The effects of fiscal policy on the conduct and transmission mechanism of monetary policy in Zambia

BY

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ABSTRACT
The main objective of this study was to empirically assess the direct and indirect effects of fiscal policy shocks on monetary policy conduct and effectiveness in Zambia. In addition, the purpose of this study was to evaluate the evolution of fiscal and monetary policy in Zambia as well as the legal framework and institutions governing these policies.

Using CCD and the pass-through analysis for data spanning January 2003 to December 2012, our results suggest that there is evidence of fiscal dominance in Zambia whilst the Tanner and Ramos (2002) approach does not show this evidence. Furthermore, results based on the Auto-Regressive Distributive lag models and the VAR approach presents evidence that fiscal policy stance has an effect on the channels of monetary policy transmission in Zambia. Thus, we conclude that fiscal policy shocks have significant implications for the effectiveness of monetary policy in Zambia.

Our evaluation of monetary and fiscal policy in Zambia shows that the country has undergone numerous reforms, but room still remains to improve the transparency in governance and implementation of these policies. Our observation shows that there is need for more reforms focusing on the institutions and legal framework aimed at improving transparency and safeguarding the frameworks.

Finally, our investigation reveals that fiscal policy was mostly counter-cyclical in the period 1994-2003 while it was pro-cyclical from 2003 to 2014. However, monetary policy showed no clear policy mix with regard to the business cycle. In addition, the evidence shows that there is no policy coordination in Zambia.

JEL Classification Codes: E41, E49, E52

Keywords: Fiscal Policy, Monetary Policy, Dominance, Fiscal Deficit, Fiscal Stance
1.0 Introduction

The 20th meeting of the COMESA Committee of Central Bank Governors held in Kinshasa, Congo (DR) from 26th to 27th November 2014 considered a study on “Empirical Assessment of the effectiveness of monetary policy in COMESA member countries”. During discussions on the study the Governors observed that poor coordination between fiscal and monetary policy was one of the most important factors limiting the effectiveness of monetary policy in member countries. In light of this limiting factor, the Governors instructed the COMESA Monetary Institute (CMI) to undertake a study on the effects of fiscal policy on the conduct and transmission mechanism of monetary policy in selected member states, and Zambia is one such country identified for the study.

After years of improved fiscal performance following the commodity price boom of the 2000s many African economies, especially commodity exporters, fiscal performance has started to deteriorate. For example, Zambia’s fiscal performance has been deteriorating since 2011 following great improvement in 2000s (see figure 1 below). The rising levels of fiscal deficits in many African economies, Zambia included, has rekindled the interest of both researchers and policy makers. The main focus of these studies has been to make both fiscal and monetary policy authorities to understand the nature of the interaction and its implications.

![Figure 1: Zambia Budget and primary fiscal performance since 2000](image1)

Source: Authors compilation from BMI database

One area of interest for both researchers and policy makers has been the effect of fiscal policy performance on the effectiveness of monetary policy. The link between fiscal and monetary policy is not a new one in both theoretical and empirical literature. Doughty (1991) noted that the conduct and stance of fiscal policy affects monetary policy and inflation at two principal levels. Firstly, in the short term fiscal policy conduct and stance interacts with key elements and channels of monetary policy transmission. Sargent and Wallace (1981) first pointed out that, in a so-called “fiscal dominant” regime, where the fiscal authority sets its budget...
independently of public sector liabilities, a fiscal expansion may eventually require monetisation, and result in higher inflation. In addition, fiscal policy affects inflation through its effects on aggregate demand (Zoli, 2005). Furthermore, fiscal policy influences financial variables which are the main channels of monetary policy transmission such as interest rates, exchange rates and interest spreads. Secondly, fiscal policy can influence the long term sustainability of monetary policy.

The main purpose of this study therefore, is to assess the direct and indirect impact of fiscal policy on the effectiveness of monetary policy transmission in Zambia. Specifically, the study will deal with the following objectives:

- Review Zambia’s fiscal and monetary policy frameworks,
- Analyse trends in fiscal performance and external borrowing in Zambia;
- Test for the existence of fiscal dominance in Zambia;
- Analyse the impact of fiscal deficits on interest rate spreads, interest rates, exchange rates, and inflation;
- Provide recommendations for ensuring the effectiveness of monetary and fiscal coordination in macroeconomic management.

In this regard, to effectively deal with these objectives this report has been divided into four main parts. Section 2 provides a background on macroeconomic performance, an overview of fiscal and monetary policy as well as trends in fiscal deficits and borrowing; section 3 provides theoretical and empirical literature on the link between fiscal and monetary policy; section 4 provides an empirical methodology; and sections 5 and 6 provides expected results and recommendations, respectively.

**2.0 Background**

**2.1 An Overview of Macroeconomic Performance of Zambia Since 1961**

The orientation of economic policy, both fiscal and monetary policy, in Zambia has undergone significant changes overtime. For example, monetary policy had multiple objectives while fiscal policy was mostly socialist in nature supporting huge subsidies and inward-looking industrialization strategies. Prior to the 1990s, monetary policy was subordinated towards supporting government’s fiscal objectives. For example, monetary policy was geared towards the provision of cheap credit mainly to state owned enterprises and promotion of economic growth through various initiatives and incentives as well as financing of the government’s budget from the central bank.

Due to poor economic policies that were pursued, Zambia’s macroeconomic conditions deteriorated steadily during the period prior to the 1990s. Persistent fiscal deficits that were financed by the central bank coupled with failure of the monetary authority to control money supply resulted in rising inflation (Bigstern and Mugerwa, 2000). Internal and external
imbalances as well as structural and institutional deficiencies augmented the growing economic problems. Widespread consumer subsidies and the industrialisation strategy of import substitution coupled with weak public administration worsened the fiscal position. Deterioration in the fiscal position and price controls on most food items resulted in inefficient allocation of resources. Externally, the country’s balance of payments were unsustainable due to loss of international reserves on account of growing foreign debt servicing and dwindling export earnings resulting from falling copper prices and production volumes.

The economy was pushed to a state of stagnation and near hyperinflation due to a combined effect of the factors noted above (See Table 1). Annual economic growth slumped from an average of 3.9% during 1961-65 to 1.1% during 1981-90. Concurrently, external debt as a percentage of gross domestic product (GDP) rose from 49% to 119%. Inflation reached an average of 76.9% during the 1980s, and with negative real interest rates, the banking system started to lose its intermediation role and credit to the private sector declined relative to GDP.

Table 1: Evolution of Macroeconomic Variables in Zambia since 1961

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<tbody>
<tr>
<td>Real Per Capita GDP Growth (annual % growth)</td>
<td>0.8</td>
<td>1.9</td>
<td>1.8</td>
<td>1.7</td>
<td>2.8</td>
<td>3.1</td>
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<tr>
<td>Real GDP Growth (annual % growth)</td>
<td>3.9</td>
<td>1.5</td>
<td>1.1</td>
<td>0.8</td>
<td>5.6</td>
<td>6.4</td>
<td>6.8</td>
<td>6.7</td>
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<tr>
<td>Average Annual Inflation Rate</td>
<td>11.1</td>
<td>76.9</td>
<td>68.1</td>
<td>15.5</td>
<td>6.4</td>
<td>6.6</td>
<td>7</td>
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<tr>
<td>External Debt Stocks (% of GNI)</td>
<td>75.3</td>
<td>206.1</td>
<td>214.3</td>
<td>89.9</td>
<td>27.4</td>
<td>26.6</td>
<td>25.9</td>
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<tr>
<td>External Debt (% of GDP)</td>
<td>48.7</td>
<td>119.3</td>
<td>147.3</td>
<td>67.9</td>
<td>20.8</td>
<td>21.6</td>
<td>20.9</td>
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<tr>
<td>Total Debt Service (% of exports)</td>
<td>2.9</td>
<td>26.2</td>
<td>25.1</td>
<td>25</td>
<td>12.9</td>
<td>2.2</td>
<td>2.2</td>
<td>2.8</td>
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<td>Total Reserves (% of total external debt)</td>
<td>10.1</td>
<td>2.8</td>
<td>2.8</td>
<td>23.1</td>
<td>47</td>
<td>56.5</td>
<td>48</td>
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<tr>
<td>Total Reserves (% of GDP)</td>
<td>18.6</td>
<td>7.1</td>
<td>4.5</td>
<td>5</td>
<td>7.7</td>
<td>9.8</td>
<td>12.2</td>
<td>10</td>
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<tr>
<td>Broad Money (% of GDP)</td>
<td>19.3</td>
<td>29</td>
<td>30.9</td>
<td>18.2</td>
<td>17.9</td>
<td>18.9</td>
<td>20</td>
<td>21.4</td>
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<tr>
<td>Broad Money Growth (annual % growth)</td>
<td>27.2</td>
<td>10.5</td>
<td>41.5</td>
<td>49.9</td>
<td>22.7</td>
<td>21.7</td>
<td>17.9</td>
<td>20.8</td>
</tr>
<tr>
<td>Real Interest Rate (%)</td>
<td>0.8</td>
<td>15.5</td>
<td>3.1</td>
<td>11.9</td>
<td>6.5</td>
<td>7.6</td>
<td>3.7</td>
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<tr>
<td>Domestic Credit (% of GDP)</td>
<td>0.3</td>
<td>41.9</td>
<td>63.9</td>
<td>59.6</td>
<td>28.2</td>
<td>18.1</td>
<td>18.5</td>
<td>-</td>
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<tr>
<td>Domestic Credit to Private Sector (% of GDP)</td>
<td>8.5</td>
<td>17.1</td>
<td>14</td>
<td>6.7</td>
<td>8.1</td>
<td>13.5</td>
<td>16.2</td>
<td>16.5</td>
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<tr>
<td>External Balance (% of GDP)</td>
<td>15.1</td>
<td>0.9</td>
<td>-1.7</td>
<td>-6.5</td>
<td>-2.5</td>
<td>6.2</td>
<td>2.6</td>
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Source: World Bank, CSO and Bank of Zambia databases

Discontented with deterioration in economic conditions, the citizenry in the October 1991 general elections ushered in a new Government. The new government in 1992 embarked on the transformation of the economy through instituting a series of economic reforms and policies aimed at creating a market-based economic system driven by the private sector. The reforms undertaken included removing price controls as well as abolishing most subsidies thereby giving market forces a greater role in the allocation of resources. Other measures
taken include the liberalisation of the foreign exchange market through the removal of exchange controls and the decontrolling of interest rates. The change in the macroeconomic policy framework after 1991 contributed to a marked improvement in Zambia’s macroeconomic environment. Money growth and inflation declined sharply, with the latter being held in single digits since 2006. The liberalization of lending and deposit rates initially caused real interest rates to spike, but they subsequently stabilized at about 5%. Moreover, real GDP growth steadily increased to an average of 5.6% during the period since 2001-2010.

2.2 Fiscal and monetary policy in Zambia

2.2.1 Fiscal Policy in Zambia

Overview of fiscal policy in Zambia since 1964

Fiscal policy refers to government actions aimed at influencing the direction of the economy through changes in the level and composition of public expenditure and funding. Specifically, fiscal policy involves government expenditure, taxes and subsidies which are implemented through the national budget. Fiscal policy plays a key role in the economy by delivering on the three principal functions of government namely, efficient allocation of resources, and fair distribution of incomes and stabilization of economic activity (Nyamongo et al., 2008). These functions can be achieved via the effects of fiscal stabilizers, discretionary fiscal fine tuning, or through a combination of both. Currently, Zambia’s fiscal policy is anchored on expenditure rationalisation and enhanced revenue mobilisation to create fiscal space for infrastructure development as well as reduce overall budget deficits.

After attaining Independence from Great Britain in 1964, Zambia embarked upon a vigorous expansionary fiscal policy focussing on massive infrastructure development as well as import substitution industrialisation. To implement this expansionary fiscal policy, Zambia followed in the footsteps of the Soviet Union by instituting centralised planning under the National commission for development (Whitworth, 2012): this lead to the envisioning of the Transitional National Development Plan (1964-1966) which was followed by the First National Development Plan (1966-71). Supported by high revenues from the booming mining industry, the first two plans were successfully implemented (Whitworth, 2012). However, subsequent plans were largely unsuccessful.

In addition to centralised development planning, the Government also adopted the Soviet style command economic management in which majority of production in the economy was largely controlled by the state. A major switch to this command style economic system came with the Mulungushi Reforms of April 1968. Resolutions of the Mulungushi reforms called for nationalisation of key foreign owned firms by acquiring 51% shareholding. Nationalisation saw the creation of many parastatals such as Industrial Development Company (INDECO), Mining Development Company (MINDECO), and Finance and Development Corporation (FINDECO); which most often only contributed to higher government expenditure and not revenue or productivity. Unfortunately, the nationalisation
program was ill-timed and consequently failed as a result of external shocks. In 1973 a massive rise in oil prices was followed by a slump in copper prices, Zambia’s main export and tax revenue earner at the time, in 1975. These shocks resulted in falling export earnings leading to deteriorating balance of payments as well as huge budget deficits. Poor revenue collection consequently caused the government to abandon the Third National Development Plan (1978-1983). In addition, there was poor funding to newly acquired companies leading to a fall in productivity and consequently economic performance.

To cover up for the shortfalls in revenue, the Government borrowed heavily from the international markets and Bretton-wood institutions. By the mid-1980s, Zambia was one of the most indebted nations in the world, relative to its gross domestic product (GDP). The IMF called on Zambia to start economic reforms aimed at stabilizing the economy and restructuring it to reduce dependence on copper. The proposed measures included: the ending of price controls; devaluation of the kwacha (Zambia's currency); cut-backs in government expenditure; cancellation of subsidies on food and fertilizer; and increased prices for farm produce. However, the removal of food subsidies caused massive increases in the prices of basic foodstuffs; the country's urbanized population rioted in protest. In desperation, the government abandoned the IMF sponsored Structural Adjustment Program (SAP) in May 1987 and introduced a New Economic Recovery Programme in 1988. However, this did not help and the government eventually moved toward a new understanding with the IMF in 1989.

In 1990, with the collapse of communism in the Soviet Union and Eastern Europe (on which UNIP’s philosophy of Zambian Humanism had been fashioned), Zambia was forced to make a major policy reversal: the Government announced the intention to partially privatize the parastatals. However, time was not on the part of the ruling party at the time as riots continued in urban centres forcing the government to call for multiparty elections in October 1991, which they consequently lost to the Movement for Multiparty Democracy (MMD). The Frederick Chiluba government (1991–2001), which came to power after democratic multi-party elections in October 1991, was more committed to extensive economic reform albeit without any long term planning.

After 1991, fiscal policy was guided by the Poverty Reduction Strategy Papers (PRSPs) which government formulated with the help of cooperating partners. The PRSPs aimed at optimizing resource allocation towards the sole aim of reducing poverty albeit without much emphasis on macroeconomic performance. In addition, to improve the fiscal position of government a cash budget was introduced. The Cash Budget entailed that government could only spend when funds are available. Later the PRSPs were replaced by the medium term expenditure framework (MTEF) in 2003 which outlined both the macroeconomic and fiscal policy framework for a three year period. After the 2001 general elections, the government re-introduced national planning through the re-introduction of five national development plans which anchored government’s fiscal policy objectives.
In order to anchor the five year development plans, since 2005, Zambia’s long-term fiscal policy objectives have been enshrined in a document called the “Vision 2030” and operationalized through several five year national development plans. The five-year national development plans and annual budgets are used as vehicles for the achievement of the objectives in the Vision 2030. The introduction of the Vision 2030 departs from the previous practice of preparing and implementing medium-term plans that were not anchored on a national vision. In addition to the introduction of a long term fiscal policy framework, several initiatives that had a direct bearing on fiscal policy have been implemented in Zambia as outlined above.

**Institutional and legal framework guiding fiscal policy in Zambia**

Literature from political economy emphasizes the weaknesses and flaws in a country’s budgeting institutions as an important underlying source of poor fiscal outcomes (von Hagen, 1992; von Hagen and Harden, 1994 and 1996; Velasco, 1999; Alesina and Perotti, 1999; Stauch and von Hagen, 1999). Budgeting institutions encompass the formal and informal rules governing the drafting of the budget, its passage through the legislature and its implementation as well as its monitoring. These rules distribute strategic influences among the participants in the budget process and regulate the flow of information. In doing so, they have important effects on the outcomes of budgeting processes.

The institutions and laws governing Zambia’s fiscal policy are enshrined in various pieces of legislation. The legal framework governing the budget process in Zambia is derived from the Constitution of Zambia number 18 of 1996. All the four stages of the budget process (drafting, enacting, implementation and auditing are governed by specific articles in Part X of Zambian Constitution of 1996. Article 117 in Part X of the constitution authorises the Minister responsible to draft a budget, present it to parliament, and spend the funds in accordance with the approved budget. Article 114 empowers the Parliament to approve the budget before budget implementation. After the budget has been approved by parliament the President signs a General Warrant which authorises controlling officers to start implementing the budget. Finally, Article 121 of the Constitution further provides for the auditing of the budget after it has been implemented by the Auditor General whose tenure is guaranteed by the constitution. Although the budget process is regulated by a legal framework, a lot still remains to ensure accountability, transparency and wider participation. Firstly, there is no provision in the framework for linking the annual budgets to medium term and long term plans of government such as the MTEF and five year development plan. Further, the legal framework does not provide for an explicit participation of non-state actors while it gives extensive powers to the Minister of Finance without providing for proper checks and balances. Finally, there is lack of strong provisions for action on the Auditor General’s report by law enforcement agencies such as Zambia Police, Drug Enforcement Commission and the Anti-Corruption Commission.

Another important aspect of fiscal policy is public debt because in most cases the country’s tax revenues are rarely adequate to meet Government expenditure needs. Furthermore, public debt forms an important ingredient of expansionary fiscal policy as debt provides a
mechanism through which the government can stimulate the economy through spending more than they can afford. Debt management in Zambia is governed by several pieces of legislation and regulations. The primary law governing debt management in Zambia is Article 120 which provides that all debt contracted and guaranteed by the state will be charged on the general revenues of government. Furthermore, the Loan and Guarantees Act - Chapter 366 of the laws of Zambia authorises the government to raise and guarantee loans. The Act also gives the Minister of Finance the sole authority to procure and guarantee in the republic or elsewhere short and long term debt within limits proscribed by parliament. The Local Loans Act - Chapter 353 authorises the President or the Minister of Finance to borrow in the domestic financial markets by the issue of bonds and debentures. The law specifies the conditions of issuing various financial instruments and limits the maturity of these instruments to sixty years.

The foregoing review shows that the country has a legal system that defines functions and responsibilities of the Minister of Finance (hereafter MOF) in the country’s debt management process. It also specifies the limits of indebtedness and guarantees that the country can undertake. However, the legal framework assigns all the responsibility of approving all debt contruction to the Minister of Finance, implying that the MOF is responsible for managing public debt. In addition, the Loans and Guarantees Act and the Local loan Act clearly give the sole authority to raise funds in and outside of Zambia to the MOF. However, it is important to note that under the current arrangements, the minister of finance has to seek Parliament approval whenever he/she intends to borrow more than the prescribed limits on both domestic and external debt. For example, to cover for the 2015 fiscal deficits through external borrowing the Minister of Finance sought the permission of Parliament to revise the debt limit from 35% of GDP to 60% of GDP.

The above review of Zambia’s legal and institutional framework of the budget process as well as debt management clearly shows serious gaps in the governance structure of the country’s fiscal policy. Significant powers and responsibilities given to the Minister of Finance could create a serious recipe for fiscal dominance in the country thereby rendering the effectiveness of monetary policy weak. Further, there is lack of clarity in the current structure with regard to how the borrowed funds are used resulting often in claims of weak accountability in debt management. Finally, lack of a clear legal framework which governs the participation of the non-state actors and others in the budgeting and debt processes could lead to fiscal dominance.

Fiscal Policy and Business Cycles

Fiscal policy is an economic management tool undertaken through changes in taxes and spending activities of government implemented through the Budget. To examine the stance of fiscal policy researchers use two approaches. One group examine fiscal policy by looking at the nature of government expenditures and revenues (Lane, 1992; Zoli, 2002) while others use the fiscal balances (Thornton, 2007; Nyamonga et al., 2008). In examining the stance of fiscal policy, researchers using fiscal balances have exploited several measures of the fiscal
balance such as the overall and primary balance (Thornton, 2007) while others have used structural balance (Du Plessis et al., 2007; Nyamonga, 2008).

This study borrows from studies by Du Plessis et al. (2007) and Nyamonga (2008) which utilises the structural budget balance to measure the stance of fiscal policy. The structural balance is calculated from the overall budget balance. The overall budget balance is basically the difference between the revenues and expenditures of government as a percent of GDP. Generally, if a measure of fiscal balance is negative then monetary policy is regarded expansionary/accommodative otherwise it is contractionary or balanced. The structural fiscal balance is measured using the output gap elasticities approach (see Appendix A for details). To assess the behaviour of fiscal policy over the business cycle, we compare the measures of the fiscal budget balance or fiscal stance to the output gap which shows the state of the economy.

Figure 2 below shows compares the evolution of structural balance and overall fiscal budget balance to the output gap from 1994 to 2014. During the period from 1994 to 2003, the economy generally experienced a downswing (falling output gap) while fiscal policy was largely accommodative (negative fiscal balances). Conventionally, it is expected that when the economy is experiencing a downswing and fiscal stabilisers are working well, the fiscal balances should widen consistent with counter-cyclical fiscal policy. In particular, from 1994 to 1998 there is a general fall in the output gap while fiscal balances are largely wider indicating countercyclical policy while from 1998 to 2001 there is an upswing in the economy followed by smaller fiscal balances and eventually positive balances again indicating countercyclical policy; and in the period 2001 to 2003 there was another downswing followed by another episode of larger fiscal balances. Therefore, during this period fiscal policy was largely counter-cyclical.

Figure 2: Evolution of the structural budget balance, overall budget balance and the output gap

Source: Computations by the author using the BoZ database
During the period 2003-2008, the economy was largely below potential thereby requiring accommodative policies to bring it closer to potential output. However, during this period fiscal balance measures generally narrowed compared to other episodes turning positive in 2006, indicating that fiscal policy was pro-cyclical. Lastly the episode from 2008 to 2014, there was an upswing in economic activity with output gap consistently rising but the fiscal balances were getting larger indicating that fiscal policy was pro-cyclical.

Figure 3 shows the relationship between cyclically neutral fiscal balance, fiscal balance and fiscal stance. From figure 3, using the fiscal stance measure, it appears that fiscal policy was largely accommodative over the study period with an exception of 1999-2000 periods and in 2006 when it was restrictive. Prior to the 2000s, Zambia experienced a downswing in economic activity resulting in lower tax revenues which made government to rely more on donor funds to run many of its welfare programs. On the expenditure side, a lot of social safety nets such as the fertiliser input support program (FISP) where created to mitigate the effects of job losses arising from the structural adjustment program (SAPs) and the privatisation programs. In December 2000, Zambia qualified for debt relief under the HIPC program. Following the debt relief and a belief for enhanced tax revenue fiscal authorities started undertaking expansionary fiscal policy focussing mainly on infrastructure development. However, the pace at which expenditures were growing was far higher than the revenues resulting in widening of the fiscal balances.

Figure 3: Trends in the cyclical neutral budget balance, overall budget balance and a measure of the fiscal stance

Finally, figure 4 shows the relationship between fiscal stance and output gap. The chart shows that fiscal policy has generally been accommodative over the period 1994-2014. Ideally, it is expected that if there is positive output gap, a restrictive fiscal stance should be undertaken, and vice versa. Evidence in figure 4 (Quadrant 1), shows that on a number of
occasions fiscal policy was accommodative even when the output gap was positive. Further, there are fewer instances when fiscal policy was restrictive in the presence of a negative output gap (quadrant 3). However, there are also instances when fiscal stance responds correctly to the state of the economy (Quadrant 4), specifically the fiscal stance was accommodative when there was a negative output gap. Generally from the chart below quadrant 1 seems to be the common feature during the sample where the government offered a stimulus even when the economy was above trend, indicating that fiscal policy was generally pro-cyclical.

Figure 4: The correlation between fiscal stance and output gap

Source: Computations by the author

2.2.2 Monetary Policy in Zambia

An overview of Monetary Policy in Zambia

Prior to the general economic policy reforms of the 1990’s, Zambia’s monetary policy had multiple objectives. Some of these multiple objectives included provision of cheap credit to support import substitution industrialisation, and to support economic growth through numerous incentives and initiatives (Chileshe and Zgambo, 2014). In addition to this, monetary policy was used to finance government’s budget through direct borrowing from the Bank, or monetisation of public deficits.

During this period, monetary policy relied mostly on the use of direct instrument of monetary policy such interest rate controls, directed credit to priority sectors as well as core liquid asset ratios and the statutory reserve ratio. This reliance on direct instrument was mainly due to the
economic policy dominated by the state control of the economy as well the realisation that the central bank had little control over money supply since the country’s banking system was foreign dominated (Kalyalya, 2001; Chileshe and Zgambo, 2014). Despite having multiple objectives and using multiple instruments, monetary policy failed to deliver on many of its objectives by 1990.

Failure of monetary as well as general macroeconomic policy to deliver on the objectives called for a rethink of the country’s economic policy framework, monetary policy included. In this regard, the Bank of Zambia Act was amended in 1996 to narrow the objective of monetary policy to price and financial system stability. Consequently, the Bank of Zambia concentrated on creating a stable macroeconomic environment to support sustainable growth and ultimately development. To achieve these new objectives the Bank of Zambia adopted a new monetary policy framework known as monetary aggregate targeting (MAT) in 1996.

The MAT framework employed by Bank of Zambia to conduct monetary policy is based on the existence of a strong and predictable relationship between monetary aggregates and the ultimate monetary policy target, inflation. Under monetary aggregate targeting, money is generally viewed as a variable with important information regarding current and future path of inflation (Friedman and Kuttner, 1982). The implication of this is that for a monetary policy framework based on money to be successful, there has to be a strong and reliable relationship between the monetary aggregate selected as the target or instrument and the ultimate target, which could be inflation or output.

Under the MAT framework, reserve money was used as an operational target of monetary policy while broad money was used as an intermediate with inflation being the ultimate target. Reserve money is a liability of the central bank and its use as an operational target is premised on the fact that the bank has monopoly on its supply. Further, reserve money is linked to the broad money through the money multiplier, which is assumed to be stable and predictable. This is because with a stable multiplier the central bank could control money supply in the economy by keeping reserve money at a level that is consistent with broad money growth required to achieve price stability (Chileshe et al., 2014).

Figure 5 below shows that the multiplier has generally not been stable during the MAT framework. From January 1994 to December 2000, the multiplier showed high levels of instability while the period during January 2001 to June 2008 it has been relatively stability. However, since mid-2008 the money multiplier has exhibited some degree of instability.
As already stated above, existence of a strong and stable relationship between money and inflation is a key requirement for the success of monetary aggregate targeting. This entails that for this framework to be successful then a country’s growth in broad money should be in line with inflation path. In other words, there is need for a strong positive relationship between inflation and broad money for the bank to be able to credibly control inflation through changing monetary aggregates. Figure 6 below shows a relationship between inflation and broad money. Specifically, figure 6 show that there is generally a positive relationship between broad money and inflation but it has been weakening. Specifically, prior to 1995 the relationship between the two variables was much stronger compared to the post-1995 era. The growing instability of the money multiplier in recent years as well as the weakening relationship between broad money and inflation, points to the need for reforms in the conduct of monetary policy as well as the need for a new framework.
The relative instability of the money multiplier and the weakening relationship between broadmoney and inflation partly motivated the Bank of Zambia's recent move toward an alternative monetary policy framework. To this effect, the Bank embarked on modernising its monetary policy framework with the ultimate objective of adopting an inflation targeting monetary policy framework. The first step in the modernisation of the monetary policy framework was the introduction of the policy rate in April 2012.

**Institutions and Legal Framework**

In Zambia, the legal framework governing the conduct and implementation of monetary policy is the Bank of Zambia Act of 1996 and the subsequent amendments. The Bank of Zambia Act Section 4(1) clearly states that the objective of Zambia’s monetary policy is price and financial systems stability. These objectives are clearly much narrower and clearer than multiple objectives that the bank had prior to the financial reforms of the 1990s.

Section 10(1) of the BoZ ACT of 1996 provides for the appointment of the Governor with requisite knowledge in either financial markets or economics for a period of five years with possibility for extension. In addition, the ACT provides for the appointment of the Board of the Bank by the Minister of Finance. However, the same ACT also provides for the termination of the contracts of all board members by the government. Section 10(7) provides for the removal of the Governor by the President while section 14(1) provides for the removal of any board member by the minister at any time. Finally, the ACT provides for the publication of a monetary policy statement which states the direction of monetary policy for a period of six months.
Although the ACT clearly states the functions and objectives of the Central Bank in line with international standards, gaps still remain which would make fiscal policy to become dominant. Firstly the ACT does not provide for the independent appointment of a monetary policy committee which would shield monetary policy from political pressures. Further, the ACT does not guarantee the tenure of office the Governor and Board members severely putting them at risk to political pressure resulting in fiscal dominance.

Currently, key institutions in monetary policy are the Minister of Finance, Monetary Policy Committee (MPC) and the Monetary Policy Advisory Committee (MPAC). The Minister of Finance provides an inflation target which the Government wants to achieve over the course of year through the national budget which is presented before Parliament. Once the Budget is passed by parliament, the inflation target in the macroeconomic objectives section of the budget becomes the basis for which monetary policy is formulated. The MPC consisting of the Governor, his/her two deputies, Senior Directors for Monetary Policy and Supervisory Policy, and the directors of the five operating departments, namely; Financial Markets, Economics, Bank Supervision, Currency and Banking Services, and Non-Bank Supervision. The MPC is mandated with formulating monetary policy by evaluating conditions in the financial as well as macroeconomic conditions with implications for inflation at their quarterly meeting. At the end of the monetary policy meeting, the Governor issues a monetary policy statement which outlines the decision the MPC has taken as well as the reasons for its decision.

Another important group in Zambia’s monetary policy formulation is the MPAC. The MPAC is a group drawing its membership from the Central Bank and prominent members of the public from the academia as well as the private sector. The MPAC holds its meetings on a bi-annual basis and produces a Monetary Policy Statement. The monetary policy statement is published as a legal requirement after presentation in parliament. The MPS reviews monetary policy performance in the last six months and also provides forecasts for inflation for the latter half of the year.

**Monetary Policy and Business Cycles**

Literature reveals that there are several measures of the monetary policy stance among them real interest rate, reserve money, nominal interest rates (Nyamonga, 2012; Baldini Ribeiro, 2008; Chileshe et al., 2014). In this study we utilise the real interest rate as a measure of monetary policy stance. Figure 7 below gives trends in real interest rates from 1980 to 2014. Over this period, there are three major episodes namely 1980 to 1994; 1994 to 2004; and 2004 to date. During the period 1980 to 1994, real 3 month TB rates where negative while during 1994 to 2004 the real interest rate was positive. After 2004 real interest rates have largely been close zero.
Figure 7: Evolution of the real 91-Day TB rate since 1980

Source: Compiled from BoZ Database

Figure 8 below shows that, over the period 1980 to 2014 the Bank of Zambia pursued a mixture of both pro-cyclical and counter-cyclical monetary policy. There are instances when tight monetary policy is associated with a positive output gap (quadrant 1) while in other periods accommodative monetary policy is associated with a negative output gap (quadrant 3). In both quadrants 1 and 3 monetary policy stance is counter-cyclical. Furthermore, there were also instances when monetary policy was pro-cyclical. In many instances a negative output gap is associated with positive real interest rates (Quadrant 4) while in other instances positive output gap is associated with negative real interest rates (Quadrant 2). In quadrants 2 and 4 monetary policy is pro-cyclical. Putting all this together there is no clear direction of monetary policy in Zambia with regard to business cycles.
2.3 Trends in fiscal performance, Domestic and External Borrowing

2.3.1 Fiscal Performance
Zambia’s Fiscal performance over the last fifteen years can be divided into two distinct periods – from 2000 to 2006 and, from 2006 onwards (See figure 9 below). From 2000 to 2006, there was a general decline in the budget deficit. In 2006, a surplus of 16.9 percent of GDP was recorded. In 2007, the surplus reduced to 0.3 per cent of GDP, with increasing deficits in subsequent periods.
From 2000 to 2014, government expenditure as a share of GDP has on average exceeded government revenue as a share of GDP (See Figure 10 Below).

Figure 10: Trends in Government Revenue and Expenditure. 2000-2014

From 2000 to 2009, the share of government expenditure in GDP was steadily declining, after 2009, the ratio has been on the rise. Between 2000 and 2014, Government revenue as a percentage of GDP has averaged 20%. After 2007, Total revenue as a share of GDP was slightly below its ratio between 2000 and 2007. This indicates that whilst government’s relative spending to the size of the economy was increasing, the revenues raised were declining, which may have put pressure on government to seek alternative sources of financing the budget deficit. Government’s fiscal policy after 2007 is highly expansionary.

2.3.2 Domestic and External Debt

Zambia’s external debt as a percentage of GDP slumped from a high of 121.2% of GDP in 2004 to an average of 8.7% of GDP between 2006 and 2013 (See Figure 11). This is mainly because, in 2005 under the HIPC initiative, Zambia had external debt forgiveness that was expected to surpass US $3.9 billion overtime. The general Government gross debt averaged 22.5% of GDP between 2004 and 2014, showing a relatively flat shape except from 2011 when it begun to show an upward trend. The overall balance was in deficit over most of the period with an exception of the year 2006 when the Government recorded a surplus.
On the other hand, between 2001 and 2011 revenues in general and tax revenues in particular have hovered at below 18% of GDP (see Figure 12 below).

Source: Regional economic outlook, October 2010 and April 2015, World Development Indicators and WEO database
The evolution of revenues and debt seem to suggest that government’s revenues have not marched increases in the growth of government’s debt and hence, government may have to finance itself using other means than tax revenues. The government can finance itself by borrowing, seignorage and inflation tax. The ways in which government finances its deficits may have implications on the nature of interaction between fiscal and monetary policy. Specially, the interaction between primary surpluses and public sector liabilities may have a profound impact on price level stability, and consequently on the conduct of monetary policy.

2.4 Evidence of Fiscal and Monetary Policy Coordination

The objective of macroeconomic policy in any country is to achieve a stable macroeconomic environment to promote sustainable economic growth. Chief among these is to have a stable price system and viable external sector accounts. To achieve this, it is essential to achieve a close degree of coordination among decision makers in both monetary and fiscal policy. This is because lack of coordination between the two tools of macroeconomic policy will result in inferior economic outcomes.

Policy coordination is said to exist when both the fiscal and monetary policies are consistent in terms of addressing a particular economic problem (Laurens and De la Piedra, 1998). For example policy coordination exists when both monetary policy and fiscal policy move in the same direction. That is either both fiscal and monetary policy are loosening or they are tightening, otherwise there is no coordination.
To evaluate whether there is coordination or not between monetary and fiscal policies in macroeconomic management, we compare a measure of fiscal and monetary policy over the period 1994 to 2014 using a four quadrant system. Figure 13 shows a graphical illustration of the behaviour of fiscal and monetary policy stance over the period 1994-2014. The figure shows that during the period most of the years had the policy mix in quadrant 1 where monetary policy tightening is accompanied by fiscal policy loosening. However, we observe few instances when there is monetary-fiscal policy coordination. Specifically, there are periods when there is fiscal loosening accompanied by monetary policy loosening (Quadrant 2) and very few instances when there is tightening in both. Furthermore, there seems to be a positive relationship between monetary and fiscal policy stance which clearly shows that monetary policy tightening is accompanied by fiscal policy loosening. Clearly, this evidence shows that there is no policy coordination in Zambia.

Figure 13: Correlation of Monetary and Fiscal policy Stance

In view of the above evidence showing lack policy coordination in most of years in the sample there is need to check for the implications of uncoordinated policy on the economy. Available empirical literature suggest that uncoordinated policy is harmful to the economy if there is fiscal policy dominance while monetary policy has no harmful effects. Therefore in order to investigate the potential dangers of poor policy coordination we need to investigate the nature of policy dominance in the Zambia.
3.0 Literature review

3.1 Theoretical Literature

3.1.1 Theories of Fiscal Dominance

We start by looking at the theory of fiscal dominance and why lack of coordination between fiscal and monetary policy could threaten price stability. It is generally agreed in literature that unconstrained monetary or fiscal policy could lead to excessively high inflation due to “dynamic inconsistency”.

Dynamic inconsistency describes a situation where inflation is a result of a game played between the policy makers and the private sector (Barro and Gordon, 1983). For example, the central bank may be tempted to rationally change its initially announced low inflation policy by running an expansionary policy in order to exploit the short run Phillips curve between unemployment and inflation, thus reducing unemployment. Overtime, economic agents may realise that the policy maker mostly renegade on policy announced and hence will start having higher inflation expectations. This leads to higher inflation making the announced inflation target unachievable, while the policy makers attempt to increase employment above the natural rate fails.

Literature on “dynamic inconsistency” provides reasons why the growth in the supply of base money could be dominated by fiscal policy and not monetary policy. Specifically, the government is tempted to run a higher inflation for two reasons: (i) to reduce the real value of a large and unsustainable nominal debt by creating unanticipated inflation; or (ii) to finance government expenditure through seignorage or printing money. However, some economists have argued that in the presence of fiscal dominance, the policy implication is that, to reduce inflationary bias created by discretionary policy, monetary policy should be delegated to an independent and conservative central bank (Rogoff, 1985; Baldini and Ribeiro, 2008).

The Dynamic inconsistency theory bases its conclusions on the standard Quantity Theory of Money (QTM) assumption that there is a one to one relationship between money supply growth and inflation: that is inflation is always and everywhere a monetary phenomenon. However, other theories have emerged such as the fiscal theory of the price level (FTPL) which try to show that money creation is not the only channel through which fiscal policy dominates monetary policy and fiscal deficits cause inflation (Baldini and Ribeiro, 2008). According to the FTPL, fiscal policy stance can directly jeopardise the objective of price stability even if monetary policy is credible and committed to this objective through the accommodation of expansionary fiscal policy through printing money.

The main difference between the QTM and FPTL is their interpretation of the government’s inter-temporal budget equation. The QTM states that the value of government debt is equal to the present discounted value of future government tax revenue net of expenditures, with both debt and surpluses denominated in units of goods. Further, the QTM sees the government’s inter-temporal budget equation as a solvency constraint on fiscal policy, and assumes the price level as given. Therefore, according to this theory whenever the solvency condition
does not hold, then government must take revenue or expenditure measures, or both, to restore equality and satisfy the solvency condition.

However, the FTPL argues that the same inter-temporal budget equation and the determination of prices should be viewed as an equilibrium condition. In this regard, whenever the condition does not change it is restored through the price mechanism. For example, if there is a negative shock that increases the nominal stock of liabilities and the market anticipates a fall in future primary surpluses without corrective fiscal measures or an accommodative monetary policy, to reach a new equilibrium the real value of government debt would fall. Hence, a new equilibrium could only be achieved through price increases.

Given the foregoing, the FTPL argues that if primary surpluses tend to be arbitrary and weakly correlated or uncorrelated with public liabilities, prices will have to adjust to ensure fiscal solvency, and fiscal dominant regime would exist, even if monetary policy is not accommodative of fiscal needs. In this regard, fiscal policy would become the nominal anchor to determine the price level. Alternatively, if primary surpluses adjust promptly to limit or reduce the growth of public liabilities, fiscal solvency is ensured for any price level, and a monetary dominant regime would prevail. In this regard, monetary policy would be conducted independent of government financing requirements and it becomes a nominal anchor for economic stability.

3.1.2 Effects of fiscal policy on channels of monetary policy transmission

An exposition of the theories of fiscal dominance above (the QTM and FTPL) shows that fiscal policy has direct influence on the effectiveness of monetary policy through its effects on inflation. However, fiscal policy stance can influence the effectiveness of monetary policy indirectly through its effects on the channels of monetary policy transmission. In this section, we discuss the theories that explain how fiscal policy impact financial variables, or the monetary policy transmission.

Fiscal policy, interest rates and interest rate spreads

One way in which fiscal policy may affect monetary policy effectiveness is through the effect of fiscal variables on interest rates and sovereign spreads. Available theoretical literature seems to be a consensus on the relationship between fiscal policy and interest rates, it is generally agreed that higher fiscal deficits are associated with higher interest rates on short term and long term financial assets (Federal Reserve Board, 2001, 2002; Moharty and Scatigna, 2003). The channel through which this occurs is the effect of fiscal deficits on total national savings. In standard neo-classical theory, a rise in fiscal deficits reduces national savings and increase aggregate demand, ceteris paribus (Elmendorf and Mankiw, 1998). The rise in fiscal deficits increases the supply of debt leading to higher interest rates while at the same time higher aggregate demand increases the transaction demand for money resulting higher interest rates.

There is a broad agreement on the role of public debt in determining long-term interest rates. It is acknowledged that higher indebtedness increases the risk of default on sovereign debt which ultimately translates into higher spreads on government bonds (Ferrucci,
2003). Further, the yield curve is likely to become more positively sloped in anticipation of deterioration in fiscal space. In such a situation, even if short term interest rates are indicators of the stance of monetary policy, and expected to influence long-term interest rates; the latter are likely to rise more in response to anticipated worsening of the government debt (Blanchard, 1984; Baldacci and Kumar, 2010). In addition, rising public debt and fiscal deficits coupled with deterioration in economic growth could lead to concerns about government’s ability to service its debt resulting in rising credit risk-premia and government paper yields.

Hakkio et al. (1996) and Doughty (2004) argue theoretically, the movements in interest rates emanating from changes in fiscal policy may arise from three aspects. The first aspect is the impact of fiscal policy on domestic demand which may alter the demand for loanable funds in the money market and consequently interest rates. The second aspect relates to perceptions about fiscal sustainability of government. Unsustainable fiscal policy could lead to higher inflation expectations and consequently higher interest rates as per the Fisher Hypothesis (Doughty, 2004). Lastly, the capital markets effect which relates government funding needs may lead to changes in interest rates in response to fiscal policy changes. In such a situation, an increase in the demand for funds in the domestic market by government could cause domestic interest rates to rise if domestic and foreign funds are not perfect substitutes. Furthermore, rising fiscal deficits could have signalling effects of future policies.

The above theoretical perspectives above clearly show that there is a positive and unambiguous relationship between interest rates and fiscal policy stance. Thus, rising fiscal deficits will cause higher interest rates on government paper and consequently interest rate spreads.

\textit{Fiscal Policy stance and Exchange rates}

Fiscal policy can also affect exchange rate movements, and a country’s exchange rate policy (Baldacci and Kumar, 2010). The theoretical link between fiscal policy and exchange rates can be explained using Mundell-Fleming model. In the Mundell-Fleming model, the theoretical impact of a fiscal action on exchange rates depends on the openness of the capital account and on the country’s exchange rate regime as well as the associated changes in sovereign default risk. If a country has high capital mobility and a flexible exchange regime with constant country premium, expansionary fiscal policy is expected to lead to an appreciation. This occurs because expansionary fiscal policy leads to an increase in domestic interest rates thereby attracting inflows of capital from abroad. On the other hand, if the country has an un-flexible capital mobility regime then expansionary fiscal policy would lead to depreciation. Further, expansionary fiscal policy increases the demand for imports leading to a current account deficit and thereby a depreciation of the domestic currency. Clearly from a theoretical perspective the effect of fiscal policy stance on exchange rates is un-ambiguous (Hakkio et al., 1996)
Further, theoretical literature has analysed specifically the link between fiscal policy and currency crises. First-generation models of balance of payments crises show how the inconsistency between fiscal policy fundamentals and the exchange rate peg leads to the abandonment of the peg (Krugman, 1979). Second-generation models suggest that crises may be self-fulfilling, and possibly triggered by investor new perceptions about future fiscal policies (Obstfeld, 1994). Fiscal policy can also affect the conduct of exchange rate policy. For example, in economies with a large share of foreign currency denominated, or exchange rate linked, government debt, a central bank may decide to fight against currency depreciations, thereby limiting the shock-absorbing role of the exchange rate (Goldstein and Turner, 2003). Conversely, in countries with a large share of interest rate linked public debt, the monetary authority may be reluctant to increase domestic interest rates to counter currency pressures.

### 3.2 Empirical Literature

The empirical literature on the interaction between monetary and fiscal policy reviews themes such as fiscal dominance; the effect of fiscal policy on the interest rate and/or interest rate spread, and the effect of fiscal policy on the real exchange rate.

#### 3.2.1 The interaction between Monetary and Fiscal Policies in Emerging Countries

Various studies have examined the phenomenon of fiscal dominance. Employing the VAR methodology, a study of fiscal dominance in six emerging countries showed that Brazil and Argentina were unambiguously characterized by fiscal dominant regimes in the 1990s and early 2000s (Zoli, 2005). However, no country exhibited clear evidence of a monetary dominant regime for the whole sample period studied. Granger-Causality tests and impulse response functions are used to determine the existence of fiscal dominance versus monetary dominance in these countries. However, the methodology used did not take into account different periods of the business cycle and the results obtained may pertain to both a monetary dominant or fiscal dominant regime when the Fiscal theory of the price level is taken into account.

In most emerging countries fiscal and monetary are countercyclical, with significant variations in the policy mix between the two (Montoro et al., 2012). In a study on emerging market economies, Montoro et al. (2012) conclude that most countries used both policies to lean against the wind whilst others heavily depended on one and not the other. They also found a weak correlation between structural budget surpluses and long-run interest rates and more conservative fiscal policies were only weakly associated with lower inflation. Hence, they conclude that their results are indicative of the non-existence of fiscal dominance and the likelihood of fiscal policy accommodating monetary policy and consequently, the price level.

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2 The emerging countries included in the sample are Argentina, Brazil, Colombia, Mexico, Poland and Thailand.

3 The Fiscal Theory of the Price level contends that the government inter-temporal budget constraint may be treated as a state variable that may pin down the price level even in the presence of credible and independent monetary policy.
being pinned down by monetary policy and the monetary authorities exerting greater control over inflation.

Raj, Khundrakpam and Das (2011), used the VAR framework to investigate the nature of the interaction between monetary and fiscal policy in India. Employing quarterly data from 2002 second quarter to 2010 first quarter and using granger causality tests, they found that fiscal policy unilaterally influences monetary and that impulse response functions showed that monetary policy is highly sensitive to shocks in inflation and swiftly responds in a counter cyclical manner. Fiscal policy on the other hand shows a pro-cyclical response to inflation and output shocks. Hence, they conclude that the regime in India cannot be said to be monetary dominant.

3.2.2 The interaction between Monetary and Fiscal Policies in Advanced Economies

In a study on G-7 countries, Muscatellie et al. (2002) shows that the nature of the interdependence between monetary and fiscal policy instruments was found to be asymmetric and different across the countries using a VAR approach. Specifically, they find that while in the US and the UK, monetary policy was found to react to fiscal expansion, it was absent in Italy, Germany and France.

Using an arbitrage- free model within the VAR framework, Laubach (2010) found that an exogenous fiscal contraction leads to a fall in the short run interest rates in the US. The fiscal shocks are transmitted to the short rate via their impact on real activity and inflation, which in turn affect the budget balance through the automatic stabilizers. For the EMU, the spread on government bonds were found to be mainly explained by fiscal variables but the need to compensate for differences in the deficit/GDP and debt/GDP ratios were minimal.4

In the Euro area where monetary policy responds to area-wide aggregates, the results indicated asymmetric effects on countries within the Euro area (Canzoneri, Cumby and Diba, 2005). In their study, Canzoneri et al. (2005) conditioned effects of the policy on the size of the economy (whether they are large or small), and the level of debt (high or low debt levels). Implicitly, the impact of the common monetary policy (in the Euro area) on individual countries is dependent on country specific factors influencing the stance of fiscal policy. Productivity shocks and idiosyncratic monetary policy have differing effects on the volatility in the deficit-to-GDP ratio in the Average and Large sized countries and High Debt Countries. Idiosyncratic monetary policy interacts differently with fiscal policy depending on the size of the country and/ or the level of debt of the country. Productivity shocks and idiosyncratic monetary policy shocks are the dominant source of inflation differentials. Shocks to taxes and spending were found to play a minor role in determining inflation differentials. These results suggest that there is no need for coordination of monetary policy

4 The spreads are the spreads of the EMU member countries bond yields and the Germany bond yields.
with national fiscal policies, contrary to the prescriptions of the fiscal theory of the price level. They also find that common monetary policy favours larger countries in the Euroarea, since their inflation rates are more highly correlated with aggregate (Euro area) inflation. However, the model has inherent weaknesses as the role played by productivity shocks seems to be excessively large.

Fatas and Rose (2001) examined whether there are systematic differences in fiscal policy in extreme exchange rate regimes. They used panel data methods to detect systematic differences in fiscal policy in countries with different types of extreme rate regimes. They find that fiscal policy differs with the type of exchange rate arrangement of a given country. They find no evidence that currency unions restrain fiscal policy as measured by the size of government, unilateral currency unions seem to have larger governments (when government is measured by total expenditures. In the case of multilateral currency unions, the evidence was not conclusive and robust to the introduction of additional controls. Multilateral currency unions tend to have smaller governments. Fiscal policy in currency unions behaves similarly to that in multilateral currency unions, with economic effects that are larger. Currency boards are also characterized by restrictive and conservative fiscal policies. However, the results for currency boards may suffer from endogeneity bias as countries with the potential to implement currency boards are more likely to implement restrictive and conservative policies and not necessarily that having a currency board increases the likelihood of implementing restrictive and conservative fiscal policies. These results do show that the stance of fiscal policy may depend on the type of monetary policy framework in place.

3.2.3 The interaction between Monetary and Fiscal Policies in Sub-Saharan African Countries

There is scanty empirical evidence on the interaction between monetary policy and fiscal policies for Sub-Saharan African countries, with only a few studies on this important issue. Furthermore, these studies have a limited scope as they only tackle the presence or absence of fiscal dominance without analysing the effect of fiscal policy on monetary policy transmission.

Nyamongo et al. (2008) investigates the interaction of monetary and fiscal policy in Kenya using VAR approaches. Using impulse response and forecast error decomposition they find that monetary policy was mostly dominant over the period 1979 to 2007. Hence, they conclude that there was no fiscal dominance in Kenya over the study period. This study utilises annual time series data resulting in a small sample size which could lower power test. Furthermore, this study analyses only the existence of fiscal or monetary policy dominance without investigating the effects of fiscal dominance on monetary policy. Our study improves on this in two ways. Firstly, it uses monthly and quarterly data resulting in a much longer

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5A country is classified as having an extreme monetary policy if it is either a currency board or a common currency area. Common currency areas can further be divided into multilateral currency unions and countries that have unilaterally adopted the currency of another country.
data series which enables us to carry out more empirical analysis. Secondly, we do not only evaluate the existence of fiscal dominance but also investigate its effects on the monetary policy transmission channels.

Baldini and Ribeiro (2008) test the presence of fiscal dominance; the wealth effects of the government’s budget constraint and the deviation of the policy regimes from the Ricardian equivalence for 22 SSA countries. They implement their tests within the VAR framework and using impulse response functions. Nine of the countries in the sample had an identified regime (either monetary or fiscal dominant regime), thirteen did not have an identified regime. Four of the nine countries had fiscally dominant regimes whilst five had a monetary dominant regime. Zambia was among the thirteen that had an unidentified regime. The primary surpluses/deficits were positively correlated with public sector liabilities. However, the results from the impulse response analyses were inconclusive. Furthermore, most of the variability in inflation was found to be mostly explained by domestic debt growth. Again compared to our study, this study does not comprehensively deal with effects of fiscal policy on the monetary policy transmission channels. Furthermore, it only utilises annual data which results in a smaller sample size.

Du Plessis et al. (2007) use a SVAR to investigate the cyclicality of monetary and fiscal policy in South Africa from 1994 to 2014 using quarterly data. Their results indicate that fiscal policy in South Africa has largely been pro-cyclical while monetary policy has been counter-cyclical. However, they find no evidence that pro-cyclical fiscal policy has a destabilising impact on real output. Unlike our study, this study does not examine the interaction of monetary and fiscal policy directly as well as the effects of fiscal policy on monetary policy.

Chuku (2010) investigates the interactions of monetary and fiscal policy in Nigeria using two approaches; the VAR and a State Space Model. The study utilises quarterly data from 1970 to 2008. Using impulses response functions they find that there is evidence that fiscal policy in Nigeria is non-Ricardian. Further, applying the SS-model they find that there was no monetary and fiscal policy coordination in Nigeria for much of the sample with an exception of the period 1998 and 2007). They also find that there is evidence of fiscal dominance in the interaction of monetary and fiscal policy in Nigeria. However, unlike our study this study does not investigate the effects of fiscal policy on monetary policy transmission process as well as the effectiveness of monetary policy.

4.0 Methodology
In this section, we develop the empirical framework for analysing the impact of fiscal policy on the monetary policy as well as on the channels of monetary policy transmission. We start by presenting a methodology we are going to use in evaluating the presence of fiscal dominance and thereafter present a model that we use in evaluating the effects of fiscal policy stance on channels of monetary policy and inflation.
4.1 Testing for the presence of fiscal dominance in Zambia.
Fiscal or monetary policy dominance relates to how macroeconomic variables such as prices and interest rates react to either policy (Nyamongo et al., 2008). Specifically, fiscal dominance occurs when macroeconomic variables are more sensitive to fiscal policy than monetary policy. According to the FTPL, fiscal policy or non-Ricardian regime occurs if primary surpluses evolve independently of government debt, leading to rising prices to bring about fiscal solvency (Canzoneri et al., 2001). For example, if there is fiscal dominance, expansionary fiscal policy would result in the growth of reserve money as the central bank monetizes the government fiscal deficits. In short, fiscal variables become major predictors of inflation and other macroeconomic variables and not monetary policy. Furthermore, lack of policy coordination between monetary and fiscal policy could produce mixed results. For example, expansionary fiscal policy coupled with tight monetary policy could lead to increases in interest rates resulting in low private investment or the crowding out effect.

To test dominance in Zambia, we use a test of the Fiscal Theory of the Price Level developed by Canzoneri et al. (2001) later utilised by Nyamonga et al. (2008) as well as a method used by Baldini and Ribeiro (2008). In this approach, we test the response of macroeconomic variables to fiscal policy or monetary policy shocks. We test for fiscal dominance using two approaches: 1) the Public Liabilities and Surpluses Approach, and 2) The Pass-through analysis.

4.1.1 Public Liabilities and Primary Surpluses Approach
This approach is based on tests developed by Canzoneri, Cumby, and Diba (2001) hereafter referred to as CCD. The CCD approach uses a simple non-structural VAR analysis to identify monetary or fiscal dominant strategies by estimating how primary surpluses respond to shocks to public liabilities and vice versa. However, this test is conditional on the persistence of surplus. Persistence is measured by analysing the auto-correlation of the surplus with a positive auto-correlation of up to at-least 5 lags being considered positive and persistent; otherwise the surplus is regarded as negatively auto-correlated with low persistence.

Under this approach, Public liabilities are taken to be a sum of public debt and reserve money while total surplus is total public surplus plus seignorage revenue. If there is monetary dominance, a positive shock to current surpluses will lead to a fall in future liabilities to guarantee solvency. In other words, monetary dominance is identified by a negative relationship between current surpluses and future liabilities. On the other hand, under fiscal dominance the surpluses are assumed to be exogenous, and hence shocks to current surpluses have no effect on future liabilities or they lead to an increase.

In addition, tests developed by Tanner and Ramos (2002) are used to determine whether a reduction in primary deficits help reduce future liabilities and/ or interest payments, as implied by a monetary dominance regime. If they do then it is expected that shocks to current primary deficit and future interest payments ought to be positively correlated.
4.1.2 The Pass-through analysis
Here, we develop a method for analysing how Fiscal and Monetary variables directly affect inflation dynamics, which helps in identifying fiscal or monetary dominance. According to the FTPL, if there is fiscal dominance the main determinant of inflation are fiscal sector variables (Baldini and Ribeiro, 2008). Furthermore, Woodford (1998) notes that under fiscal dominance the main source of variability in the price level could be primarily explained by wealth effects associated with growth in nominal national debt. This is because, in a non-Ricardian regime, a shock to nominal national domestic debt makes households to believe that they can afford more lifetime consumption resulting in higher aggregate demand and consequently more inflation. However, in a Ricardian regime (monetary dominance) an increase in nominal national debt will lead households to believe that there will be higher taxes in the future causing them to increase savings and therefore no change in aggregate demand and domestic prices. In this regard, using a similar empirical strategy such as one used by Baldini and Ribeiro (2008) our aim is to show which of the two policy variables—changes in nominal national debt and growth in money—better explains inflation.

Hence to test for the wealth effects, a VAR model is run with the following causal ordering (nominal national debt, reserve money, real output gap, consumer price index). This causal ordering ensures that the price level is the only variable that is responding contemporaneously to fiscal and monetary policy variables. To identify fiscal dominance or monetary dominance we compute forecast variance error decompositions. If there is fiscal dominance then we expect that changes in nominal debt will contribute more to price level variability than changes in reserve money. Furthermore, we use impulse response functions to see if shocks to reserve money and nominal national debt significantly affect prices.

4.2 Fiscal policy stance and channels of monetary policy transmission
The approach outlined above, deals only with the presence of fiscal dominance or not. However, it does not deal with how fiscal policy affects the transmission mechanism of monetary policy. In the section, we develop empirical methods for assessing how fiscal policy affects channels of monetary policy and consequently its effectiveness.

4.2.1 Empirical models
To analyse the effect of fiscal policy stance on interest rates as well as interest rate spreads on securities we modify an empirical strategy developed by Hakkio et al. (1996). In this model, interest rates, real exchange rate and interest spreads are related in the long run by the following equation:

\[ i_t = \alpha_0 + \beta_1 \cdot BD_t \ldots \ldots 1.1 \]
\[ s_t = \alpha_0 + \beta_1 \cdot BD_t \ldots \ldots 1.2 \]
\[ rer_t = \alpha_0 + \beta_1 \cdot BD_t \ldots \ldots 1.3 \]

In the above set of equations, \( i_t \), \( rer_t \) and \( s_t \) represent nominal interest rates, real exchange rate and interest rate spreads on government securities, respectively; \( BD_t \) respectively represents
budget deficit. From theory, a positive relationship is expected implying that worsening fiscal environment would cause interest rates to rise. However, from a theoretical perspective there is an ambiguous relationship between real exchange rate and fiscal policy stance.

The above empirical models only captures the long run relationship between interest rates as well as the spreads and the budget deficits and ignores the short run as well as the dynamics that may exist. Furthermore, estimating above equation in levels could lead to spurious results if the variables in the model are non-stationary. Hence, we estimate an error correction model of the following form:

\[ \Delta i_t = \beta_0 + \sum_{i=1}^{p} \gamma_i \Delta i_{t-i} + \sum_{j=0}^{q} \delta_j \Delta BD_{t-j} + \theta(i_t - \alpha_0 - \beta_t BD_t) \ldots \ldots 1.4 \]

\[ \Delta s_t = \beta_0 + \sum_{i=1}^{p} \gamma_i \Delta s_{t-i} + \sum_{j=0}^{q} \delta_j \Delta BD_{t-j} + \theta(s_t - \alpha_0 - \beta_s BD_t) \ldots \ldots 1.5 \]

\[ \Delta rer_t = \beta_0 + \sum_{i=1}^{p} \gamma_i \Delta rer_{t-i} + \sum_{j=0}^{q} \delta_j \Delta BD_{t-j} + \theta(re_t - \alpha_0 - \beta_r BD_t) \ldots \ldots 1.6 \]

In the above model, \( \delta_j \)'s measures the short term response of the interest rates/spreads to changes in the budget deficit while \( \gamma_i \)'s represents persistence/inertia associated with the interest rates. \( \theta \) or the error correction term measures the speed of adjustment towards equilibrium once there is a disturbance.

Estimating an error correction model of the form given in equations 1.4, 1.5 and 1.6 above requires that the variables are integrated of the same order (Favero, 2004; Enders, 2008), implying that if variables are integrated of different orders then we may produce spurious results. In this regard, we consider an Auto Regressive Distributive Lag (ARDL) model which allows for the existence of differently integrated variables (Ononugbo, 2012). In this regard, we estimate general form of the ARDL\((p,q)\) of the form:

\[ \Delta r_t = \theta + \delta r_{t-1} + \omega i_{t-1} + \sum_{j=1}^{p} \varphi_j \Delta r_{t-j} + \sum_{i=0}^{q} \phi_i \Delta BD_{t-i} + \varepsilon_t \ldots \ldots 1.7 \]

In equation 1.7 above, \( r_t \) represents the interest rate, interest rate spread and the exchange rate in time \( t \) while \( \delta \) provides information about the error correction process. The term \( \omega \) nests the long run parameter \( (\beta) \), while \( \phi_i \)'s are the parameters for the short run effects of the policy rate on lending rates and \( \varphi_j \) provides the inertial dynamic effects. Hence, \( \phi_0 \) provides the contemporaneous effect of the policy rate changes on lending rates. Given the error correction parameter and the contemporaneous parameter, we can calculate the mean average lag time (M.A.L) as derived by Hendry (1995), to provide an indication of the...
number of months required for complete adjustment to equilibrium. The M.A.L is computed as follows;

$$M.A.L = \frac{1 - \varphi_0}{-\delta} \ldots \ldots \ldots \ldots 1.8$$

In this study, to test for the existence of co-integration in the ARDL, the PSS bounds testing approach proposed by Pesaran et al. (2001) is adopted.

4.2.2 A VAR analysis of the effects of fiscal policy on Channels of monetary policy Transmission

The empirical strategy outlined above assumes that budget deficits are strictly exogenous with no feedback mechanism. However, from a theoretical perspective there could be bi-directional causality between fiscal policy and financial variables such as interest rates and exchange rates. For example, expansionary fiscal policy leading to higher budget deficits will cause rising interest rates. However, at the same time rising interest rates could cause the interest expense component of government expenditure to increase, resulting in widening budget deficits. Furthermore, the rising interest rates will cause the domestic currency to appreciate and consequently increase the cost of servicing debt.

In order to capture the effects of this bi-directional causality between financial variables and fiscal deficits we will use a VAR model. Specifically, we run VAR with the following causal ordering: Budget deficit, real GDP, consumer price index, reserve money, commercial lending rate, interest rate spread on government securities, and the real exchange rate. This ordering of variables is based on the theoretical and the researchers’ intuition. Budget deficits are assumed to be the most exogenous because in most cases government sets its fiscal objectives before the year in which they are implement; real GDP or economic activity is assumed to respond contemporaneously to fiscal policy but not other variables in the system because of inertia; inflation responds contemporaneously to real economic activity as well as government spending; reserve money is assumed to respond to inflation, fiscal deficits due to monetisation of government debts as well as real economic activity; interest rates respond contemporaneously to all variables except exchange rate while the exchange rate is the most endogenous variable.

To draw conclusions from the VAR, we will use the impulse response functions and the Variance decomposition. The impulse response functions will be used to assess the response of financial variables to shocks to fiscal deficits while the variance decomposition is used to assess the extent to which variations in each variable is attributed to fiscal shocks.
4.3 Data sources and Diagnostics

Data

We use monthly and quarterly time series data covering the January 2003 to June 2015. All the data used in this study is obtained from the Bank of Zambia database, Central Statistical Office, the World Bank and the IMF databases. Although all variables are available on a monthly and quarterly basis, real GDP is only available at an annual level. Hence, to obtain the quarterly GDP we decompose the annual GDP using the index of industrial production (IIP) which is available on quarterly using the Denton Method. After decomposing the GDP using the IIP to quarterly series we decompose the new series to monthly series using interpolation.

The lags included in the study are determined using the AIC and the SBC.

Diagnostic Tests

Unit Root Tests

Non-stationarity is a common feature in time series data. Estimating a regression with differently integrated series could result in spurious correlation in the estimated equation. In this regard, there is need to test for stationarity or non-stationarity in the time series data before proceeding to estimation. Normally, the Augmented Dickey Fuller (ADF) test is used to determine the order of integration of the data. However, literature has shown ADF test has lower power in the presence of structural breaks; it is biased towards non-rejection of a unit root. Hence, the Phillip Peron (PP) Test is also used in addition to the ADF to test for the presence or absence of unit roots in the data series.

5.0 Results

5.1 Unit Root Tests

To check for stationarity in the data set we employ the ADF and PP tests. The results shown in table 2 below indicate that all the variables in the model are either integrated of order one or zero. Specifically, 91-Day TB rate, 5-year Bond yield Rate, Bank of Zambia (BOZ) rate, and Exchange are all integrated of order one, I(1) while primary balance to GDP and 2-year bond rate are stationary.
Table 2: Unit root test for the variables used in the analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF</th>
<th>PP</th>
<th>Chosen Order</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Levels</td>
<td>Differences</td>
<td>Order</td>
</tr>
<tr>
<td>91 Day TB rate</td>
<td>-3.01</td>
<td>-6.42</td>
<td>I(0)</td>
</tr>
<tr>
<td>2-Year Bond rate</td>
<td>-3.56</td>
<td>-5.88</td>
<td>I(0)</td>
</tr>
<tr>
<td>5-Year Bond rate</td>
<td>-2.76</td>
<td>-6.55</td>
<td>I(1)</td>
</tr>
<tr>
<td>BOZ rate</td>
<td>-2.69</td>
<td>-7.49</td>
<td>I(1)</td>
</tr>
<tr>
<td>Primary surplus % of GDP</td>
<td>-7.22</td>
<td>-9.65</td>
<td>I(0)</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>-1.65</td>
<td>-10.22</td>
<td>I(1)</td>
</tr>
<tr>
<td>Public Liability % of GDP</td>
<td>-1.74</td>
<td>-11.82</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: Computations by the Authors

5.2 Testing for Fiscal or Monetary Dominance in Zambia

a) Public Surpluses - Public Liabilities approach

To deduce the presence or absence of fiscal or monetary dominance in Zambia, we utilise two approaches the CCD and the Tanner-Ramos (2002) approaches. The use of the first method is only applicable if surpluses are positively persistent. Table 3 below shows that there is a positive persistency in the surplus to GDP ratio of up to 5 lags, implying that we can apply the CCD method. This result is similar to those by others such as Nyamonga (2008) who finds lags of up 6 years while Canzoneri et al. (2001) find lags of 9 years. Hence, our results are consistent with the Baldini-Ribeiro’s cut off of five lags and give an indication of either fiscal or monetary dominance.

Table 3: Autocorrelations of the Surplus/GDP ratio

<table>
<thead>
<tr>
<th>Autocorrelation</th>
<th>Partial Correlation</th>
<th>AC</th>
<th>PAC</th>
<th>Q-Stat</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>.</td>
<td>1</td>
<td>0.783</td>
<td>0.783</td>
<td>23.981</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>2</td>
<td>0.551</td>
<td>-0.161</td>
<td>36.209</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>3</td>
<td>0.335</td>
<td>-0.106</td>
<td>40.864</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>4</td>
<td>0.154</td>
<td>-0.071</td>
<td>41.874</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>5</td>
<td>0.051</td>
<td>0.047</td>
<td>41.989</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>6</td>
<td>-0.005</td>
<td>-0.005</td>
<td>41.990</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>7</td>
<td>-0.080</td>
<td>-0.141</td>
<td>42.291</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>8</td>
<td>-0.198</td>
<td>-0.210</td>
<td>44.204</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>9</td>
<td>-0.174</td>
<td>0.287</td>
<td>45.733</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>10</td>
<td>-0.159</td>
<td>-0.095</td>
<td>47.068</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>11</td>
<td>-0.141</td>
<td>-0.067</td>
<td>48.150</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>12</td>
<td>-0.103</td>
<td>-0.010</td>
<td>48.758</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>13</td>
<td>-0.096</td>
<td>-0.016</td>
<td>49.309</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>14</td>
<td>-0.085</td>
<td>0.050</td>
<td>49.759</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>15</td>
<td>-0.087</td>
<td>-0.109</td>
<td>50.248</td>
</tr>
<tr>
<td>.</td>
<td>.</td>
<td>16</td>
<td>-0.081</td>
<td>-0.094</td>
<td>50.697</td>
</tr>
</tbody>
</table>

Source: Computations by the Authors
In the CCD approach, detection of monetary or fiscal dominance involves looking at how future public liabilities respond to shocks to current surpluses. If there is monetary dominance, we expect that a positive shock to fiscal surpluses should lead to a fall in public liabilities to ensure fiscal solvency; in short, there is a negative relationship between current surpluses and future liabilities. If there is fiscal dominance, future liabilities should either be unresponsive or lead to an increase. Furthermore, if we focus on how surpluses respond to shocks to public liabilities; monetary dominance would exist if a shock to public liabilities leads to a rise in future surpluses to guarantee solvency. On the other hand, if future surpluses do not respond or they fall following a positive shock to current public liabilities, the implication is a fiscal dominance.

Figure 5 below presents the impulse response functions for the VAR in which public liabilities to GDP are ordered first. The results show that a positive shock to current fiscal surpluses leads to an increase in the public liabilities though not significant suggesting that there is a fiscal dominance. On the other hand, a one standard deviation shock to public liabilities will lead to a fall in future primary surpluses, though the result is not significant. These results seem to suggest that there is some evidence of fiscal dominance in Zambia, though not significant.

\[ \text{Response of Public Liabilities to Public Liabilities} \]

\[ \text{Response of Public Liabilities to Primary Surplus} \]

\[ \text{Response of Primary Surplus to Public Liabilities} \]

\[ \text{Response of Primary Surplus to Primary Surplus} \]

Source: Computations by the Authors
As a robustness measure, we also utilise the method developed by Taner and Ramos (2002) to test for the presence or absence of fiscal dominance. In this method, a monetary dominance exists if a reduction in primary deficits helps to reduce future interest payments, otherwise we have fiscal dominance; In other words, there should be a positive correlation between fiscal deficits and interest payments. Figure 6 below shows the impulse functions for a VAR with interest rate payments and Primary Surpluses expressed as a ratio to GDP.

Figure 15: VAR model: Interest Payments and Primary Surpluses

![Graph showing impulse functions for a VAR model](image)

Source: Computations by the Authors

Figure 15 above based on quarterly data indicates that one standard deviation shock to primary surplus increases the interest payment though the result is not significant. However, a positive one standard deviation shock to interest payments statistically reduces future primary surpluses. These results suggests that government maybe taking into account it’s inter-temporal budget constraint when accruing liabilities and hence suggesting that there is no fiscal dominance. This result is similar to those obtained by Tanner and Ramos (2002) from Brazilian data which showed that there is no relationship between interest payments and primary surpluses suggesting that there was no fiscal dominance.
In this approach, we use a method that has been developed under the fiscal theory of the price level (FTPL) to identify presence and absence of fiscal or monetary dominance. In this approach, if there is fiscal dominance then the main determinant of inflation is fiscal sector variables and not monetary variables (Baldini and Ribeiro, 2008). The results for the forecast error decomposition are presented in table 4 below at the 4th, 8th, and 12th quarter horizons.

<table>
<thead>
<tr>
<th>Period</th>
<th>S.E.</th>
<th>Debt_GDP</th>
<th>RM_GDP</th>
<th>OUTPUT_GAP</th>
<th>LOG(CPI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0.003731</td>
<td>13.15660</td>
<td>1.519534</td>
<td>81.94319</td>
<td>3.380677</td>
</tr>
<tr>
<td>8</td>
<td>0.005041</td>
<td>46.49211</td>
<td>1.682374</td>
<td>48.24280</td>
<td>3.582710</td>
</tr>
<tr>
<td>12</td>
<td>0.005645</td>
<td>47.29946</td>
<td>1.810059</td>
<td>48.17008</td>
<td>2.720396</td>
</tr>
</tbody>
</table>

Variance Decomposition of LOG(CPI):

<table>
<thead>
<tr>
<th>Period</th>
<th>S.E.</th>
<th>Debt_GDP</th>
<th>RM_GDP</th>
<th>OUTPUT_GAP</th>
<th>LOG(CPI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0.024517</td>
<td>2.005804</td>
<td>19.77984</td>
<td>1.016213</td>
<td>77.19814</td>
</tr>
<tr>
<td>8</td>
<td>0.033207</td>
<td>14.21784</td>
<td>12.37896</td>
<td>5.179920</td>
<td>68.22328</td>
</tr>
<tr>
<td>12</td>
<td>0.039272</td>
<td>20.28631</td>
<td>13.535034</td>
<td>5.661662</td>
<td>60.51699</td>
</tr>
</tbody>
</table>

Cholesky Ordering: Debt_GDP RM_GDP OUTPUT_GAP LOG(CPI)

Source: Computations by the Authors

Results presented in table 4 above clearly shows that in Zambia, fiscal policy shocks (shocks to nominal debt) progressively explain a larger variability in both inflation dynamics and output gap dynamics in line with the FTPL. Specifically, at the one year horizon shocks to nominal debt explains approximately 13.2% of variations in the output gap compared to 1.5% for reserve money while at the two-year and three-year horizons nominal debt accounts for close to half of the variations compared to less than 2% for reserve money shocks. Further the results shows that at the one year horizon reserve money explains close to 20% of the variation in the price level. However, at the two- and three-year horizons nominal debt explains a larger variability in price dynamics compared to reserve money. Results in the section suggest that there is a fiscal dominance in Zambia over the study period, 2004q1 to 2012q4. These results are similar to those obtained by others on Zambia such as Baldini and Ribeiro (2008) are reasonable given the rising level of fiscal activism over the sample period, especially starting in 2011 to date.

5.3 Analysis of the effects of fiscal deficits on the Channels of monetary policy

As noted in the earlier sections fiscal policy can influence monetary policy through its effects on the economic variables that are important for monetary policy transmission such as interest rates, interest rate spreads, and the exchange rate. In this section, we present results on the effects of fiscal policy on the channels of monetary policy transmission focussing on
interest rates, interest rate spreads and exchange rates. We present results from two approaches; the first approach uses ARDL models to evaluate the effects of fiscal deficits on channels of monetary policy transmission while the second approach utilises a VAR approach relying on the impulse response functions and variance decompositions to evaluate the effects of fiscal balances on channels of monetary policy.

The Single Equation Approach: ARDL model

a) Effect of Fiscal Policy Stance on Interest rates and interest rate spread

The results presented in table 5 below clearly shows that there is positive relationship between the fiscal deficits on one hand and short /long term interest rates as well as interest rate spreads. Specifically, the immediate pass-through of a 1% increase in the fiscal deficit as % of GDP will lead to 6 basis points increase in the 91-day yield rates within a month while in the long-run the yield rates increases by 49 basis points after approximately a year. In the money market, this would cause a 14 bps increase in interbank rates within a month while the long run impact is approximately 69 bps taking approximately 4 months. Fiscal deficits have the lowest effect on average lending rates with a 1% increase in the fiscal deficit resulting in only 1bps increase with a month and only 17 bps in approximately 10.8 months. Results obtained in this study are not only consistent with the crowding out effect theory but also supported by results from many other empirical studies. In the crowding out literature, a consensus exists that expansionary fiscal policy is associated with higher medium and long term interest rates leading to crowding out of private investment (Tomsik, 2012). Further, a number of studies find evidence that budget deficits exert a statistically significant effect on interest rates (Tomsik, 2012; Lopez et al., 2011; Watchtel and Young, 1987; Canzoneri et al., 2002). For example, Lopez et al. (2011) in a panel data study of 54 emerging markets finds that when fiscal deficits expand by 1% long term interest rates rise by 10-12 basis points.

Table 5: Transmission of fiscal shocks into interest rates and interest rate spreads

<table>
<thead>
<tr>
<th></th>
<th>91-Day TB rate</th>
<th>Interbank Rate</th>
<th>Average lending rate</th>
<th>Interest Spread (3-year Bonds)</th>
<th>Interest Spread (5-year Bonds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Pass-through</td>
<td>0.060(0.033)**</td>
<td>0.14 (0.0113)**</td>
<td>0.010(0.079)*</td>
<td>0.035(0.1342)</td>
<td>0.040 (0.1152)</td>
</tr>
<tr>
<td>Long Run Pass-through</td>
<td>0.49***</td>
<td>0.69 ***</td>
<td>0.17*</td>
<td>0.41**</td>
<td>0.363***</td>
</tr>
<tr>
<td>Mean Average Lag Time</td>
<td>11.75 months</td>
<td>4 months</td>
<td>10.8 months</td>
<td>4.7 months</td>
<td>7.2 months</td>
</tr>
</tbody>
</table>

Source: Computations by the authors, full results for the ARDL and Tests for Cointegration are in Appendix B

Another effect that fiscal policy shock or larger deficits may have on monetary policy transmission is on the interest rate spreads on government securities. Results from this study indicate that a 1% rise in the fiscal deficit increases the interest spreads on 3- and 5-year government bonds by approximately 4 bps within a month though not significant while it significantly rises to 41 bps and 36 bps in the long run. Average time for adjustment toward
the long run is approximately 4.7 months and 7.2 months for the 3-year and 5-year bonds respectively. Again these results are consistent with theory as well as empirical evidence from several studies (Zoli, 2005; Lopez et al., 2011, Canzoneri et al., 2002). From a theoretical perspective, there is a growing consensus that government’s fiscal position is important in determining long term interest rates. Specifically, increases in public debt arising from growing fiscal deficits could cause an increase in the default risk and consequently widening of the interest spreads on government bonds (Zoli, 2005).

b) Effects of fiscal policy shocks on exchange rate channel

Fiscal policy shocks as explained earlier can have ambiguous effects on the country’s exchange rate. In the Mundell-Fleming as well as the Obstefeld-Rogoth frameworks expansionary fiscal policy financed by domestic borrowing could cause interest rates to rise resulting in higher capital flows leading to improved levels of foreign exchange supply and consequently in a real appreciation. On the contrary RBC models and empirical work (Perotti, 2006) show that expansionary fiscal policy has a real depreciation effect. The later theories argue that fiscal expansion could lead to increased imports, high risk of default (risk premia) resulting in a depreciated currency. Hence, the relative strength of these indirect and direct effects will determine the direction of the effects. In the single equation analysis, we utilise the ARDL approach to determine the short-and long-run effects of fiscal deficits on the exchange rate movements. The results are presented in the table 6 below;

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(LOG(REER))</td>
<td>0.016011</td>
<td>0.089626</td>
<td>0.178640</td>
<td>0.0586</td>
</tr>
<tr>
<td>ID5</td>
<td>-0.142903</td>
<td>0.039392</td>
<td>-3.627681</td>
<td>0.0005</td>
</tr>
<tr>
<td>ID6_9</td>
<td>-0.174056</td>
<td>0.040087</td>
<td>-4.341917</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

The results in table 6 above indicate that both in the short run and long run fiscal balances significantly influence the real exchange rate. Specifically, a one percent increase in the fiscal balance to GDP will significantly lead to a depreciation of the real exchange rate by
approximately 7 basis points in the short run while in the long run it will lead to 90 basis points depreciation. The mean average lag time for adjustment is approximately 8.2 months. These results confirm that in the transmission process, the direct effects are strong than the indirect effects. In addition, these results are similar to emerging stylised empirical results which seem to show that expansionary fiscal policy leads to a real depreciation (Monacelli and Perotti, 2006).

5.3 The Multi-equation method: The VAR-Approach

To check the robustness of our results, we also analyse the effect of fiscal/primary balance shocks on the variables that are important in monetary policy transmission such as reserve money, average lending rates, interest rate spreads, and real effective exchange rate using the VAR approach. In figure 16 below, we present the impulse response functions of a one standard deviation shock to primary balance.

*Figure 16: Impulse response important variables in Monetary Policy Transmission*

The first chart in figure 16 above indicates that a positive one standard deviation shock to fiscal balance significantly increases reserve money up to fifteen quarters, a result which is consistent with our finding that there is likely fiscal dominance over the sample period. It shows that the central bank tend to monetise public debt when the government is faced with a primary deficit. A one standard deviation shock to fiscal balance leads to rise in average lending rates in the economy as well as interest rate spreads, a result which is consistent with our single equation analysis above which showed that there is a positive relationship between
interest spreads and fiscal deficits. Finally, a one standard deviation to the fiscal balance leads to a depreciation in the exchange rate, though this result is not significant.

6.0 Summary and Conclusion

The main objective of this study was to investigate the effects of fiscal policy stance on monetary policy transmission and conduct in Zambia. Specifically, we wanted to test the existence of either fiscal dominance or monetary dominance in Zambia as well as the effects of fiscal policy on monetary transmission channels such as interest rate, interest rate spreads and exchange rates. In addition, the study was also expected to evaluate the evolution of fiscal and monetary policy in Zambia over the last 40 years.

To test for the presence of either fiscal or monetary policy dominance, we utilise three different approaches, namely the CCD, the Tanner and Ramos (2002) method, and the pass-through analysis. Results from the CCD methods show some evidence for the existence of fiscal dominance different from those obtained by Baldini and Ribeiro (2008) who find that the results are inconclusive. The difference in the results could be explained by the fact that we utilise data from different episodes. The Baldini-Ribeiro (2008) data includes a period when the Zambian government was implementing fiscal austerity measures to meet the conditions under the HIPC debt relief initiative. Our data set covers a period after Zambia achieved the HIPC completion point with significant debt relief accompanied by high copper prices which prompted the fiscal authorities to embark on an expansionary stance. Using the Tanner and Ramos method (2002) our results do not show evidence of fiscal dominance in Zambia. Using the pass-through analysis approach, we find that national nominal debt or fiscal shocks in Zambia play a significant role in explaining variability in both inflation and output gap in Zambia, suggesting that there is fiscal dominance in Zambia over the sample period. This result is similar to those found by Baldini and Ribeiro (2008) whose results indicate that domestic debt growth in Zambia significantly explains inflation dynamics in Zambia. Hence, we can safely conclude that there is some evidence of fiscal dominance in Zambia over the sample period.

To uncover the effect of fiscal policy stance on monetary policy transmission channels as well as monetary policy conduct in Zambia, we utilise two methods namely; the ARDL and the VAR approaches. Using the ARDL method we find that primary fiscal deficits have significant positive effects both in the short and long run on the 91-day Treasury bill rate, Inter-bank rates and the average lending rates. In addition, our results show that fiscal deficits have a statistically significant positive effect on the long-run interest rate spreads on government securities but no significant effect in the short-run. These results clearly shows that fiscal policy shocks have a bearing on the monetary policy transmission channels in Zambia, especially the interest rate channel which is the first stage in the monetary transmission process. Furthermore, the results show that fiscal deficits have a significant positive effect on the real effective exchange rate in the short and long run. Using the VAR
approach, we find that shocks to fiscal deficits leads to rising interest rates and interest rate spreads while a one standard deviation shock to fiscal deficits leads to depreciation in the real effective exchange rate.

We also undertook to evaluate monetary and fiscal policy evolution in Zambia as well as the evolution of debt overtime. Zambia’s monetary policy framework has undergone serious reforms over the years. Before the 1990s, Zambia’s monetary policy had multiple objectives as well as relying on indirect instruments of monetary policy. However, the reforms that started in early 1990s saw the revision of the objective of monetary policy to a narrow one of price and financial systems stability while conduct of monetary policy started to increasingly rely on indirect instruments. Subsequently, the BoZ adopted the MAT framework but since April 2012 the Bank started the process towards inflation targeting. Finally, Zambia’s monetary policy is governed by the BoZ Act of 1996 while the main institutions are the MPC, and the MPAC. It is important to note that although the monetary policy framework has undergone numerous reforms over the years, these reforms have not provided for more transparency in its conduct and implementation. The current legal and institutional framework does not provide for the publication of the discussion of the MPC and MPAC, no provision for external membership in the MPC, and no provision for the publications of inflation forecasts to guide expectations. In addition, the tenure of the governor and board members are not protected in constitution thereby creating vulnerability of the Banks’ independence.

With regards to fiscal policy, the narrative given above shows that it has undergone three major phases. After independence in 1965, Zambia embarked on expansionary fiscal policy mainly supported by favourable revenues from copper exports. It embraced soviet style command economic planning through the introduction of the five year development plans managed by the commission for national planning and development. However, the success of these plans where short-lived by external shocks such as the oil price in 1973 and a 1975 slump in copper prices. These two events lead to a rise in fiscal and balance of payments (BOP) deficits forcing the government to resort to excessive borrowing from IMF and World Bank such that by mid 1980s Zambia was one of the most heavily indebted nations in the world. The high level of indebtedness forced government to seek help from the Bretton Woods institutions but could not adhere to the reforms proposed by these institutions. Following the elections of 1991, the new government agreed to start implementing austerity measures such as the Cash Budget and the sale of loss making parastaatals. In addition, the government embarked upon the macroeconomic and financial reforms. During this period, fiscal policy was guided by the PRSPs which were later replaced by the MTEF in 2001. Starting 2001, government started to use five year development plans as the main guide for fiscal policy which where anchored on the long term plan the “The Vision 2030”. The institutions and legal framework governing Fiscal Policy in Zambia can be found in various pieces of legislation. However, a review of the legal and institutional framework governing fiscal policy in Zambia clearly shows serious gaps. For example, there are significant powers and responsibilities given to the Minister of Finance which could create a serious recipe for fiscal dominance and thereby render monetary policy ineffective.
Finally, the study undertook to evaluate the behaviour of monetary and fiscal policy over the business cycle as well as the evaluating whether there is policy coordination in Zambia. Over the period 1994 to 2014, fiscal policy was generally found to be counter-cyclical from 1994 to 2003 but pro-cyclical from 2003 to 2014. On the other hand, there was no clear evidence of the policy mix that monetary policy makers followed over the period 1980 to 2014. Finally, our comparison between monetary and fiscal policy shows that there is no policy coordination in Zambia.

In conclusion, the results of this study provide evidence that over the study period there is fiscal dominance in Zambia and that fiscal policy stance can influence monetary policy transmission channels and consequently the effectiveness of monetary policy.

7.0 Recommendations

The results of this study which show that there is fiscal dominance and that fiscal policy influences variables which are important for monetary policy transmission have implications for both monetary and fiscal policy regimes in Zambia. In addition, there is lack of policy coordination in Zambia. To help mitigate the negative effects of fiscal policy on the effectiveness of monetary policy in Zambia, we recommend the following;

1. Recommend that there should an appropriate institutional framework for the coordination of fiscal and monetary policy framework in Zambian to reduce the negative effects of fiscal policy stance on the transmission of monetary policy;

2. Recommend that there should be more reforms to create an appropriate legal and institutional framework to enhance the transparency and accountability of Zambia’s fiscal and monetary policy. To ensure that fiscal policy does not become dominating, we recommend that there is need to reduce the powers given to the Minister of Finance in the conduct of fiscal policy especially, the loan contraction process. Furthermore, we recommend that the Minister should be guided by stringent fiscal rules. On the part of monetary policy, there is need for more reforms to ensure the independence of monetary policy. To achieve this, we recommend that the appointment and tenure of the Central bank Governor should be protected by the Constitution and that his/her term must alternate that of the political powers. Secondly, there is need for the legal framework to provide for the appointment of MPC members from outside the central bank and also that the Bank of Zambia should be able to publish its inflation report. These measures will help to reduce the time inconsistent problem and also ensure that monetary policy is independent enough to respond appropriately to fiscal policy shocks with a bearing on monetary policy.

3. We recommend for enhanced coordination between monetary and fiscal policy in Zambia so as to optimise the intended effects of macroeconomic policy.
References


.........................., Transitional National Development Plan 1964-1966

.........................., Third National Development Plan 1978-1983


Tomsik, V. (2012). Some insights into monetary and fiscal interactions in the Czech Republic. *BIS working paper no. 67*


Appendices

APPENDIX A

Estimating the Structural Balance

The structural budget deficit is a deficit that prevails if income is at full employment, yielding a corresponding level of full-employment revenue. To calculate the structural fiscal balance we first estimate the elasticities associated with the government expenditure and revenue.

The estimated elasticities provide a measure of the cyclical response of particular revenue and expenditure categories or their aggregate form. Once this procedure is conducted, the calculation of the structural fiscal balance is measured using:

\[ D_s = G_s - T_s = G(1 - \delta G_{GAP}) - T(1 - \theta T_{GAP}) \]

where \( \delta \) and \( \theta \) elasticities of expenditures and tax revenues.

\( D_s \) is measured as a share of potential output: \( d_a = \frac{D_s}{Y_s} \) while the cyclical budget deficit as the difference between the actual and the structural budget deficit.

Fiscal stance (FS) is calculated as the residual between the cyclically neutral (\( D_{CN} \)) and the actual budget deficit (\( D \)): \( FS = D_{CN} - D \). A cyclically neutral budget deficit is obtained using the following: \( D_{CN} = g_0Y - t_0Y \) where \( g_0 \) is the ratio of government expenditure to potential GDP (\( Y_p \)) at the period while \( t_0 \) is the ratio of tax revenue to actual GDP during the base year.
### Appendix B: Effects of Fiscal Policy on Channels of Monetary Policy - ARDL models

**Dependent Variable:** D(INT)

**Method:** Least Squares

**Date:** 08/05/15   **Time:** 07:51

**Sample (adjusted):** 2004M03 2012M12

**Included observations:** 106 after adjustments

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**R-squared** 0.515189  **Mean dependent var** -0.000000

**Adjusted R-squared** 0.464157  **S.D. dependent var** 0.026254

**S.E. of regression** 0.019218  **Akaike info criterion** -4.967942

**Sum squared resid** 0.035087  **Schwarz criterion** -4.691548

**Log likelihood** 274.3009  **Hannan-Quinn criter.** -4.855918

**F-statistic** 10.09528  **Durbin-Watson stat** 1.967663

**Prob(F-statistic)** 0.000000

---

**Dependent Variable:** D(SP1)

**Method:** Least Squares

**Date:** 08/05/15   **Time:** 09:15

**Sample (adjusted):** 2004M04 2012M12

**Included observations:** 105 after adjustments

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**R-squared** 0.509910  **Mean dependent var** -0.000957

**Adjusted R-squared** 0.445985  **S.D. dependent var** 0.011216

**S.E. of regression** 0.008349  **Akaike info criterion** -6.617997

**Sum squared resid** 0.006412  **Schwarz criterion** -6.289412

**Log likelihood** 360.4449  **Hannan-Quinn criter.** -6.484848

**F-statistic** 7.976706  **Durbin-Watson stat** 1.940151

**Prob(F-statistic)** 0.000000
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**Method: Least Squares**
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**Sample (adjusted):** 2005M11 2012M12
**Included observations:** 86 after adjustments

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R-squared 0.591508  Mean dependent var -0.000739
Adjusted R-squared 0.517753  S.D. dependent var 0.000000
S.E. of regression 0.008376  Akaike info criterion -6.579095
Sum squared resid 0.005051  Schwarz criterion -6.179550
Log likelihood 296.9011  Hannan-Quinn criter. -6.418297
F-statistic 8.019854  Durbin-Watson stat 2.049406
Prob(F-statistic) 0.000000

### Dependent Variable: D(ALR)
**Method: Least Squares**
**Date:** 08/05/15  **Time:** 11:39
**Sample (adjusted):** 2004M03 2012M12
**Included observations:** 106 after adjustments

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R-squared 0.492589  Mean dependent var -0.000269
Adjusted R-squared 0.439178  S.D. dependent var 0.000775
S.E. of regression 0.005074  Akaike info criterion -7.631414
Sum squared resid 0.002446  Schwarz criterion -7.355020
Log likelihood 415.4650  Hannan-Quinn criter. -7.519390
F-statistic 9.222512  Durbin-Watson stat 2.044822
Prob(F-statistic) 0.000000
### Model 1: D(LOG(REER))

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**Sample (adjusted):** 2004M03 2012M12  
**Included observations:** 106 after adjustments

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**R-squared:** 0.291124  
**Adjusted R-squared:** 0.240490  
**Mean dependent var:** -0.004728  
**S.D. dependent var:** 0.043869  
**S.E. of regression:** 0.038232  
**Akaike info criterion:** -3.617822  
**Sum squared resid:** 0.143244  
**Schwarz criterion:** -3.416808  
**Log likelihood:** 199.7446  
**Hannan-Quinn criter.:** -3.536350  
**F-statistic:** 5.749577  
**Durbin-Watson stat:** 1.987134  
**Prob(F-statistic):** 0.000014

### Model 2: D(TB91)

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**Sample (adjusted):** 2004M03 2012M12  
**Included observations:** 106 after adjustments

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**R-squared:** 0.503194  
**Adjusted R-squared:** 0.462221  
**Mean dependent var:** -0.000356  
**S.D. dependent var:** 0.013183  
**S.E. of regression:** 0.009668  
**Akaike info criterion:** -6.358970  
**Sum squared resid:** 0.009066  
**Schwarz criterion:** -6.132829  
**Log likelihood:** 346.0254  
**Hannan-Quinn criter.:** -6.267314  
**F-statistic:** 12.28092  
**Durbin-Watson stat:** 2.208519  
**Prob(F-statistic):** 0.000000
Appendix C: Stability of the VARs

Table 1B: Inverse roots for the VAR with Public liabilities and Public surpluses

![Inverse Roots of AR Characteristic Polynomial](image)

Table 2B: Inverse roots for the VAR with public debt, reserve money, output gap, cpi and

![Inverse Roots of AR Characteristic Polynomial](image)
Table 2B: Inverse roots for the VAR with Public liability and Interest rate Payments