



**DOES PUBLIC DEBT SPUR OR HINDER ECONOMIC
GROWTH IN ZAMBIA?**

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by
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Abstract

This study investigates the relationship between public debts and economic growth in Zambia using ARDL analysis covering the period from 1970 to 2015. The results confirm the existence of the long run relationship between public debt and economic growth but the relationship is found to be negative and insignificant both in the short and long run. In addition, the results indicate that both the debt overhang and crowding out effects occur in Zambia. The study recommends that the government should develop a debt management policy, improve macro-economic management, borrow prudently, improve project appraisal and selection, investing in productivity-enhancing projects, encourage diversification and promote export-growth.

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GLOSSARY OF TERMS

CPIA	Country Policy and Institutional Assessment
FE	Fixed Effects
GDP	Gross Domestic Product
HIPC	Heavily Indebted Poor Country
K	Zambian Kwacha
IMF	International Monetary Fund
MDRI	Multilateral Debt Relief Initiative
USD	United States Dollars
WDI	World Development Indicator

Chapter 1

1 INTRODUCTION AND BACKGROUND

1.1 OVERVIEW

In July 2015, the Government of Zambia issued a new USD1.25 billion Eurobond. This was the second Eurobond after the first issue of USD750 million in 2012, taking the total outstanding Eurobonds to USD3 billion and total government debt to USD9.75billion from USD1.1 billion in just three years (Saasha, 2015). Despite Zambia being classified by the International Monetary Fund (IMF) as a low-income country, the recent Eurobond issue was the most expensive dollar debt issuance by any African government in history (ibid). As a result, the credit rating for Zambia had been downgraded from A to B3 in the same period (Post, 2016).

Zambia accumulated substantial external debt during the last 30 years of the twentieth century largely due to the falling copper prices and the loss of transport links because of Zambia's commitment to the liberation struggles in the Central and Southern African region (Weeks & Mckinley 2006). While many sub-Saharan African countries suffered from debilitating debt burdens, few had the debt problem as severe as Zambia (ibid).

In December 2000, Zambia formally qualified for Heavily Indebted Poor Country (HIPC) relief and Multilateral Debt Relief Initiative, which became active in April 2005 (Week & Mckinley, 2006), reducing the external debt to GDP from 85 percent to 9 percent (IMF 2007).

However, despite these interventions, the level of public debt then increased from 15 percent of GDP in 2011 to 41.9 percent in 2015 whilst economic growth slowed down from 7 percent in 2011 to 3 percent over the same period partially because of lower commodity prices and global economic shocks (IMF Executive Report, May 2015). Since the bulk of Zambia's government debt is denominated in United States Dollars, it is likely that debt servicing will undermine long-term economic growth even if the copper price rebounded, partly because additional debt obligations in debt servicing might undermine long-term economic growth. Over the years, the Zambian government has been running a budget deficit, which is projected to increase to 10 percent in 2016 before marginally decreasing to 3 percent of GDP by 2020 (IMF Staff Report, 2015).

The longer the commodity slump, the more likely it becomes that African commodity-reliant countries such as Zambia will continue to suffer from slowing economic growth and stressed state budgets (Reuters, 2015).¹ With economies floundering and currencies depreciating, African states that have borrowed heavily in dollars may slip back into debt traps and ultimately default only a decade after a far-reaching round of debt forgiveness (ibid).

The Zambian economy is facing strong headwinds. Large fiscal imbalances, lower copper prices, and policy uncertainty are dampening economic activity and putting pressures on the exchange rate. Key risks to the outlook are persistent low copper prices with copper exports representing three quarters of total exports, delayed fiscal adjustment, and domestic policy uncertainties that threaten to lower investment and current production in the mining sector (IMF Staff Report, 2015, 19). Nevertheless, government policy has prioritised social and capital investment spending as means of promoting broad based economic growth (ibid, 5). Thus, the government has to borrow to support and meet the expenditure policies but additional borrowings increases the overall risk of debt distress.²

Zambia's stocks of public debt have been on the increase and gravitating more towards capital market non-concessional borrowing from bilateral and concessional borrowing. However, market lending has little possibility of debt forgiveness (Zambia Civil Society, 2002; Economics Association of Zambia, 2014; Kalima Nkonde, 2015) and debt service costs have increased, which can undermine economic growth and lead to a potential debt trap as the debts are mostly contracted in United States Dollars. At the height of Zambia's debt crisis in the 1980's, about 86 percent of export earnings were used to service debt obligations leaving only around 14 percent to use for other sectors (Daka *et al.*, 2017). By the 1990's, Zambia's debt service payments were over three times the combined budget for health, education and social security (ibid p55). As at the year 2000, Zambia's external debt to exports stood at 652 percent and external debt to gross national income (GNI) was about 188.6 percent (ibid 55). It is now estimated that the government pays about K4.4 billion (USD 440 million at the current exchange rate of K10/USD) annually to service the Euro bonds and the total interest payments

¹ This is not only a Zambian problem but other countries like Ghana and Kenya have a similar challenges. Top of the list of at risk countries include Ghana which issued two Euro bonds of USD1Billion each pushing the total debt to 71 percent of the GDP (Reuters 2015). According to Fitch Kenya is facing additional pressure on debt and could potentially be downgraded.

² Currently, Zambia's risk of external debt distress is moderate but the overall risk of debt distress is heightened by public debt vulnerabilities (ibid, 19)

for both the domestic and external debt of about K6.7 billion which is higher than the entire Health budget allocation of K4.5 billion (Bank of Zambia, 2015).

Apart from external debt, taxation revenue is another source of funds to develop the economy or repay the loans. However, taxation has not been making significant contribution to total government revenues in part because Zambia has a large informal sector that is not paying taxes to government coupled with the scaling back of the mining tax regulations which has meant that mines are paying less taxes to the treasury (Economist 2015). Zambia's revenue collection from taxation has been ebbing and is among the lowest in the region with a tax to GDP ratio of 19 percent compared to Zimbabwe's 26 percent, Botswana's 30 percent, and Namibia's 32 percent (Kalima Nkonde 2015).

Zambia is heavily dependent on copper mining and rain-fed agricultural output for export revenue and foreign exchange and is thus vulnerable to changes in copper prices and unpredictable seasonal weather patterns. The manufacturing industry is largely underdeveloped and thus is incapable of contributing to export-led growth. It has been found that countries like Zambia that depend on exports of primary raw materials do not grow as fast as those that have developed their manufacturing export sectors (Hausmann *et al.*, 2007; Jarreau and Poncet, 2012; Crespo-Cuaresma and Worz, 2005; Berg *et al.*, 2012)

For Public debt to be effective and make a positive contribution towards economic growth, the financed capital projects and investment's rate of return should be greater than the interest rates payable on the loans (Ijirshar, 2016; Ada 2016). In Zambia, it is not clear if project financing has a high rate of return at a margin because some projects are selected based on political consideration rather than the net positive contribution to the economy (Economics Association of Zambia, 2014).

Another important consideration when evaluating and getting public debt is that of the real interest rates on the debt versus the real growth rate of the economy. If the real interest rate of the debt is greater than the real growth rate of the economy, the debt is likely to be unsustainable in the long-run. For Zambia, the rates on the external debt, particularly the Euro bonds, are 5.3 and 8.6 percent while domestic rates on one-year government treasury bills are over 20 percent. Conversely, Zambia's economic growth and GDP has been declining and the last time a double digit figure for GDP growth was registered was six years ago in 2010 when GDP growth was

10.3 percent. In the 56 years from 1960 to 2016, the highest GDP growth ever registered was 16.6 percent in the year 1965. The average growth in GDP in the same period was 3.3 percent. (Zambia Central Statistics Office, 2016)

Government borrows to finance its fiscal deficit, which is the excess of government expenditure over its revenues. In Zambia, the deficit has been growing. The average fiscal deficit increased from about 1.1 percent between 2010 to 2013, to about 4.8 percent of GDP in 2012 to 2014 (IMF, 2015). This increase was driven by projects like the roads, large fuel and maize subsidies, increased public services workers wage bill and therefore are indirectly part of the reasons for the increase in the Zambia's public debt (ibid:1). Public debt used to pay increased public services workers and consumption subsidies will not increase the economic productive capacity in the long run. This could also be said for poorly selected and monitored projects.

It is however, necessary to note that high debt does not automatically imply solvency or liquidity problems and eventually economic problems. According to Cheney and Strout (1966), what is undesirable is the situation of not being able to meet current debt obligations as they fall due. By implication therefore, the country should be able to generate more exports and forex to service the debt. Some of the most developed and advanced countries like the United States and Japan have had episodes of high debt but not faced liquidity or solvency problems. According to Reinhart and Rogoff (2010), public debt and GDP growth rates have a weaker relationship below the 100 percent debt to GDP ratio for developed and advanced countries. On the other hand, by implication Highly Indebted Poor Countries (HIPC), such as Zambia, at the height of the external debt crisis in 1990 faced both solvency and liquidity problems because of the inability to generate enough forex through exports and direct foreign investments to meet debt obligations.

Chapter 2

2.0 PUBLIC DEBT AND ECONOMIC GROWTH IN ZAMBIA

2.1 Introduction

This section provides an overview of Public debt and economic growth in Zambia over the period 1970 to 2015. This is then followed by the problem statement for the study. Thereafter, research questions and objectives are outlined. The chapter concludes by looking at the justification for the study.

2.2 Public Debt and Economic growth in Zambia 1960's to 2016³

Public debt and economic growth in Zambia have tended to follow the performance of the mining industry and the government's general economic policies. In the 1960's Zambia was the third largest Copper producer after the United States and the Soviet Union (Zambia Review, 2015). Today Zambia remains one of the largest producers of Copper in Africa with mining and agriculture the mainstay of the economy. The performance and growth of the economy has therefore been closely related to the international copper price developments and international demand conditions.

With regards to economic policies, the last four decades have been that of either controlled regimes or liberalisation. When the economy is growing and the copper prices are good, the fiscal deficit tends to be lower and hence a lower public debt. The opposite is also true.

In the 1960's to 1970's because of the good copper prices on the world market, the economy was growing despite embarking on an ambitious social and infrastructure development plans

³ The word Public debt is used interchangeably with Government debt and essentially means the same. By definition it is the total financial obligations of the government to both residents which in this case is referred to as domestic debt and non-residents referred to as external debt (Economics Association of Zambia, 2014) In Zambia, domestic debt includes both the debt obligations of the central government, the local government and the public enterprises (ibid: 1) This therefore includes all marketable and non-marketable securities such as Treasury Bills, government bonds and public liabilities such as pension obligations. The World Development indicator defines external debt as debt owed to non-residents repayable in currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. (WDI, July 2016). In Zambia external debt forms, the biggest component of public debt at any given time like is a case for most developing nations.

and the level of public debt stock was relatively low (Zambia Review, 2015). However, economic difficulties started by 1973, largely because of the problems in the copper price, demand and production costs. By 1974, world demand for copper had fallen with production costs going up as well. At that time, the economy was not very diversified and copper accounted for 90 percent of Zambia's foreign exchange earnings (ibid : 9) Additionally, being landlocked, the conflicts in neighbouring countries which were not yet independent had an adverse impact on the economy of Zambia. At the same time in the in 1970's oil prices went up and economic mismanagement further deteriorated. Debt contraction was therefore inevitable.

By 1982 Zambia had problems to service its external debt obligation for debt contracted in the 1970's (Musona and Seshamani, 1999). When the global economic recession hit in 1981/82, Zambia experienced a sharp decline in the terms of trade and economic mismanagement further worsened the problem of poor economic growth. The interest payments on the Zambian loans increased sharply between 50 to 70 percent in the period 1981/2 despite a smaller drop in World commodity prices of only around 28 percent (United Nations Conference on Trade and Development report, 1988).

The economic conditions continued to deteriorate in the 1980's not only due to the poor copper prices and regional instability but also to political factors. The government adopted a controlled economic regime. The government determined agricultural producer prices, exchange and interest rates and owned the Zambia Consolidated Copper Mines (ZCCM), which owned all the mines and hence controlled the bulk of Zambia's exports (IHS Economic and Country risk report Zambia, 2015). By the 1980's the government run enterprises owned and controlled 80 percent of the national economy (Zambia Review 2015). Social spending remained high with government subsidizing most goods and services. In the same period, economic mismanagement was rampant. Going from the 1980's to the 1990's the public debt had increased and Zambia was having both liquidity and solvency problems partly due to its inability to generate enough exports to meet debt service obligations.

In order to curb the poor economic performance in the face of increased debt service obligations, the Zambian government entered into a World Bank and IMF supported Structural Adjustment Programme (SAP) in 1983. Under the terms, Zambia agreed to take drastic and austerity measures meant to improve economic performance. These included measures such as removing controls on food and input prices, devaluating the Kwacha, reduce government

spending and liberalising trade (Mwanza 1992). Additionally, Zambia agreed to service the external debt at the rate prescribed by the World Bank and the International Monetary Fund (IMF).

On 1st May 1987, the Zambian government decided to suspend and abort the Structural Adjustment Programme (SAP). According to the Zambian government, the SAP programme was constraining the achievement of economic growth (ibid: 18). In its place another economic recovery programme called NERP under the theme “growth from own resources” was adopted. The main objectives of NERP was to help economic recovery through import reduction and limiting debt service payments to only 10 percent of Net Foreign exchange earnings; diversification of the economy to create capacity; and improving government administrative efficiency through measures such as better targeting and utilisation of subsidies.

NERP had an immediate impact one year after implementation as the economy recorded a growth rate of 6.7 percent in 1988 after many years of economic decline. This growth was in partly attributed to the debt service limitation as the savings in the forex previously used for debt servicing was now allocated to the other productive sectors of the economy (Mwanza, 1992:20).

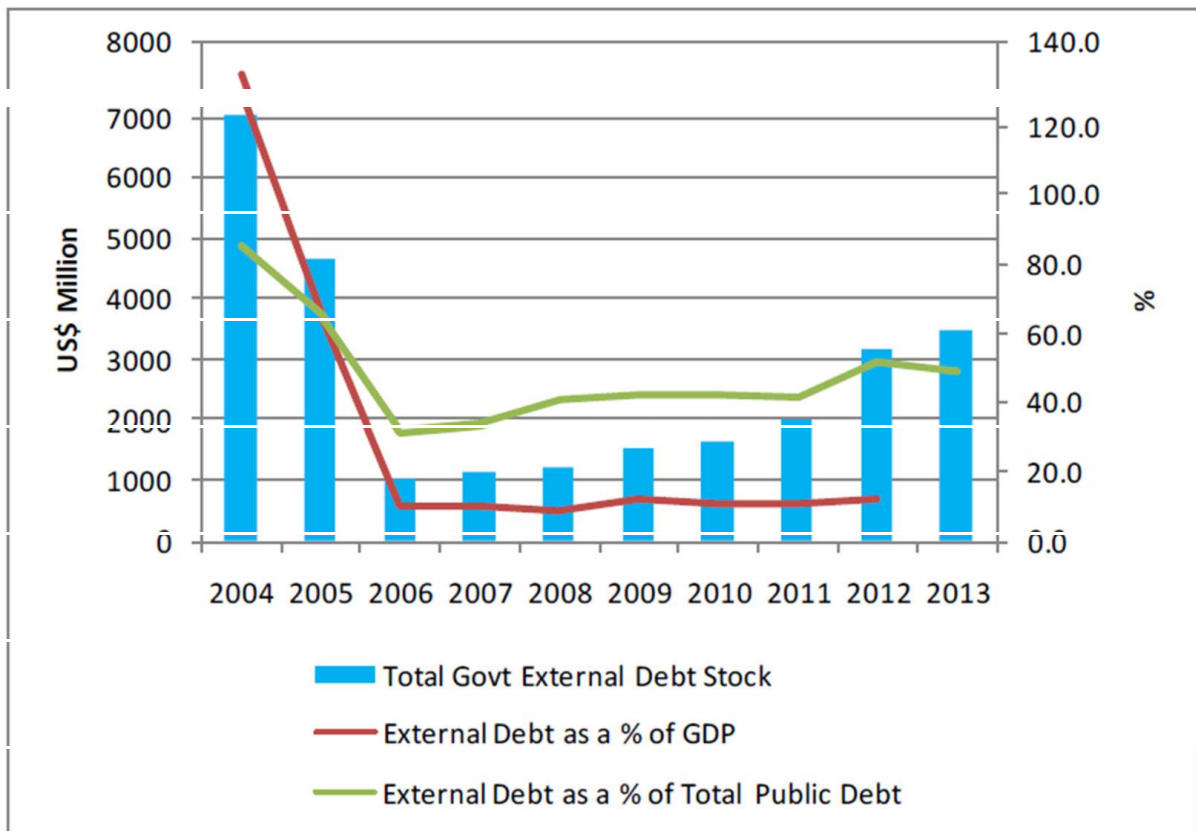
However, consequences of restricting debt service to 10 percent of export earning quickly led the International Monetary Fund (IMF) declaring Zambia as a bad debtor and not eligible for donor support. Because of this, the international community particularly the bilateral and Multi-lateral credit agencies and donors lost confidence in the Zambian economy (Seshamani 1997). Because the economy had increasingly become dependent on donor support, the withholding and loss of foreign direct investments and financial resources and aid into Zambia adversely affected the economy which eventually suffered another economic down turn. This is partly in hindsight why the Zambian government has been cynical to deal with the IMF and World Bank because of the previous experiences and the massive influence that these two financial organisations have on other creditor countries and agencies. After IMF declared Zambia a bad debtor and the subsequent loss of confidence in the Zambia’s economy, the external debt service was now in arrears. By 1990 the arrears on the debt had reached USD7.2 billion representing 260 percent of GDP. At the same time economic performance worsened with GDP growth below 1 percent. Zambia had no capacity whatsoever to meet any debt service obligations as it had serious liquidity and solvency problems.

In 1991 there was a regime change with the end of the Dr. Kenneth Kaunda's era from one party state to Multi-party democracy. The new government under Dr. Fredrick Chiluba introduced economic reforms that were meant to accelerate economic recovery and restoring the lost confidence with the likes of the World Bank and the International Monetary Fund (IMF). The reforms entailed measures such as liberalising the economy and letting the market forces drive it as opposed to fixing prices. Other measures included commitments to restructure and reduce the huge public debt in order to guarantee consistent debt servicing, privatisation of state owned enterprises and restructuring the public sector (Bank of Zambia, 1992). The aim of these measures were to curb expenditure as it was a vital element of fiscal policy objective of achieving the balance of payment stability and a sure way of recovery and creating economic growth (Seshamani, 1999).

The commitment by the Zambian government to improve debt serving meant that they had to pursue tough economic reforms as well as the Heavily Indebted Poor Countries (H.I.P.C) initiative in addition to the bilateral debt relief negotiation meant to do some debt write off (Bank of Zambia, Annual report 2000: 16). In December 2000, Zambia formally qualified for Heavily Indebted Poor Country (HIPC) relief and Multilateral Debt Relief Initiative, which became active in April 2005 (Zambia Review 2015). Zambia received significant debt relief that reduced the external debt to GDP from 85 percent to 9 percent (ibid: 77).

At the same time, copper and cobalt prices on the World market started to improve significantly in 2005. The economy once again started to perform strongly due to the debt relief, strong macroeconomic policies and high copper prices (Zambia Economic review 2015: 77). With a reduced debt burden, the economy was growing and even shown some resilience to the global economic crisis and donor disbursement shortfalls, and by 2010 debt levels had declined substantially and international reserves increased (ibid :77). By 2011, inflation had dropped from 30 percent to a single digit of between 9 and 6 percent and available bank credit expanded (Zambia Economic review 2015:77)

Fig 1: Zambia’s Total outstanding External debt- December 2004 to 2013



Source: Ministry of Finance

The last few years since 2011 has seen a significant increase in total public debt, rising from K22.1 billion to K48.9 billion at the end of 2014. In the same period, external debt increased by 61 percent between 2011 and 2012, to approximately USD3.2 billion (Daka *et al.*, 2017). A primary reason for the increase in external debt was because of the issuance of a 10-year USD750 million Eurobond on the international capital market. By the end of 2014, total external and private debt had reached 24 percent of GDP from 15 percent in 2011 (IMF 2015).

The configuration of the public debt by 2014 was that more was owned to external creditors who formed about 57 percent of total public debt and about 43 percent was internal debt. On 25th June 2015, Parliament approved the increase in the debt ceiling to from K25 billion to K60 billion (USD8.1billion) an increase of about K35 billion (140 percent increase). Additionally, the government indicated that they would issue an additional USD2 billion Euro bond in order to finance infrastructure projects. The increase in the debt ceiling threshold signalled Government pressure to cover expenditure needs as domestic revenues were significantly reducing in part due to the scaling back of the mining tax regime (Economist 2015). The

challenge exists because the government is still running a considerable fiscal deficit despite having ambitious programmes to finance social and economic infrastructure.

Furthermore, it is generally acceptable that a risk of having a debt burden exists when the real interest rates on debt is greater than the real growth rate of the economy. This is because this situation will lead to an increase in the debt to GDP ratio and eventually the debt becoming unsustainable in the long-run. For Zambia, sustainability is said to be benchmarked around 20-25 percent of GDP (Economic Association of Zambia, 2014). It is also important to know and ascertain the rate of return on projects financed through borrowing. The simple rule for borrowing is that external debt can only be productive if well managed by making the rate of return higher than the cost of servicing the debt. Developing countries should borrow abroad as long as they produce the rate of return higher than the cost of external borrowing (Ijirshar, 2016). In Zambia's case, the current structure of the existing two Euro Bonds is such that they will require large lump-sum bullet repayments in 2022 and 2024. These Bonds have interest rates of 5.3 percent and 8.6 percent. These interest rates on the bonds are higher than the real growth in GDP with GDP having grown at only 1.7 percent in 2015, 5.6 percent in 2014, 6.7 percent in 2013 and 2012 and 6.3 percent in 2011 (Source IMF, 2016). This is also true with the domestic debt where the interest on Treasury bills is above 20 percent in 2016 which is way above the GDP growth rate.

This therefore poses the risk of liquidity and debt burden as opposed to increased economic growth because the real interest payments on the both the external and internal debt are more than the real growth rates of GDP. The external debt is denominated in United States Dollars, which therefore brings other debt dynamics and challenges associated with foreign currency denominated debt. Eichengreen, Hausmann and Panizza (2005) refer to the inability by emerging countries to contract debt in their own currency as "original sin". Particularly foreign denominated debt especially on the interest repayments and some short-term maturities on the debt triggers an exchange rate channel for the sharp depreciation of the local currency which eventually increases the debt burden (Panizza 2005). This situation can trigger additional exchange rate depreciation and cause a vicious cycle (ibid). Zambia's debt has grown beyond the 20 to 25 percent of GDP to 44.9 percent due to the depreciation of the Kwacha which has depreciated by as much as 55 percent from the time the loans were contracted (Bloomberg 2015).

The Kwacha has since further depreciated between 80 to 100 percent in 2016 posing even more challenges in managing the external debt dynamics. Zambia's public debt has increased rapidly because of the government keeps running large fiscal deficits and unless deliberate measures are taken to reduce the fiscal deficit, the risk of debt reaching unsustainable levels is very high (Economic Association of Zambia 2014). This approach has been deemed reckless that the World Bank and IMF among other cooperating partners advised the Zambian Government to rationalise and prioritise their infrastructure development (Reuters 2015). However, the government through the Minister of Finance advanced the argument that debt levels are still not yet excessive because GDP growth will create room for additional capacity to repay the loans in the future. (Economist, 2015). However in in-truth, Zambia's economic growth and GDP has been declining and the last time a double digit figure for GDP growth was registered was six years ago in 2010 when GDP growth was 10.3 percent. In the 56 years (1960 to 2016), the highest GDP growth ever registered was 16.6 percent in the year 1965. The average growth in GDP in the same period is 3.3 percent (Zambia Central Statistics Office, 2016) Even policy changes are not implemented to curb down the deficits, the Net Present value of debt to GDP is likely to increase to over 50 percent by 2018 especially that debt is mostly financing recurrent expenditure (Economic Association of Zambia, 2014). Fiscal discipline is a problem as can be seen from the recent trends. In 2013 the overall budget deficit was K7.3 billion against that years target of K5.4 billion representing 6.7% of GDP above the 4.3 percent cap of GDP. The situation was the same in 2015 with the government end up with the higher deficit than what was initially planned for.

Another problem with public debt is that of servicing costs, which reduces available resources required to develop and grow the economy and pro-poor expenditure that is aimed at improving the standard of living for the citizen. In Zambia, poverty remains high at over 60 percent of the population, above the sub-Saharan Africa average of 48 percent (IMF, 2015). In 2013, even before the second Euro Bond was issued, interest payments were K1.8 billion on domestic debt and K361 million on external debt which was higher than the approved budget of K1.5 billion for the Ministry of Community Development, Mother and Child Health in the same year (Economics Association of Zambia, 2014). Now the debt servicing costs have gone up even further with two Euro bonds. Borrowing from global capital markets through the Euro Bonds has become expensive in Kwacha terms because of the depreciation of the Kwacha. Even though they have bullet repayments due in 2022 and 2024 with relatively higher interest rates of 5.3 percent and 8.6 percent, interest repayment are however payable now therefore putting

even more pressure on the already strained government resources. These loans are higher than the ones from the World Bank's concessional arms, which have a 38 years maturity, six-year grace period with zero interest and only 0.75 percent service charges (Daily 2014). Besides these instalment repayments for the Euro Bonds as opposed to amortisation requires more care budgetary planning as funds have to be set aside for the full repayment.

Assessments of constraints to inclusive economic growth in Zambia suggest that reforms are needed to address bottlenecks in infrastructure development (IMF 2015). It is for this reason that Zambia's revised Sixth National Development Plan (2013–16) prioritises addressing constraints to inclusive economic growth by focusing on developing infrastructure, developmental projects and developing rural areas as a way to stimulate economic growth which consequentially creates jobs and reduce poverty (ibid, 18).

However, the concern here is use of the borrowed funds and the selection criteria used to fund projects. For borrowing to be effective and contribute to economic growth, the projects invested in should have a rate of return that is greater than the interest rates on the borrowings. The implication is that the government actually, undertake a good project evaluation, which includes the rate of return analysis as opposed to pork barrel spending. The problem in Zambia is that it is not clear if public expenditure has been used optimally to finance viable investments and projects that have high rates of return relative to the rates of interest on the borrowing (Economics Association of Zambia 2014). With Zambia having faced two Presidential general elections in 2015 and 2016, there was considerable pre-elections pressure to fund certain projects based solely on winning voters as opposed to the viability and the expected return on the projects. Poorly selected and managed projects do not increase the economic productive capacity for more revenue generation in the long-run.

Public debt in Zambia has not been used entirely to fund capital economic infrastructure, which is a problem in itself. The main reasons for the growth in public expenditure include construction of roads, large maize and fuel subsidies and a large increase in public services workers' salaries. These therefore indirectly are some of the main reasons in the increase in Zambia's public debt (Daily, 2015). Borrowing for capital projects like road construction can have a positive effect on economic growth in the long-run (Ada 2016). However, borrowing to fund consumption subsidies like maize and fuel or public service salaries will not create capacity for future economic growth.

However, even where funds have been used on projects, problems exist. The 2012 Auditor General's report revealed that USD123 million was not serviced. The report further notes that it is difficult to ascertain the existence of effective monitoring and management of the bonds by the Ministry of Finance (Auditor General Report, 2012). Among the other problems related to capital projects that seriously impair good prospects of creating capacity to grow the economy relates to delays in procurements of the key equipment and services required to finish the projects. The Zambia Railways project is still a working in progress up to now going into the fourth year since the funds were borrowed to undertake the project.

The other problem that arises from borrowing on capital infrastructure project is that of the final debt burden and externalisation of funds. Because of the quantum of these projects, most Zambian companies do not have sufficient capacity to undertake these projects especially the constructions ones. These jobs eventually end in companies owned by foreigners who are free to repatriate money to their own countries. By repatriating the money outside the Zambian economy, the economic growth is reduced and the locals are made to finance the debt through taxation.

Government borrows to finance its fiscal deficit. Some of the resources available to bridge the deficit are taxation revenues. Therefore, the higher the taxation revenue available to government, the lower the need for government to borrow to finance its fiscal deficit. It is also true that the lower the taxation revenue, the higher the likelihood that government will increase its public debt. Among the arguments for borrowing in Zambia is that of tax morals of the citizen. Zambia's informal sector is huge and earn more money and yet, they are not willing to pay taxes to government whilst expect better roads, education and health facilities. (Economics Association of Zambia, 2014). Therefore, financings the budget deficit solely based on taxation puts a massive strain on the few in the taxable formal sector. This problem eventually results into government to borrow more in order to finance its fiscal deficit. The government is even more under pressure now to meet its fiscal deficit given the fact that domestic taxation revenues have reduced partly because of the reduction in economic activity and the scaling back of the mining tax regime (Economist 2015)

The government can borrow from different sources. Among them include the global capital markets, Official lenders and other governments. These have different implications in terms of cost and terms. The problem with Zambia's external debt now is that unlike in the past were

the government borrowed from official lenders, the new debt is predominately from global capital markets specifically the Euro bond. Borrowing from official lenders such as the World Bank's concessional arm or other governments have better terms and lower risk compared to the global capital markets. Unlike the Euro bonds, the World Bank loans have a longer maturity (38 years), six years' moratorium, zero interest rate and 0.75 percent service charge. On the other hand, the Euro bonds have shorter maturities (10 years' average) with interest rates of 5.3 and 8.6 percent. For government debt to have a contribution towards economic growth, the risk should be lower, the interest rate should also be lower and the maturity long enough to create capacity from the projects that the money is invested in. Because of this borrowing from the Euro bond capital market should not have ideally been preferred over the official lenders and other governments.

The other problem of high domestic borrowing by government in Zambia is that it causes the private sector to be crowded out because Commercial banks tend to prefer the safety of treasury bills as opposed to lending out. In 2013, Commercial banks in Zambia held more than 50 percent of Treasury bills reducing the amount of funds available to the private sectors to invest in other areas of the economy which can advance economic growth. (Economics Association of Zambia, 2014). This trend has continued even in 2016 with Treasury bill rates higher than 20 percent on average. Additionally, increased appetite in government domestic borrowing has had an adverse effect on liquidity management, which has resulted in sharp movements in short term interest rates and reduced credit flow to the private sector.

2.3 Problem Statement

Government revenues from taxation and exports are not enough to meet the fiscal deficit and fund an ambitious government infrastructure and social expenditure drive meant to stimulate economic growth. External debt contraction is therefore inevitable to bridge the gap of the resources required to meet the fiscal deficit and fund infrastructure and social expenditure. .

Adepoju *et al.* (2007) observe that most African countries have inadequate internal capital formation due to factors such as low productivity, lower investments, low income and inadequate domestic savings. External debt therefore remains one of the sources of capital formation in any economy. Developing countries will acquire external debt to supplement domestic savings and investments.

Experiences from the debt crisis in the 1980's and 1990's that highly indebted countries like Zambia went through whose negative effects are still felt even up to date, suggest that huge debt accumulation can be a constraint on economic growth. Furthermore, they are concerns about the sources of government debt-global capital markets as opposed to official or bilateral debt can undermine the economic growth because of the terms of these debts. Particularly the rate of interest for these loans are above the GDP growth rate, which has been on a reducing trend for more than five years now. A simple rule of borrowing from abroad is that countries should borrow from abroad as long as the borrowed funds produce a higher rate of return that is higher than the cost of the externally borrowed funds (Ajayi and Khan, 2000; Ayadi, 2008). Additionally, this external debt stock is denominated in United States Dollars a currency that has appreciated massively against the Kwacha (between 80 to 100 percent) from the time that these debts were contracted posing other challenges that come with foreign debt dynamics.

Some of the borrowed funds have been applied to fund Capital infrastructure projects like roads. Observations about the project selection methods, expected rate of return of such project and misapplication of funds in certain instance are but some of the problems and flaws not given critical attention and hence raises serious doubts about these capital projects capacity to contribute to economic growth. The increase in government borrowing in the domestic market has reduced loanable funds to the private sector that can contribute to economic growth. In contrast, borrowing by government reflects a relatively good and health economy as reflected by debt-to-GDP ratio and other debt sustainability indicators. The rebasing of the currency in 2013 is said to have reduced the debt to GDP ratio to 13.9 percent, meaning that three years ago, Zambia had greater capacity to take on more debt. Zambia's total public debt is projected to rise gradually over the medium term and the risks posed by public debt dynamics are being driven mainly by the negative shocks to GDP growth and the deterioration of the fiscal stance (IMF Debt Sustainability report analysis Zambia, 2015). With debt having increased by over 120 percent in the last four year, the question is will government debt lead to economic growth or it is going to have a negative effect on economic growth?

2.4 Research Questions and Objectives

The objective of this study is to determine whether government debt has an impact on economic growth in Zambia over the 45-year period from 1970 to 2015. Thus the primary research question is:

Does government debt spur or hinder economic growth in Zambia between 1970-2015?

In addition, the study seeks to answer the following sub-questions:

- i. Does government debt have a significantly positive or negative effect on economic growth in Zambia?
- ii. Does government debt have a short term or long-term effect on economic growth in Zambia?

2.5 Justification for the Study

Government debt is an important means by which low-income countries like Zambia cover their total financing needs. This is because their domestic sources are usually insufficient to meet their total financing requirements and thus debt funding is a crucial part of the country's funding mix. However, as the experiences of the 1980's and 1990's show, even after debt write-offs and debt forgiveness, the negative effects of over-indebtedness remain for decades. Nevertheless, in recent years, Zambia has continued to re-accumulate high levels of government debt which may once again have an effect on economic growth rates in Zambia. This study thus attempts to complement existing studies by providing some additional empirical evidence of the effects of government debt on economic growth in Zambia over the period from 1970 to 2015. The empirical analysis is conducted using the ARDL approach so as to discern the short-term and long-term relationships between public debt and economic growth.

3 LITERATURE REVIEW

3.0 Introduction

This section reviews both the theoretical and empirical literature on the effects of government debt on economic growth. The literature review is structured in three parts. First, the theoretical explanations and underpinning of government debt and economic growth are explored. Thereafter, the empirical evidence on the effects of government debt on economic growth is discussed. The chapter concludes by reviewing the studies on Sub-Sahara countries, particularly Zambia.

3.1 Theoretical and Conceptual Literature

Over the course of the last few decades, various theories have emerged to explain the relationship between public debt and economic growth. The five main theories that are explored in this section are the dual gap, financing gap, debt overhang, crowding out and debt Laffer curve theories.

3.1.1 The Dual Gap Theory

According to the dual gap theory of Chenery and Strout (1966), borrowing comes about because of the imbalance between domestic savings and budget and current account deficits. Thus in order to accelerate economic development, developing economies often depend on external sources of capital due to the inadequate domestic investable capital resulting from poor domestic savings (Panizza, 2008). Economic growth cannot be achieved or sustained unless a certain level of capital is available (Sachs, 2002) and developing countries often rely on external capital resources from outside to supplement domestic savings accordingly (McKinnol, 1964; Pattillo *et al.*, 2002; Ajab and Audu, 2006).

The gap theory therefore posits that external borrowing is inevitable for developing countries and that growth in foreign capital and investment enhanced with foreign loans will enhance economic growth (Sachs, 2002). However, it is important for borrowing nations to ensure that they only contract external debt only when it can generate higher returns than the cost of the funds. Simply put, externally borrowed funds will enhance economic development and increase national output only when the investments in which the borrowed funds are used to generate a higher rate of return than the cost of the external debt.

3.1.2 The Financing Gap Theory

The financing gap theory was initially propounded by Domar (1946) and argues that there is a proportionate relationship between the spending on investment and the total growth of the gross domestic product. Rostow (1960) further notes that for any country to transition from less developed to developed, it has to pass through various stages dependent on available investment, and economic growth and development. Thus, a developing country must rely on external debt or aid when the domestic resources for investments are inadequate in order to bridge the funding (Abdullahi *et al.*, 2016).

3.1.3 The Debt Overhang Theory

Krugman (1988) defines debt overhang as “the presence of an existing, inherited debt sufficiently large enough that creditors do not expect with confidence to be fully paid.” Hence, the foreign debt is not merely large, but distorts production and investment decisions (IMF, 1989, p63). According to Sachs (1989) and Bulow and Rogoff (1990), in countries that are heavily indebted, debt overhang is the main cause of slow economic growth because economies that are heavily indebted are unable to attract private investors. Additionally, debt service obligations take up a significant portion of the country’s revenue to the point that the potential of returning to the growth paths is impaired (Levy-Livermore and Chowdhury, 1988).

In addition to unsustainable debt accumulation, debt-overhang can also occur when changing circumstances make it difficult for the country to manage and pay its debts. This can be as a result of adverse economic shocks or poor economic management and policies (Arslanalp and Henry, 2004) or IMF austerity programs (Deshpande, 1997).

3.1.4 The Debt Laffer Curve

The debt Laffer curve theory posits that debt will have a positive impact on economic growth up to a certain threshold level but the negative effects of debt will begin beyond this point (Kabadagi, 2012). Elbadawi *et al.* (1996) report that this negative effect arises when the cost of servicing debt puts a constraint on the amount of resources available to invest in productive sectors and investments.

3.1.5 The Crowding Out Effect

The concept of crowding out effect is anchored on the assumption that government-borrowing takes up a bigger portion of the national savings meant for investment. This is because of the increase in the demand for savings and loanable funds by government while supply remains either constant or reduces. Excessive borrowing by government absorbs most of the available savings meant for investment. Governments or its agencies are the only ones that are able to borrow because of the high interest rates caused by the shortage of savings and thus loanable funds (Claessens *et al.*, 1996). This may happen because an indebted country's term of trade deteriorates, local savings are insufficient, and hence foreign credit markets become attractive. Since individuals and private firms cannot compete with government, they are crowded out of the market (Patenio and Agustina 2007).

3.2 Empirical Literature Review

Empirical studies on the relationship between public debt and economic growth have gained momentum after the debt crises of the 1980's and thus this review of the empirical studies focusses on country-specific and cross-country examinations of African countries, before reviewing studies devoted to Zambia.

3.2.1 African Country-Specific Studies

With regards to Nigeria, Ashinze and Onwioduokit (1996) empirically examine the effect of public debt on economic growth using the macroeconomic model. They find that when debt is utilised effectively (ineffectively), the result was a significant increase (decrease) in economic growth. Iyoha (1997) further reports that the negative effect is because of the existence of the crowding out and debt overhang effects. Sulaiman and Azeez (2012) thus recommend that external public debt should be obtained for economic growth but not for a social or political motive. More recently, Ada *et al.* (2016) use the ARDL bound testing approach for the period 1970 to 2013 to investigate the long-run equilibrium relationship and to test for the direction of causality using the granger causality tests. The results find a significantly negative long-run relationship between economic growth and public external debt. The results also show that there is unidirectional causality between external public debt and economic growth. Ijirsha *et al.* (2016) uses a both descriptive and econometric tools that included the model used by Ayadi and Ayadi (2008) to explain the linear relationship between GDP, external debt management and other macroeconomic variables examines the relationship between economic growth and

external debt for the period 1981 to 2014 and contrary to Ada *et al.* (2016), finds that external debt stock has a positive impact on economic growth, while external debt service has a negative impact on economic growth both in the short and long run.

Mwaba (2001) uses the basic growth model equation in a simple ordinary least squares (OLS) regression to investigate the effect of accumulated debt on economic growth in Uganda. The results find that accumulated public debt had a negative effect on economic growth. However current debt had a positive impact on economic growth in Uganda.

Mbanga and Sikod (2001) using the data for Cameroon investigate the effect of public debt on economic growth. Similar to the findings of Mwaba (2001), the results find that debt-overhang and crowding out effect effects were the two main reasons for the negative relationship between public debt and economic growth.

Frimpong *et al.* (2006) empirically examine the impact of external debt on economic growth in Ghana for the period 1970 to 1999. The study uses Johansen-Juselius multivariate approach to integration to test for stationarity and long run and the Vector error correction model (VECM) to estimate short-run impacts. The results reveal a positive relationship between external debt and economic growth. The study however finds that debt servicing impacts negatively on economic growth suggesting the presence of debt overhang effects.

Maana *et al.* (2008) uses a modified Barro growth regression model to investigate the effects of public domestic debt on economic growth in Kenya for the period 1996 to 2007. The results find that public domestic debt contraction had a positive but insignificant effect on economic growth, and that there is no evidence of the crowding out effect of the private sector due to increased domestic debt contraction.

Ayadi (2008) investigates the impact of external debt on economic growth in South Africa and Nigeria using both the ordinary least squares (OLS) and the generalised least squares (GLS). The study finds a negative relationship between public debt and economic growth in both countries. However for Nigeria, debt contributes positively to economic growth up to a certain debt threshold beyond which the contribution turns negative while South Africa is better at managing its debt servicing obligations.

Ntshakala (2014) using the ordinary least square (OLS) method analyses the relationship between public debt (both external and domestic debt) and economic growth in Swaziland for the period 1988 to 2013. The results of the study finds that the relationship between external debt and economic growth is not significant. However, domestic debt is found to have a positive and significant relationship with economic growth. The study therefore recommends that government should borrow internally to stimulate economic growth.

In conclusion, most of the studies that attempt to look at the effect of public debt on economic growth on single countries have been inconclusive with other studies finding a negative relationship whilst others have found a positive one. Majority of the studies in developing countries more or less point to the fact that public debt impairs economic growth after a certain threshold. Debt overhang and clouding out effects are the two main channels by which public debt impacts negatively on economic growth especially on developing countries.

3.2.2 Panel Empirical Studies focusing more on African Countries including Zambia

Elbadawi *et al.* (1996) using cross-section regression investigates the channels through which debt negatively impacts economic growth among 99 developing countries (including Sub-Saharan Africa, Latin America, Asia and Middle East). The study finds there are three significant channels of transmission: liquidity caused by removing resources for debt servicing, indirect public sector expenditure and debt accumulation. In addition, the results show that current debt inflows enhanced economic growth while past debt accumulation has a negative effect on economic growth. The results therefore suggest that the negative effect is associated with debt overhang.

Fosu (1999) investigates the effects of external debt on economic growth for 35 Sub-Saharan African countries for the period of 1980 to 1990. The results find that debt has a negative effect on economic growth, and that economic growth in Sub-Saharan Africa would have been 50 percent higher had the countries not had existing debt burdens. Pattillo *et al.* (2002) investigates 93 developing countries for the period 1969 to 1998 using ordinary least squares, two-stage least squares, fixed effects and system generalised method of moments. The results show that public investment has a positive effect on economic growth in low-income countries, and that public debt only has a negative impact on economic growth when the debt ratios are above 160-170 percent of exports or 35-40 percent of Gross Domestic Product. Clements *et al.* (2003)

uses fixed effects and systems generalised method of moments to analyse the channels through which external debt impacts economic growth in 55 low-income countries. In addition, the study makes use of 3 years averages to net out any effects of short-term fluctuations. The results find support for the presence of the debt overhang hypothesis but unlike Pattillo *et al.* (2002), find a lower threshold of debt to exports of 100-105 percent and debt to GDP ratio of 20-25 percent at which debt has a negative effect on economic growth.

Reinhart and Rogoff (2010, 2012) examine a sample of 44 countries of which 20 were developed countries and 24 were developing countries over the period from 1790–2009. Unlike the findings of most of the previous studies already, Reinhart and Rogoff find that there is no significant association between public debt and economic growth at low or moderate levels of debt. However, a relationship exists when the government debt to GDP ratio reaches 90 percent and above at which point economic growth is reduced. Panizza and Presbitero (2012) use an instrumental variable approach to examine the impact of public debt on economic growth for 92 low-and middle-income countries over the period 1990-2007. The results reject the hypothesis that high debt causes lower growth but unlike the findings of Reinhart and Rogoff (2010, 2012), Panizza and Presbitero show that public debt has a negative impact on economic growth up to a threshold of 90 percent of GDP, beyond which its effect becomes irrelevant. More recently, Pescatori, Sandri and Simon (2014) use a novel empirical approach and growth regression on an extensive database of gross government debt to GDP ratio for IMF member countries unlike Panizza and Presbitero (2012), Pescatori, *et al.* find no significant evidence of a debt threshold above which medium–term economic growth prospect are impaired. Mencinger *et al.* (2015) examine the turning point of the debt to GDP ratio in order to ascertain the impact of the levels of public debt on economic growth for 36 countries. The findings show that the debt to GDP turning point at which the public debt inverts into a negative effect is between 90% to 94% for developed economies and 44% to 45% for emerging countries. Thus unlike Reinhart and Rogoff (2010, 2012), Panizza and Presbitero (2012) and Pescatori *et al.* (2014), Mencinger *et al.* confirm that the threshold of GDP to public debt is lower for emerging countries than that of developed ones.

Sichula (2012) investigates the effect of debt overhang on economic growth in Heavily Indebted Poor Countries (HIPC) of the Southern African Development Community SADC using financial modelling to measure the linear relationship of debt indicators on economic

output, the effect of debt relief on both economic growth and private capital, and Granger causality tests. The results show that there is a significant relationship between public external debt and GDP growth whereby a reduction in public debt increases GDP growth mainly because of the decrease in debt service; debt reduction is found to affect GDP growth; and as government expenditure decreases, private capital that can be used in investment and economic development increased. Siddique *et al.* (2015) conduct an ARDL analysis of the impact of external debt on GDP for 40 highly indebted poor countries (HIPC) over a period of 1970-2007.

In conclusion, most the panel-studies that attempt to look at the effect of public debt on economic growth are still inconclusive. Regardless, most of them more or less point to the fact that public debt impairs economic growth after a certain debt threshold. The threshold is found to be lower for developing countries and higher for developed countries. The inherent weakness of generalising from cross country studies is that what appears to hold on average is mostly rarely an adequate explanation of what is happening in a particular country (Zupi, 2003). This is because each country may have unique and country specific conditions.

3.2.3 Empirical Studies on Zambia

To date the number of studies devote to the relationship between public debt and economic growth in Zambia are limited. Chikuba (2003) uses a two-stage least square regression approach and OLS method to investigate the effects of public external debt on economic growth over the period 1970 to 1999. In common with most studies, the results find a negative relationship between public external debt and economic growth. In addition, there is evidence of debt overhung and the crowding out of investments in Zambia. Koyi (2006) uses a deductive approach to investigate the relationship over the period of 1975 to 2000. However, further to Chikuba (2003), the findings show that Zambia's external debt service payments reduced investment and hence, economic growth because of the combined effect of high debt to income ratios and through high debt service to export ratios. Thus unlike Chikuba (2003), Koyi concludes that the evidence of debt overhang and a crowding out effect are inconclusive.

Chongo (2013) uses a vector error correction model (VECM) to analyse the impact of public debt on Zambia's economic growth for the period 1980 to 2008. In common with previous results, the study finds a long-run negative relationship between public debt and economic

growth in Zambia but in accordance with Chikuba (2003), there is evidence of crowding out and debt overhung effects. Daka *et al.* (2017) investigate the impact of external debt on Zambia's economic growth using the ARDL approach and Granger causality tests covering the period from 1980 to 2014. The results indicate that public debt has a positive relationship with economic growth in the short-run and a negative impact in the long run, suggesting the presence of non-linearity effects. Furthermore, the results confirms the debt over hung and crowding out effects on economic growth in the short-run. In addition, the study finds unidirectional causality running from external debt to economic growth.

3.3 Conclusion

In conclusion, whilst there are not a lot of empirical studies specifically on Zambia to investigate the relationship and effects of public debt on economic growth. The results of those undertaken so far concludes that public debt has a negative effect on economic growth in Zambia especially in the long run. Most studies suggests the presence of both the debt overhung effects and crowding out.

Chapter 4

RESEARCH DATA AND METHODOLOGY

4.0 Introduction

This chapter outlines the research methodology and design used to examine the research questions. The chapter begins by explaining the rationale of the research design. This is then followed by a description of the data collection methods, the frequency of the data, the data sources, and the data limitations and assumptions. Thereafter, the empirical methods used to analyse the data are explored in greater detail, including the diagnostic tests.

4.1 Research Design

This study entails secondary data analysis as it uses data already available to examine the effect and relationship of public debt on economic growth in Zambia from 1970 to 2015. Since the study involves a research method of observing data gathered for the same subjects over a long period of time, the study employs a longitudinal research method. Longitudinal studies enables researchers to learn more about cause and effect relationships between subjects observed and therefore helps to establish clearer connections. Furthermore, the fact that longitudinal studies use data collected over a long period of time means that more data is available to study changes and developments of subjects over time and is therefore considered highly valid for determining long-term and individual changes (Saunders *et al.*, 2000).

Conversely, longitudinal research has the disadvantage that data for the same subjects must be collected and observed over a long period of time and therefore these studies may take long and can be costly to undertake. However, this disadvantage does not apply to this study because of the availability of secondary data on gross domestic product (GDP) real growth, gross government debt, gross national expenditure, export of goods and services and foreign direct investment inflows on Zambia from the World development indicators (WDI) of the World Bank.

The study uses empirical estimation to compare public debt and economic growth in order to establish the relationship between the two. Hence, the study makes use of an explanatory research strategy. Since the study uses a quantitative approach to establish and answer the questions about the relationships among the variables with the aim of explaining and predicting the relationships, the research design is therefore explorative as well.

4.2 Data

To answer the research questions about the relationship between public debt and economic growth, the study uses annual time series data covering the period of 1970-2015 (the start-date of 1970 is dictated by data availability). This is a forty-five (45) year period and covers all the economic regimes that Zambia has had from a one party command controlled economy to today's liberalised economy.

The study uses secondary data sourced mainly from the World Banks World Development indicators (WDI) available on the World Bank website. Secondary data is a credible source for longitudinal studies. Additionally, it is inexpensive, saves time and covers a long period of time. This makes it easy and readily available for others to verify and validate studies like this one that uses it. However like most secondary data sources, the shortcoming of using secondary data is that the data may have been collected for a different purpose to this study.

The study uses GDP as the dependent variable and a proxy of economic growth in accordance with similar international studies.⁴ In addition, this study includes the control factors of net FDI inflows, exports of goods and services, and gross national expenditure.

To minimise possible measurement errors in the variables, the model uses the logarithmic difference as percentages of GDP (Beck et al, 2013). The variables are described in Table 4(a) below:-

⁴ Examples include Costanza et al., (2009), Reinhart and Rogoff (2010, 2012), Checherita and Rother (2010), Abbas (2010), Kumar and Woo (2010), Sandri and Simon (2014), Pescatori (2014), Mencinger et al. (2014), Swamy (2015), Irina and Iulian (2015).

Table 4a: Description of the Variables

Symbol	Variable name	Variable description	Source
$GDP\ growth_{i,t}$	Real GDP growth per annum expressed as natural logarithm of real GDP growth.	Annual percentage growth of GDP at Market prices based on constant local currency.	World Bank's World Development Indicators (WDI) July 2016, IMF data base
fdi_t	Foreign Direct investments net inflows expressed in differenced natural logarithm of foreign direct investment net as a percentage of GDP	Foreign direct investments refers to direct equity flows in the economy. It is a sum of equity capital investments of earnings and other Capital	World Bank's World Development Indicators (WDI) July 2016
$exgs_t$	Exports of Goods and Services. This is the differenced natural logarithm of the exports of goods and service expressed as a percentage of GDP	Exports of goods and services represents the value of all goods and other market services provided to the rest of the World. They include the value of merchandise, freight, insurance, transport, travel, royalties, licence fees and other services such as communication, financial, information, business and government services.	World Bank's World Development Indicator (WDI) July 2016
gne_t	Gross national expenditure expressed in differenced natural logarithm of the Gross national expenditure.	Gross national expenditure is the sum of household and government final consumption expenditure plus gross Capital formation	World Bank's World Development Indicator (WDI) July 2016

	This taken as a percentage of GDP		
ggd_t	Gross Government Debt expressed in differenced natural logarithm of Gross Government debt as a percentage of GDP	Total Gross Government debt is debt owed to non-residents and non-residents repayable in currency, goods and services. It includes public guaranteed and private non-guaranteed long-term debt, use of IMF credit and short term debt. Short-term debt includes all debt having an original maturity of one year or less and interest arrears on long-term debt.	World Development Indicator (WDI) July 2016, IMF data base.

4.3 Data Limitations

The following are the limitations inherent with the data used in the study.

- (a) Whilst it is desirable to have quarterly data for the key variable, it is however not available because like most macroeconomic data, government debt figures are only available on an annual basis. The same is true for all other control variables used in the study. . This therefore compromises the predictive power of the results (Brooks, 2008). Regardless, similar studies involving GDP have used annual figures because of the availability challenges.
- (b) According to the IMF guidelines on public debt definition. Public debt should include debt contracted by state owned, quasi and public institutions especially if the debt is guaranteed by government. Debt figures for State owned companies, quasi and government public institutions have not been included in the total debt figures. This is

because they are difficult to obtain, especially for earlier years and currently their borrowing is fragmented and uncoordinated.

- (c) Latest data as at 2017 was not yet available for most of the variables used in the study. However, the available data was sufficient for the purpose of the answering the research questions for the study.

4.4 Methodology

This study uses the Autoregressive Distributed Lag (ARDL) bounds test of Pesaran, Shin and Smith (2001) to determine the long run relationship between government debt and economic growth in Zambia for the period 1970 to 2015. The ARDL bounds test was used for the following five reasons. First, when using the ARDL technique, the pretesting problems associated with standard cointegration analysis that requires the classification of the variables into I(0) and I(1) is avoided (Nkoro and Uko, 2016). With the ARDL bounds testing procedure, variables of different integration orders can be used in the same model without the risk of generating spurious regression even for small or finite sample sizes (Pesaran and Shin, 1999; Pesaran *et al.*, 2001).

Second, the choice to use the ARDL bounds test is also due to its extensive use in empirical studies on establishing and examining long run cointegration relationship among economic variables. Apart from being suitable even with smaller samples, the ARDL approach is robust enough to handle phenomena shocks and regime changes (Wong and Tong, 2008; Bahmani-Oskooee and Hajilee, 2010; Fuinhas and Marques, 2012; Srinivasan and Kalaiivani, 2013).

Third, the ARDL is able to estimate parameters using a single equation rather than a vector approach (such as the Johansen cointegration approach), which could potentially lead to loss of degrees of freedom. Furthermore, because each of the underlying variables stands as a single equation, endogeneity is less of a problem when using the ARDL approach. This is because the ARDL technique is free of the residual correlation as all variables are assumed to be endogenous hence allowing for the analysis of the reference model (Nkoro and Uko, 2016).

Fourth, the ARDL approach is able to identify cointegrating vectors where there are multiple cointegrating vectors (*ibid*, 79). According to Pesaran, Smith, and Shin (2001), using the ARDL approach can distinguish between dependent and independent variables where a single

long run relationship exists. With the ARDL approach, the assumption is that only a single reduced form equation relationship exists between the dependent variable and the independent variables.

Finally, the ARDL model can derive the Error Correction Model (ECM) through a simple linear transformation that integrates short run adjustments with long run equilibrium without losing long run information (Nkoro and Uko, 2016).

4.5 Analytical Approach

Hence, the long run ARDL (k) model equation is as follows:-

$$Y_t = \delta_0 + \sum_{i=1}^k \alpha_1 X_{1t} + \sum_{i=1}^k \alpha_2 X_{2t} + \sum_{i=1}^k \alpha_3 X_{3t} + \sum_{i=1}^k \alpha_4 X_{4t} + v_{1t} \quad (5)$$

Where $X_{1t}, X_{2t}, X_{3t}, X_{4t}$ the explanatory or the long run forcing variables, and K are is the number of optimum lag order.

For the purposes of this study, the functional form of the ARDL long run cointegration equation is as follows:

$$GDP\ growth_{i,t} = \delta_0 + \sum_{i=1}^k \alpha_1 ggd_t + \sum_{i=1}^k \alpha_2 gne_t + \sum_{i=1}^k \alpha_3 fdi_t + \sum_{i=1}^k \alpha_4 exgs_t + v_{1t} \quad (6)$$

Where:

- $GDP\ growth_{i,t}$ is the log of the Real GDP growth for Zambia in year t
- $D\ log\ ggd_t$ is the differenced logarithm of the General Gross Government debt for Zambia in year t as a percentage of GDP

- $D \log gne_t$ is the differenced logarithm of the Gross national expenditure. This is the sum of household and government consumption expenditure plus the gross Capital formation/expenditure at time t in Zambia. This taken as a percentage of GDP
- $D \log fdi_t$ is the differenced logarithm of the foreign direct investment at time t in Zambia. This is expressed as a percentage of GDP
- $D \log exgs_t$ is the differenced logarithm of the exports of goods and service at time t in Zambia. This is also expressed as a percentage of GDP

4.6 Diagnostics Checks

Having specified the ARDL, the next step of the analysis is to conduct diagnostic tests to ensure that the results are robust and that the model is correctly specified. The diagnostic tests are discussed below.

4.6.1 Serial correlation Test

In order to determine whether the residual terms are serially correlated with their own lagged values, the estimation uses the Breusch-Godfrey (1978) serial correlation test. The advantages of using the Breusch-Godfrey (BG) test over the Durbin-Watson (DW) autocorrelation test are that the BG test does not assume that the residuals are normally distributed, and tests over a number of lags (Godfrey *et al.*, 2005).

4.6.2 Heteroskedasticity Test

The presence of heteroskedasticity implies that the estimation is not efficient and does not possess the minimum variance. Consequentially, the F and t tests based on the results may lead to erroneous conclusions (Gujarati 2003). This study thus uses the White (1980) test for heteroscedasticity where the null hypothesis states that variance of the disturbance term is homoscedastic while the alternative hypothesis states that the variance of the disturbance term is heteroskedastic.

4.6.3 Recursive Tests

The study uses both the CUSUM and the CUSUM of squares test attributed to Brown, Durbin and Evans (1975). Recursive tests present a plot of the residuals in reference to the zero line. When the residuals are within the standard bands, then there is parameter stability whereas, if the residuals are outside the error bands then there is parameter instability in the equation.

The CUSUM test statistic is as follows: -

$$W_t = \sum_{r=k+1}^t W_r / S \quad (7)$$

Where:-

- S is the standard deviation of recursive residuals
- $t=k+1$, w is the recursive residual

W_t outside the two critical values indicates Parameter instability

The CUSUM of squares test by Brown, Durbin and Evans (1975) derived by cumulative summing of the recursive residuals test statistic is as follows:-

$$S_t = \left(\sum_{r=k+1}^t W_r^2 \mid \sum_{r=k+1}^T W_r^2 \right) \quad (8)$$

Where W is the recursive residual and the mean of S_t is given as

$$E(S_t) = (T - K) / (t - K) \quad (9)$$

4.7 Methodological Assumptions

In order to satisfy the applicability of the ARDL approach, the following assumptions are made:

- No one variable is stationary at I(2).
- There is both a short run and a long run relationship between the variables used in the study.
- There is cointegration and a steady state of equilibrium between the variables. This is because if variables do not cointegrate, then it can lead to problems of spurious regression and results obtained are misleading and meaningless (Emeka Nkoro and Aham Kelvin Uko 2016)

4.8 Limitations

Where there are multiple long-run relationships, the ARDL approach cannot be applied and instead an alternative approach like the Johansen and Juselius (1990) will be more appropriate, (ibid).

CHAPTER FIVE: RESEARCH EMPIRICAL RESULTS AND FINDINGS, ANALYSIS AND DISCUSSION

5.0 Introduction

This chapter presents the empirical results and findings of the study. First, the unit root and stationarity test results are briefly explored. Thereafter, the ARDL test results are discussed. Finally, the diagnostic test results are presented to ensure that the estimated model is stable, robust and that the results are not spurious.

5.1 Unit Root Tests

Table 5.1(a) presents the results of the Augmented Dickey Fuller (ADF), Philip Perron (PP) and the Kwiatkowski Philips Schmidt Shin (KPSS) unit root and stationary tests. The results generally show that Gross Domestic Product growth (GDPG) is level stationary while the remaining factors are first difference stationary. Based on the test results obtained using the ADF, PP and KPSS at both level $I(0)$ and first difference $I(1)$, all the variables are integrated of order zero $I(0)$ or one $I(1)$ and may exhibit a valid long-run relationship. This therefore means that using ARDL model will not give spurious regression results.

Table 5.1(a): Unit Root Test Results

	GDPG	GOV DEBT	EXPORTS	FDI	GNE
1.INTERCEPT ONLY					
Level I(0)	-1.277	0.606	3.269	5.595	-3.318***
First Difference I(1)	-6.792***	-5.113***	-5.153***	-0.782	-2.082
PHILIP PERRON PP					
Level I(0)	-5.935***	0.356	3.797	1.673	0.438
First Difference I(1)	-47.732***	-5.131***	-5.221***	-11.648***	-4.029***
KPSS- Kwiatkowski Philips Schmidt Shin					
Level I(0)	0.575***	0.688***	0.617***	0.673***	0.228***
First Difference I(1)	0.172***	0.260***	0.745	0.525***	0.346***
2. TREND AND INTERCEPT					
ADF- Augmented Dickey Fuller					
Level I(0)	-7.068***	-1.539	0.598	3.826	-2.758
First Difference I(1)	-6.709***	-5.354***	-6.833***	-2.803	-2.107
PHILIP PERRON PP					
Level I(0)	-7.069***	-1.246	1.167	-1.476	0.827
First Difference I(1)	-46.408***	-5.354***	-6.893***	-19.042***	-4.418***
KPSS- Kwiatkowski Philips Schmidt Shin					
Level I(0)	0.175***	0.086***	0.217	0.220***	0.126***
First Difference I(1)	0.168***	0.084***	0.152***	0.1506***	0.133***

Notes:

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

2. The ADF unit root tests include a maximum of 4 lags chosen on the basis of the Akaike information Criterion
3. I(0), I(1), denotes level and 1st Difference respectively

5.2 The Full ARDL Estimation Model

Having investigated the stationarity properties of the data, the next step is to apply the Auto Regressive Distributed Lag (ARDL) method as developed by Pesaran and Pesaran (1997) Persaran and Shin (1999), Pesaran *et al.* (2000, 2001). Table 5.2[a] presents the summarised results of the full ARDL model.

The results show that the coefficient of government debt (*Gov_Debt*) is negative but insignificant. This insignificance therefore implies that government debt has little or no effect on economic growth in Zambia. A possible reason for this relates to Zambia's level of debt accumulation. According to Reinart and Rogoff (2010), public debt and GDP growth have a weak relationship when the debt to GDP ratio is below the 100 percent ratio, which is the case for Zambia for most of the period covered by this study.

5.2[a] FULL ARDL Model Estimation

Variable	Coefficient	t-Statistic	Prob.*
GDPG(-1)	-0.455	-2.701	0.011***
GOV_DEBT	-11.454	-1.197	0.240
GOV_DEBT(-1)	14.198	1.426	0.164
EXPORTS	-112.058	-2.140	0.040**
EXPORTS(-1)	45.7152	0.816	0.420
EXPORTS(-2)	210.899	2.863	0.007***
EXPORTS(-3)	-177.697	-2.719	0.010***
FDI	171.892	2.250	0.032**
FDI(-1)	189.104	2.288	0.029**
GNE	-39.031	-3.004	0.005***
GNE(-1)	19.428	1.201	0.239
GNE(-2)	168.656	3.023	0.005***
GNE(-3)	-94.891	-1.997	0.055**
C	-51.518	-1.303	0.202

R-squared	0.568	Mean dependent var	3.137
Adjusted R-squared	0.374	S.D. dependent var	4.250
S.E. of regression	3.359	Akaike info criterion	5.519
Sum squared residual	327.396	Schwarz criterion	6.092
Log likelihood	-104.658	Hannan-Quinn criterion	5.730
F-statistic	2.938	Durbin-Watson stat	2.111
Prob (F-statistic)	0.007		

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

5.3 ARDL Bounds Test

In order to determine whether there is a long run cointegrating relationship between economic growth and public debt, the analysis next applied the ARDL Bounds test. The ARDL bounds test results are presented in Table 5.3 [a] below and show that the F test value of 15.40 is greater than any of the $I(0)$ and $I(1)$ critical value bounds. Hence, there is evidence of cointegration relationship among the variables, suggesting that there is a long-run relationship between government debt and economic development in Zambia in accordance with Chongo (2013) and Daka *et al.* (2017).

Despite the bounds test establishing a long run cointegration relationship among the variables, the ARDL did not find a significant association in the long run. This is possibly because government debt affects economic growth only in the long run. Livermore and Chowdhury (1998) argue that even when structural adjustment programs are implemented by highly

indebted countries, the adverse effects of debt overhung can still be felt on the general economic performance over a long period of time. The negative effects of the HIPC debt crisis of the 1980 and the 1990's in Zambia; such as high poverty and unemployment levels, low productivity and low savings, are still been felt up today (Daka *et al.* 2017)

Table 5.3[a] The ARDL Bounds test results

Test Statistic	Value	K
F-statistic	15.40412	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

5.4 ARDL Cointegrating and Long Run Form

Having established that there is a long-run relationship between economic growth and public debt, the next step is to estimate the long run coefficients and the speed of adjustment needed to restore the long-run equilibrium following a short-run shock. Table 5.4[a] presents the summarised results of the long-run coefficients and the lagged error correction term.

The lagged error correction term for the estimated economic growth equation is both negative and statistically significant, which confirms a valid short-run and long run relationship between economic growth and government debt. The coefficient of error term is -1.46 suggesting that about 146 percent of disequilibrium is corrected in the short run.

The long-run results for exports (*Exports*) suggest that an increase in exports will bring about a significant decrease in economic growth. While this finding contradicts the tenets of the export-led growth hypothesis in low income and developing countries (including Sub-Saharan Africa)⁵, it is a common feature of countries that are heavily resource dependent (Dutch

⁵ Examples include Dodara (1993), Sharma and Dhakal (1994), Riezman *et. al* (1996), Sentsho (2002), Broda and Tille (2003), Abu-Quain and Abu-Bader (2004), Musonda (2007) and Chiayee (2015).

Disease) (Corden, 1984:359; Sachs and Warner, 1995; Dawe, 1996; Herzer, 2007; Mavrotas *et al.*, 2011). In addition, it has been found that countries that depend on exports of primary raw materials do not grow as fast as those that have developed their manufacturing export sectors (Crespo-Cuaresma and Worz, 2005, Hausmann *et al.*, 2007; Jarreau and Poncet, 2012;; Berg *et al.*, 2012) Zambia is infamously dependent on copper mining and rain-fed agricultural output, and is thus vulnerable to changes in copper prices and unpredictable seasonal weather patterns While the manufacturing industry is largely underdeveloped and thus is incapable of contributing to export-led growth.

In addition to Zambia's trade limitations, economic growth in the country is also hampered by the effects of large foreign debt service obligations as debt service payments reduce output growth by reducing productivity (Daka *et al.*, 2017), requires the country to generate foreign exchange for debt servicing, and diverts potential export revenues to service the foreign debt. In contrast, foreign direct investment (*FDI*) has a positive effect on economic growth and thus economic growth in Zambia is more closely aligned with the capital flow-led growth hypothesis (Harrod, 1939; Domar, 1946; Solow, 1956; Hirschman, 1958, Romer 1994, de Mello 1977, 1999; Borensztein, De Gregorio and Lee 1998; Borensztein *et al.* 1998; Reisen 1998; Kinoshita, Stocker 1999, 2001; Greenway and Kneller 2004; Halpern *et al.*, 2005; Mody and Murshid, 2005; Beugelsdijk *et al.*, 2008) than the export-led growth hypothesis (Bhagwati 1978, Krueger 1978, Balassa 1978, Kavoussi 1984 and Ram 1987).

This finding is not in line with other studies that support the export-led growth relationship in some Sub-Sahara African countries (Fosu, 1990; Ukpolo, 1994; Pazim, 2009; Tekin, 2012; Yee, 2016) but this may be because in Zambia, the major export is copper rather than manufactured exports. Exports of primary raw materials increases export vulnerability of developing countries because raw materials are subject to large price and volume fluctuations (Yee, 2016: 234) and do not have linkages, spill-over and externality effects required for sustainable economic growth (Sachs and Warner 1995; Herzer 2007).

The long run results for Gross National Expenditure (*GNE*) is found to have a highly significant negative impact on economic growth, which accords with other studies of Sub-Saharan Africa (Bairam, 1990; Kormendi and Meguire, 1985; Levine and Renelt, 1992; Nelson and Singh, 1994; Lee, 1995 Okwu and Nworji, 2012; Sennago and Matovu 2010; Khan *et al.*, 2012; Carter *et al.*, 2013; Egbetunde and Fasanya, 2013). This is in part because the public expenditure is

not on capital infrastructure projects that can contribute to economic growth but rather on consumption and recurring expenditure such as increase in public service wages, maize and fuel subsidies. Additionally, these projects are poorly selected and, often based on political considerations as opposed to economic viability. In addition, even where funds have been disbursed, there is lack of proper mechanism to monitor the use of these funds (Auditor General Report, 2012). The implication is that in some cases, funds are not used for the intended purpose of investing in capital projects which would have contributed to creating capacity for economic growth.

Table 5.4[a] ARDL Cointegrating and Long Run Form

Variable	Coefficient	t-Statistic	Prob.
D(GOV_DEBT)	-11.454	-1.197	0.240
D(EXPORTS)	-112.058	-2.140	0.040**
D(EXPORTS(-1))	-210.899	-2.863	0.007***
D(EXPORTS(-2))	177.697	2.719	0.010***
D(FDI)	171.892	2.250	0.032**
D(GNE)	-39.031	-3.004	0.005***
D(GNE(-1))	-168.656	-3.023	0.005***
D(GNE(-2))	94.891	1.997	0.055**
Coint Eq (-1)	-1.455	-8.628	0.000***

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

$$\text{Cointeq} = \text{GDPG} - (1.8850 * \text{GOV_DEBT} - 22.7641 * \text{EXPORTS} + 247.9615 * \text{FDI} + 37.2033 * \text{GNE} - 35.3868$$

The long-run coefficients are summarised in Table 5.4[b] below and show that similar to the short-run results in Table 5.4[a], government debt is negative but not significantly associated with economic growth.

Similar to the short run results in Table 4.2 [a], the long run results indicate that FDI has a positive and highly significant association with economic growth, which accords with Dogan (2014). The implication is that in the long-run, FDI has the biggest impact on economic growth. Among the factors that have promoted FDI in Zambia include a conducive post-liberalization business environment, which includes the establishment of the Zambia Development Agency (ZDA) whose main objective is to attract FDI

through the creation of a favourable investment climate, infrastructure provision, partnership facilitation, and the smoothening of bureaucratic procedures (ZDA, 2015).

This finding are however contrary to Ndaba (2015), who concludes that whilst FDI contributes to an increase in output of the mining sector due to recapitalization it does not result in GDP growth, and rather increases dependence on the extractive sector. The reason being that most of the FDI goes to the mining sector, which limits the country’s ability to diversify its production structures in favour of manufacturing exports that are necessary to sustain long-term economic growth, and has less spill-over effects. An export-oriented trade regime is however important if the benefits of FDI-led growth are to be fully realised (Balasubramanyam, Salisu and Sapsford 1996, Bhagwati 1998, de Mello 1997, Huang 2004, Ram and Zhang 2002, Zhang 2001, Busse and Groizard 2006).

5.5 Diagnostic Results

Having run the ARDL models, a set of diagnostic tests are next conducted to confirm that the models are statistically valid, reliable, and stable. The diagnostic tests include the Breusch-Godfrey Serial Correlation test, White (1980) hetereskedasticity test, and cumulative sum (CUSUM) and the CUSUM of square test on the recursive residuals. The diagnostic test results are discussed below.

5.6 Breusch-Godfrey Serial Correlation Test

The results for serial correlation using the Breusch-Godfrey serial correlation test is summarised in Table 5.6 [a] below and indicates that the null hypothesis of no serial correlation cannot be rejected and thus there is no evidence of serial correlation.

Table 5.6 [a]: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.162136	Prob. F(4,25)	0.3511
Obs*R-squared	6.741895	Prob. Chi-Square(4)	0.1502

Furthermore, the absence of serial correlation in the ARDL model when testing for residuals can be confirmed from the Durblin-Watson (DW) statistic which is closer to 2 as shown in Table 5.6 [b]. For serial correlation to be absent, the DW statistic should be around 2. The results from the test show that the DW statistic is 2.06 which confirm the absence of serial correlation.

Table 5.6 [b] ARDL Test for Residuals

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPG(-1)	-0.098	0.338	-0.291	0.773
GOV_DEBT	-3.753	11.126	-0.337	0.738
GOV_DEBT(-1)	6.750	11.360	0.594	0.557
EXPORTS	-18.550	53.958	-0.343	0.733
EXPORTS(-1)	-12.844	58.260	-0.220	0.827
EXPORTS(-2)	36.732	80.836	0.454	0.653
EXPORTS(-3)	3.896	67.543	0.057	0.954
FDI	6.615	88.029	0.075	0.940
FDI(-1)	15.228	87.116	0.174	0.862
GNE	-6.357	13.462	-0.472	0.640
GNE(-1)	-3.333	16.771	-0.198	0.844
GNE(-2)	23.023	60.801	0.378	0.708
GNE(-3)	8.266	48.981	0.168	0.867
C	-22.110	43.835	-0.504	0.618
RESID(-1)	-0.117	0.388	-0.302	0.765
RESID(-2)	-0.421	0.244	-1.721	0.097
RESID(-3)	-0.243	0.225	-1.083	0.289
RESID(-4)	-0.252	0.237	-1.063	0.297
R-squared	0.156788	Mean dependent var		6.61E-16
Adjusted R-squared	-0.416596	S.D. dependent var		2.791982
S.E. of regression	3.323040	Akaike info criterion		5.534522
Sum squared resid	276.0649	Schwarz criterion		6.271769
Log likelihood	-100.9922	Hannan-Quinn criter.		5.806396
F-statistic	0.273444	Durbin-Watson stat		2.067204
Prob(F-statistic)	0.996136			

5.7 White Heteroskedasticity Test

The results of the White (1980) heteroscedasticity test are summarised in Table 5.7 [a] below and show that the null hypothesis that the errors are both homoscedastic and independent of the regressors cannot be rejected because all the three statistics fail to reject the null hypothesis of homoscedasticity and independence of the regressors.

Table 5.7 [a]: White Heteroskedasticity Test Results

F-statistic	1.439553	Prob. F(10,35)	0.2042
Obs*R-squared	13.40596	Prob. Chi-Square(10)	0.2019
Scaled explained SS	8.722847	Prob. Chi-Square(10)	0.5586

5.8 Recursive Tests

To test for parameter and model stability, the study used the CUSUM test and the CUSUM of squares test on the recursive residuals. According to Brown et al. (1975), CUSUM test detects systematic changes from the coefficients of regression, while CUSUM of squares is able to detect the sudden changes from constancy of regression coefficients. The results for the CUSUM and CUSUM of squares are presented in Figures 4.7 [a] and 4.8 [b] respectively. As can be seen, both the CUSUM and CUSUM of square statistics remain within the error bands or the critical values at 5% confidence interval. This indicates structural stability in the residuals of the equation for economic growth and thus the model is deemed to be stable and correctly specified.

Figure 5.8 [a]: CUSUM Results

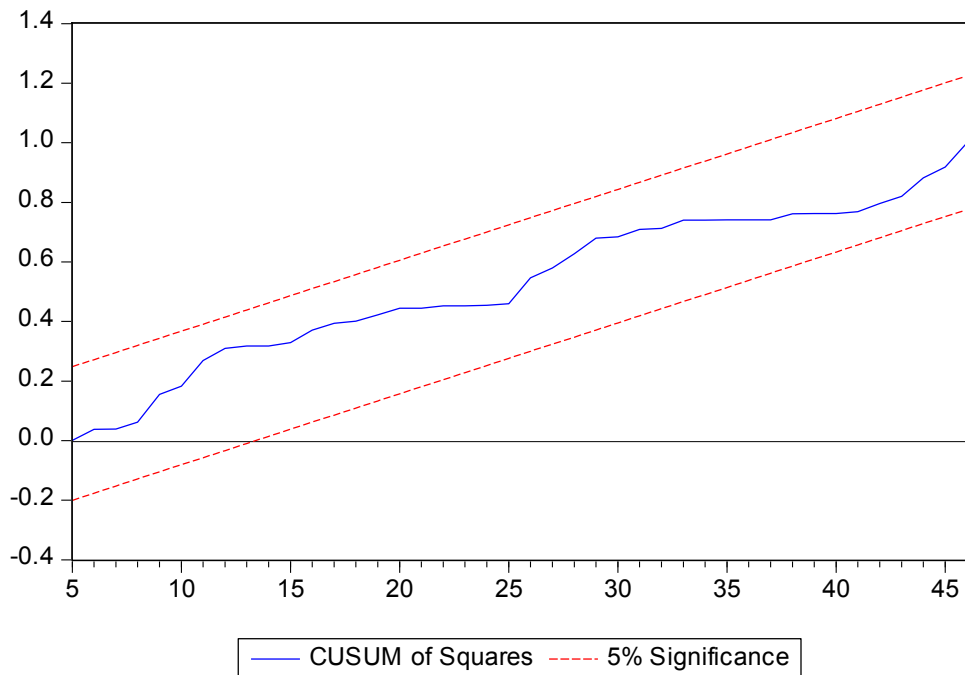
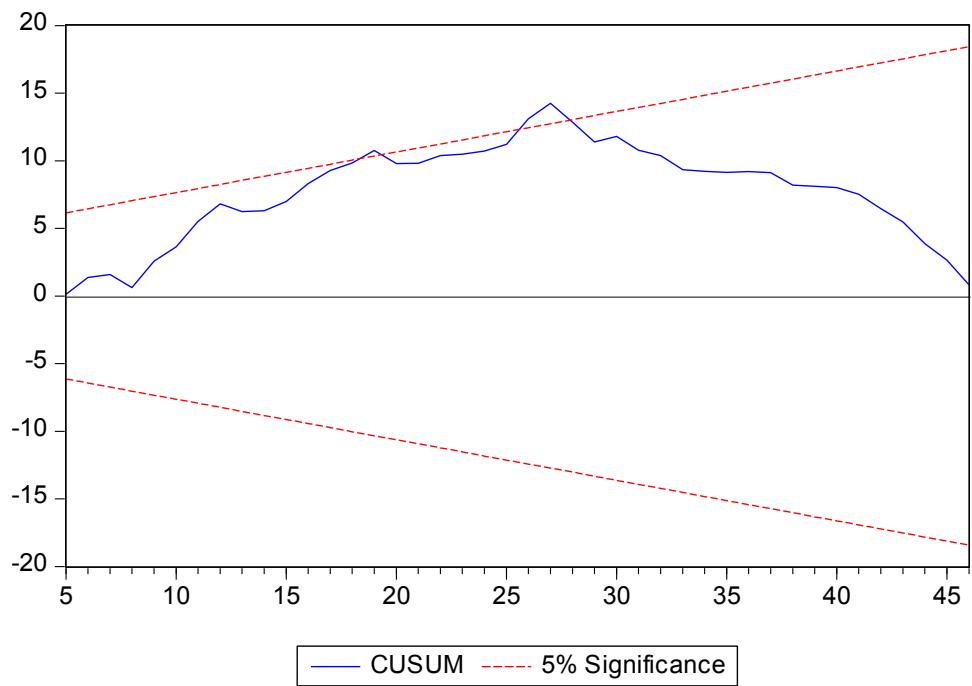


Figure 5.8 [b]: CUSUM Sum of Squares Results



Chapter 6

RESEARCH CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the conclusions of the study, the policy implications of the findings, and recommendations for future research.

6.1 Conclusions

This study used the Auto Regressive Distributed Lag (ARDL) method to investigate the relationship between government debt and economic growth in Zambia over the period of 1970-2015 so as determine (i) whether public debt spurs or hinders economic growth in Zambia, (ii) whether public debt has a positive or negative effect on economic growth, and (iii) if there is a long-run relationship between economic growth and public debt.

The results show that public debt does not spur economic growth in Zambia. The relationship between public debt and economic growth is also found to be statistically insignificant suggesting that despite having a long-run relationship with economic growth, government debt has not been significant in spurring economic growth.

6.2 RECOMMEDATIONS AND POLICY IMPLICATIONS

The findings that public debt does not spur economic growth in Zambia derives the following recommendations:-

- i. The main risk to public debt and economic growth dynamics in Zambia comes from lower GDP growth. This therefore highlights the need for Zambia to embark on a diversification promotion strategy to mitigate the risk and vulnerabilities associated with dependence on copper mining. Furthermore, there is a need for a greater diversification of the export base so as to promote economic growth and generate the foreign exchange required for debt servicing.
- ii. There is a need for the government to borrow prudently at interest rates that will not hinder economic growth. It is therefore important that the government focus more on borrowing from multilateral and bilateral sources on more favourable terms than the international bond and capital markets. The study further recommends that existing public debt from the international capital markets should be refinanced with multilateral and bilateral loans.

- iii. For public debt to make a positive contribution to economic growth in the long-run there is a need for proper public debt management, which should include the establishment of a public debt management strategy (the World Bank, IMF and the Macroeconomic and Financial Management Institute of Eastern and Southern Africa (MEFMI) have offered support in this regard). Among the objectives of the public debt management strategy should be the establishment of a sinking fund to meet repayments from the Euro bonds and the refinancing risks; and the improvement and revision of the Public Finance Act (PFA) so as to be in line with the internationally accepted practices of public debt management (IMF 2015).

6.3 RECOMMENDATIONS FOR FUTURE STUDIES

This study and the findings provides opportunities and room for future empirical studies and research to be conducted on whether government debt hinders or spurs economic growth. The study can be extended and improved in the following ways:-

- (a) Since independence, Zambia has had different political and economic regimes. These could be broadly categorised as controlled and liberalised economic regimes. An empirical study could therefore investigate the effects of these different political and economic regimes on economic growth.
- (b) Most empirical studies done on the effects of government debt on economic growth have focused more on developed countries. These countries typically borrow in their own currencies. However, most Africa countries borrow in foreign currency and are heavily reliant on commodity prices. Therefore, commodity slumps will likely lead to slowing economic growth and stressed state budgets and eventually increased government debt contraction for most African commodity-reliant countries. This study could thus be extended to most of the African countries. Currently, most studies seem to be focusing on debt stock analysis and sustainability especially in the short term and not on the long term effects and relationship of public debt and economic growth.
- (c) This study could be expanded to take account of the possible differing effects of domestic versus foreign debt.
- (d) Future studies should also look at the actual public debt to GDP threshold at which economic growth is impaired in Zambia. This will be helpful in establishing the trigger point and benchmark for public debt sustainability in Zambia.

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Appendices

Raw Data

YEAR	GDPG	GDP	EXPORTS	GNE	GOV_DEBT	FDI
1970	4.80	10.50	0.05	1.03	0.00	0.00
1971	-0.09	10.50	0.05	1.04	0.00	0.00
1972	9.21	10.54	0.05	1.03	0.00	0.00
1973	-0.96	10.53	0.05	1.02	0.00	0.00
1974	6.43	10.56	0.05	1.03	0.00	0.00
1975	-2.27	10.55	0.05	1.03	0.00	0.00
1976	6.22	10.58	0.05	1.00	0.00	0.00
1977	-4.56	10.56	0.05	1.00	0.00	0.00
1978	0.55	10.56	0.05	0.99	0.00	0.00
1979	-3.02	10.55	0.05	1.00	0.00	0.00
1980	3.04	10.56	0.04	1.00	0.00	0.00
1981	6.17	10.59	0.03	1.00	0.00	(0.00)
1982	-2.81	10.57	0.04	0.99	0.00	0.00
1983	-1.97	10.56	0.04	0.99	0.00	0.00
1984	-0.34	10.56	0.04	0.99	0.00	0.00
1985	1.62	10.57	0.03	0.99	0.00	0.00
1986	0.72	10.57	0.04	1.00	0.00	0.00
1987	2.68	10.58	0.03	1.00	0.00	0.00
1988	6.28	10.61	0.03	1.00	0.00	0.00
1989	-1.02	10.61	0.03	1.00	0.00	0.00
1990	-0.48	10.60	0.03	1.00	0.01	0.00
1991	-0.04	10.60	0.03	0.99	0.01	0.00
1992	-1.73	10.60	0.03	0.99	0.02	0.00
1993	6.80	10.63	0.03	0.99	0.07	0.00
1994	-8.63	10.59	0.03	0.99	0.13	0.00
1995	2.90	10.60	0.03	1.00	0.19	0.00
1996	6.22	10.62	0.03	1.01	0.24	0.00
1997	3.81	10.64	0.04	1.01	0.25	0.01
1998	-0.39	10.64	0.04	1.01	0.37	0.01
1999	4.65	10.66	0.07	1.00	0.39	0.01
2000	3.90	10.68	0.06	1.03	0.07	0.01
2001	5.32	10.70	0.07	1.06	0.06	0.01
2002	4.51	10.72	0.09	1.06	0.08	0.03
2003	6.94	10.75	0.13	1.03	0.10	0.03
2004	7.03	10.78	0.20	1.01	0.10	0.03
2005	7.24	10.81	0.26	0.94	0.10	0.02

2006	7.90	10.84	0.26	0.92	0.17	0.03
2007	8.35	10.87	0.27	1.00	0.16	0.07
2008	7.77	10.91	0.24	1.06	0.16	0.04
2009	9.22	10.95	0.35	0.89	0.18	0.04
2010	10.30	10.99	0.37	0.94	0.19	0.09
2011	5.62	11.01	0.37	0.95	0.23	0.05
2012	7.57	11.04	0.43	0.97	0.30	0.08
2013	5.13	11.07	0.48	0.98	0.35	0.10
2014	5.02	11.09	0.52	1.38	0.46	0.07
2015	3.22	11.10	0.54	1.60	0.60	0.11