, on the other hand, was found to negatively affect consumption and this is expected since it reduces the income available for consumption. However, the effect of government revenues on investment had a non-standard flavor as a rise brought about a positive effect on private investment.

6.2 Policy Implication of the Results

According to the analysis, the budget deficit and type of government financing remain critical in determining the level of most macroeconomic variables such as inflation and interest rates. This in turn affects consumers, investors and thus, the level of economic growth in general.

The study has confirmed that there exists a fiscal policy transmission mechanism via the tax revenue and government spending channels. Further, it has been shown that optimal tax financing of government expenditure is the best form of financing as the other forms

have been found to have adverse effects on economic agents and activity. The findings are therefore in favor of the zero domestic financing principle which was adopted in 2012. This is to enhance activities such as private investment which significantly contribute to economic growth. This principle would also help in containing inflation and thereby preserving value of the Kwacha.

6.3 Directions for Further Study

The major limitation of the study was availability of data for the variables of interest. This led me to streamline my sample and only use data from 1990 to 2014. Therefore, I was not able to conduct meaningful sub sample analysis to determine any structural breaks the economy may have had overtime.

For one to have a more comprehensive understanding of how the transmission mechanism works, additional components may be studied. For instance, a study may be conducted on the effect of fiscal policy on the term structure of interest rates. Other studies would also be done to focus on the actual multipliers in assessing fiscal policy effects.

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APPENDICES

Appendix 1: Figures

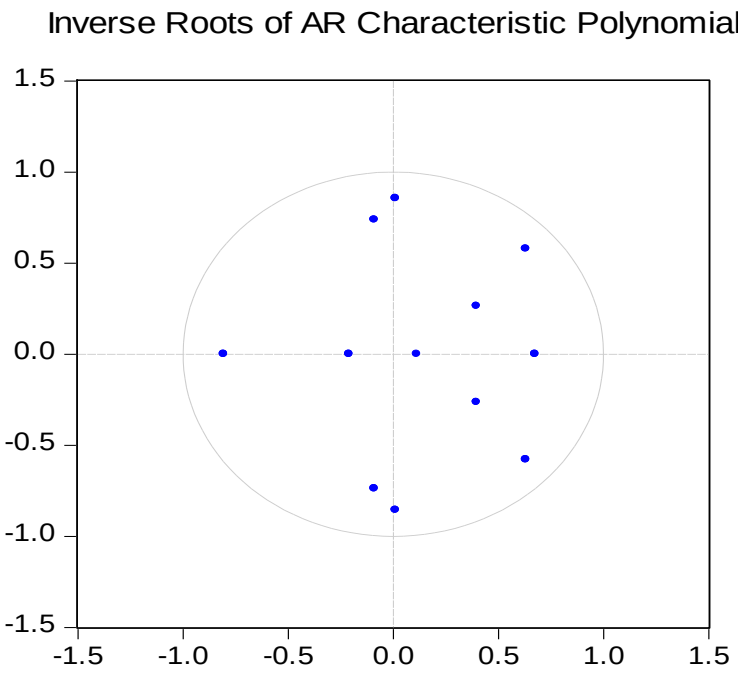

Figure 11: AR Root Graph

Appendix 2: Tables

Table 5: Lag Length Criteria

VAR Lag Order Selection Criteria
Endogenous variables: DLGOVTSP DLTAX DLGDP

Sample: 100

Lag	LogL	LR	FPE	AIC	SC	HQ
0	248.273	NA	9.15E-07	-5.390617	-5.307842	-5.357222
1	336.57	168.8321	1.60E-07	-7.133414	-6.802311	-6.999834
2	393.93	105.8939	5.54E-08	-8.196253	-7.616824	-7.96249
3	416.659	40.46414	4.10E-08	-8.498008	-7.670252*	-8.164060*
4	428.071	19.56286*	3.90e-08*	-8.551012*	-7.474929	-8.11688
5	431.149	5.073581	4.47E-08	-8.420857	-7.096448	-7.886541
6	435.597	7.038315	4.98E-08	-8.32081	-6.748073	-7.686308
7	443.341	11.74359	5.17E-08	-8.293204	-6.472141	-7.558519
8	453.648	14.95113	5.10E-08	-8.321934	-6.252545	-7.487065

* 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

Table 6: Correlation Matrix for Residuals

	RESIDGDP	RESIDGOVTSP	RESIDTAX
RESIDGDP	1.000	-0.020	-0.216
RESIDGOVTSP	-0.020	1.000	0.277
RESIDTAX	-0.216	0.277	1.000

Table 7: Output and Price Elasticities of Government Revenues

Dependent Variable: DLTAX Method: Least Squares Sample (adjusted): 2 100				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.04923	0.00642	7.674305	0.0000
DLGDP	0.13048	0.07779	1.677351	0.0968
DLCPI	0.1247	0.05917	2.107678	0.0377
DLGOVTSP	-0.0025	0.00933	-0.267076	0.7900
R-squared	0.08868	**Mean dependent var**		0.06273
Adjusted R-squared	0.0599	**S.D. dependent var**		0.04333
S.E. of regression	0.04202	**Akaike info criterion**		-3.462
Sum squared resid	0.1677	**Schwarz criterion**		-3.3572
Log likelihood	175.37	**Hannan-Quinn criter.**		-3.4196
F-statistic	3.08136	**Durbin-Watson stat**		0.70064
Prob(F-statistic)	0.03111			

Table 8: Output and Price Elasticities of Government Expenditures

Dependent Variable: DLGOVTSP Method: Least Squares Sample (adjusted): 2 100				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.019718	0.08977	0.219646	0.8266
DLGDP	1.326038	0.857318	1.546728	0.1253
DLCPI	-0.359641	0.664652	-0.541097	0.5897
DLTAX	-0.301219	1.127841	-0.267076	0.7900
R-squared	0.025447	**Mean dependent var**		0.062859
Adjusted R-squared	-0.005329	**S.D. dependent var**		0.460808
S.E. of regression	0.462034	**Akaike info criterion**		1.333211
Sum squared resid	20.28021	**Schwarz criterion**		1.438064
Log likelihood	-61.99393	**Hannan-Quinn criter.**		1.375635
F-statistic	0.826856	**Durbin-Watson stat**		3.11691
Prob(F-statistic)	0.482282			

Table 9: Fiscal Shocks on Output and Inflation

Structural VAR Estimates
Sample (adjusted): 10 100
Model: Ae = Bu where E[uu']=I
Restriction Type: short-run pattern matrix

A =

1	0	0	0
0	1	0.130484	0.124701
δ_1	δ_2	1	0
γ_1	γ_2	γ_3	1

B =

1	0	0	0
β_2	1	0	0
0	0	1	0
0	0	0	1

	Coefficient	Std. Error	z-Statistic	Prob.
δ_1 (govtsp on gdp)	1.042578	0.129755	8.034959	0.0000
γ_1 (gdp on inflation)	-0.046558	0.151461	-0.307391	0.7585
δ_2 (tax on gdp)	-55.58253	4.11272	-13.51478	0.0000
γ_2 (govtsp on inflation)	-14.28691	5.834897	-2.448528	0.0143
γ_3 (tax on inflation)	-33.41124	0.455815	-73.29996	0.0000
β_2 (govtsp on tax)	0.018321	0.104828	0.174773	0.8613
Log likelihood	72.36514			

Estimated A matrix:

1	0	0	0
0	1	0.130484	0.124701
1.042578	-55.58253	1	0
-0.046558	-14.28691	-33.41124	1

Estimated B matrix:

1	0	0	0
0.018321	1	0	0
0	0	1	0
0	0	0	1

Table 10: Fiscal Shocks on Consumption

Structural VAR Estimates
Sample (adjusted): 6 100, Included obs: 95 after adjustments
Restriction Type: short-run pattern matrix
Model: Ae = Bu where E[uu']=I

A =

1	0	0	0	0
0	1	0.13048	0.124701	0
δ_1	θ_2	1	0	0
γ_1	γ_2	γ_3	1	0
θ_1	θ_2	0	0	1

B =

1	0	0	0	0
β_2	1	0	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	1

	Coefficient	Std. Error	z-Statistic	Prob.
δ_1 (govtsp on gdp)	-0.0043	0.00992	-0.4349	0.6636
γ_1 (gdp on inflation)	0.00647	0.00499	1.29873	0.194
θ_1 (govtsp on cons)	-0.0323	0.01955	-1.6522	0.0985
δ_2 (taxes on gdp)	0.13647	0.15974	0.85436	0.3929
γ_2 (govtsp on inflation)	0.02051	0.08202	0.25003	0.8026
θ_2 (taxes on cons)	-0.5779	0.30492	-1.8954	0.058
γ_3 (taxes on inflation)	-0.1979	0.05317	-3.7223	0.0002
β_2 (govtsp on tax)	0.00481	0.00191	2.52459	0.0116
Log likelihood	823.698			

Estimated A matrix:

1	0	0	0	0
0	1	0.13048	0.124701	0
-0.0043	0.13647	1	0	0
0.00647	0.02051	-0.1979	1	0
-0.0323	-0.5779	0	0	1

Estimated B matrix:

1	0	0	0	0
0.00481	1	0	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	1

Table 11: Fiscal Shocks on Investment

Structural VAR Estimates
Sample (adjusted): 6 100 Included obs: 95 after adjustments
Restriction Type: short-run pattern matrix
Model: Ae = Bu where E[uu']=I

A =

1	0	0	0	0
0	1	0.130484	0.124701	0
δ_1	δ_2	1	0	0
γ_1	γ_2	γ_3	1	0
θ_1	θ_2	0	0	1

B =

1	0	0	0	0
β_2	1	0	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	1

	Coefficient	Std. Error	z-Statistic	Prob.
δ_1 (govtsp on gdp)	0.454921	0.107669	4.225184	0
γ_1 (gdp on inflation)	-0.037769	0.112721	-0.335069	0.7376
θ_1 (govtsp on invest)	-0.691672	0.112263	-6.161182	0
δ_2 (taxes on gdp)	-56.71175	4.104751	-13.81613	0
γ_2 (govtsp on irate)	-13.53179	5.826017	-2.322649	0.0202
θ_2 (taxes on invest)	22.69617	5.728308	3.962107	0.0001
γ_3 (taxes on irate)	-33.56376	0.447986	-74.9214	0
β_2 (govtsp on tax)	0.009832	0.102598	0.09583	0.9237
Log likelihood	-633.0215			

Estimated A matrix:

1	0	0	0	0
0	1	0.130484	0.124701	0
0.454921	-56.71175	1	0	0
-0.037769	-13.53179	-33.56376	1	0
-0.691672	22.69617	0	0	1

Estimated B matrix:

1	0	0	0	0
0.009832	1	0	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	1