

**Examining the Impact of External Debt on Economic Growth in
Zimbabwe (1980-2012)**



**University of Zimbabwe
Department of Economics**

by

Getrude Njokwe

**A Dissertation Submitted in Partial Fulfilment of the
Requirements for the Award
of
Master of Science Degree in Economics**

Abstract

This study sought to establish the impact of external debt on economic growth in Zimbabwe. The study was motivated by two reasons: government's reliance on external debt as a way of resolving the debt crisis by seeking new loans, and the citing of unlocking of new external finance as the prime objective of resolving the debt crisis. Thus, despite that the country's debt is huge and has become unsustainable, there is an indication of the need to continue borrowing. External debt was measured as the percentage of external debt to GDP and economic growth was measured by growth in GDP. The ARDL-ECM econometric approach was applied on the data for the years 1980-2012 sourced from the World Bank, World Development Indicators. External debt was found to have a consistent negative and significant impact on GDP growth in the short run and the long run. External debt servicing was however found to have a positive and significant relationship with GDP growth in the long run. The study confirmed the conventional wisdom that growth in fixed capital formation promotes growth in GDP while trade openness constrains growth. Based on these results, the study recommends that Government should not rely on external borrowing. The government has to use domestic resources and widen its non-debt financing of operations. Borrowing legislation needs to be in place to ensure rational borrowing. External debt management is also important in ensuring that borrowed funds are spent on key investments that include public roads, rail, energy and human capital projects that will serve to attract private capital accumulation. On the debate on external debt resolution, the study recommends seeking debt relief and mobilization of domestic resources as viable and sustainable options compared to new borrowing for the sake of loan repayment.

Dedications

To my family.

Acknowledgements

I thank my Supervisors, Dr P.G.Kadenge and Dr H. Zhou for their valuable effort of guiding this research project. Further appreciation goes to the Master of Economics Class of 2015.

Table of Contents

Abstract.....	i
Dedications	ii
Acknowledgements.....	iii
Tables.....	vi
Figures	vii
Acronyms.....	viii
Chapter One: Introduction	1
1.0 Introduction.....	1
1.1 Statement of the Problem.....	2
1.2 Objectives	4
1.3 Research Questions.....	4
1.4 Hypothesis.....	4
1.5 Justification of the Study	4
1.6 Methodology.....	5
1.7 Organization of the Study	5
Chapter Two: Background of the Study	6
2.0 Introduction.....	6
2.1 Economic Growth in Zimbabwe	6
2.1.1 The Period of Economic Controls (1980-1989).....	7
2.1.2 The period of Market-led Reforms (1990-1997)	7
2.1.3 The Decade of Economic Crisis, 1998-2008	8
2.1.4 The Period of Economic Transition (2009-2014)	9
2.2 Debt Development in Zimbabwe	10
2.2.1 Composition of External Debt	12
2.3 Conclusion	13
Chapter Three: Literature Review.....	14
3.0 Introduction.....	14
3.1 Solow-Swan Growth Model	14
3.2 Endogenous Growth Theories.....	16
3.2 The Two Gap Model.....	16
3.3 The Debt-Overhang Hypothesis.....	18
3.4 Empirical Literature	19
3.5 Conclusion	24

Chapter Four: Methodology.....	25
4.0 Introduction.....	25
4.1 Model Specification.....	25
4.1.1 Measurement and Justification of variables.....	26
4.2 Estimation Procedure and Econometric Tests.....	28
4.3 Sources of Data.....	29
Chapter Five: Presentation and Analysis of Results.....	30
5.0 Introduction.....	30
5.1 Descriptive Statistics.....	30
5.2 Econometric Tests.....	30
5.3 Presentation of Results.....	32
5.4 Interpretation and Discussion of Results.....	34
Chapter Six: Conclusion and Policy Recommendations.....	36
6.0 Introduction.....	36
6.1 Conclusion of the Study.....	36
6.2 Policy Recommendations.....	37
6.3 Weaknesses of the Study.....	38
6.4 Areas of future Research.....	38
References.....	39

Tables

Table 1: Economic Performance Indicators of Zimbabwe, 1980-1996	8
Table 2: Descriptive Statistics	30
Table 3: Correlation Coefficients Matrix.....	31
Table 4: ADF test for unit root in levels	31
Table 5: ADF test for unit root in first differences	32
Table 6: Long Run Coefficients: Dependent Variable, LGDP	33
Table 7: Short run Coefficients, Dependent Variable D(LGDP).....	33

Figures

Figure 1: GDP and External Debt Performance for Zimbabwe	6
--	---

Acronyms

ADF	Augmented Dickey-Fuller
AfDB	African Development Bank
ARDL ECM	Auto-Regressive Distributed Lag-Error Correction Model
DRC	Democratic Republic of Congo
ESAP	Economic Structural Adjustment Programme
FTLRP	Fast Track Land Reform Programme
GDP	Gross Domestic Product
IMF	International Monetary Fund
LDCs	Less Developed Countries
LEDRIZ	Labour and Economic Development Research Institute of Zimbabwe
MDCs	More Developed Countries
MDGs	Millennium Development Goals
MoFED	Ministry of Finance and Economic Development
MTP	Medium Term Plan
OLS	Ordinary Least Squares
RBZ	Reserve Bank of Zimbabwe
SSA	Sub-Saharan Africa
STERP	Short Term Economic Recovery Programme
UNDP	United Nations Development Programme
WB	World Bank
WBDI	World Bank Development Indicators
ZAADDS	Zimbabwe Accelerated Arrears, Debt and Development Strategy
ZimAset	Zimbabwe Accelerated Programme for Social and Economic Transformation.
ZIMPREST	Zimbabwe Programme for Economic and Social Transformation
ZimStat	Zimbabwe National Statistics Agency

Chapter One: Introduction

1.0 Introduction

Among the developmental challenges facing the economy of Zimbabwe, indebtedness ranks the most and demands resolution. Zimbabwe is in debt crisis causing a lot of political, academic and economic debate on whether external debt is important for the development of the country or not. United Nations Development Programme (UNDP) (2010) stated that Zimbabwe has a huge and unsustainable external debt acting as the major impediment to the growth trajectory and recovery of the economy. The total unaudited external debt stood at US\$10.7 billion (113.5% of GDP) by the end of 2011. In 2012, **Gono posited** that the external debt constitutes US\$8 billion of Zimbabwe's total debt and is a developmental constraint. External debt refers to the country finances borrowed from foreign lenders that include international institutions, commercial banks and governments that carry an interest and future repayment. External debt is important to a country facing a resource gap, thus it can lead to an increase in the amount of goods and services produced by a country (economic growth).

Literature on the debt-growth relationship in Zimbabwe is limited and therefore inadequate to guide policy. The debt strategy enshrined in the Zimbabwe Accelerated Arrears, Debt and Development Strategy (ZAADDS) (2012) argued that debt overhang has become a serious developmental constraint for the country since the turn of the century. This document articulates a strategy to clear most of the government arrears and debt back to sustainable levels; this will be achieved through borrowing from creditors and development partners at concessionary rates and leveraging on the natural resources of the country.

In the ZAADDS, resolution of debt is meant to ensure access to external funding. Among the reasons to resolve debt is to improve the credit rating of the country so that private companies can access long term foreign finance (Manungo, 2013). In the same vein, the government can get access to new financing for infrastructural projects and social programmes that will spearhead the achievement of Millennium Development Goals (MDGs). Despite this weight of importance being credited to external debt, Jones (2011) questioned the contribution of debt to growth. In particular, Jones (2011) questioned the extent to which debt inherited at independence, and that contracted post the year 1980, has contributed to social and economic

wellbeing of Zimbabweans. The question is, “Is external debt good for economic growth of Zimbabwe?”

1.1 Statement of the Problem

External debt has been consistently increasing in Zimbabwe while lacklustre performance in economic growth was experienced over the last three decades. It is believed that debt has grown to unsustainable levels compromising growth (Kadenge, 1999; Gono, 2012; Manungo, 2013). Resolving the debt crisis is one of the fundamental policy debates in Zimbabwe. Debt default has further worsened the credit rating of the country thereby depriving the country of the much needed capital for economic recovery. This is through lack of access to foreign direct investment and developmental facilities from the IMF and the World Bank. The country has a poor credit rating because of debt default, limiting the domestic private sector access to foreign lines of credit. The country has therefore gone to the extent of drafting a debt strategy known as the ZAADDs that seeks to resolve the debt problem.

In the strategy, (ZAADDs, 2012), borrowing to finance repayment of some of the debts with the IMF and the World Bank are suggested as the possible options. Reliance on external debt in this strategy has two implications on the debt-growth relationship in Zimbabwe; firstly, debt is good for growth. This is reflected by the country proposal to clear previous debt using new debt. Further to this, the foresight of debt resolution is primarily the need for new external finance for infrastructural and other developmental needs of the recovering economy which is experiencing a huge resource gap of about US\$27 billion (Zim Asset, 2013). Secondly, the pronouncements that debt is a serious developmental impediment to growth since the turn of the century suggest that, high debt is bad for growth. The debt overhang hypothesis is therefore believed to exist in Zimbabwe. The second pronouncement raises the question on whether debt, at low levels, has been good for growth or not for the past three decades.

This study seeks to empirically establish the economic contribution of external debt in Zimbabwe. While the debt strategy may help to unlock credit lines and capital flows into the key export and productive sectors of the country in the short to medium term, borrowing may not be favourable for future long term economic progress. Some of the country's current debt components are loans borrowed for the purposes of debt repayment in the 1980s and 1990s (Jones, 2011). Thus, the past evidence on the relationship between debt and growth may be

important in guiding the current policy option likely to be taken by the government if approved by some of its creditors. Further, empirical evidence on debt and growth may guide the borrowing behaviour of government once it clears its arrears and is able to borrow from multilateral and bilateral institutions.

There are few studies that have evaluated and assessed the impact of government borrowing on the economic progress of the country. Jones (2011) posited that, while it is well known in the United Kingdom (U.K.) and the world, that the history of Zimbabwe is characterized by political oppression, economic chaos and social division, little is known on the long term role that these external governments, international institutions and private companies have played in laying the foundations of economic misfortunes in Zimbabwe (through debt). As cited by Jones (2011), Muchena (2011) (civil organizations) argued that Zimbabwe should not commit resources to debt repayments unless the debt is audited and the role that debt has played in impoverishing Zimbabweans is established. This indicates lack of evidence on the impact of debt on economic growth in Zimbabwe. It is therefore imperative to carry out rigorous studies, reiterated in different sample time periods and using different methodologies, in an attempt to contribute to debt policy and debt management debates in the most satisfactory manner.

There exist very few studies on the impact of external debt on growth in Zimbabwe and most of them focused on both external and domestic public debt. The studies examined the effects of total debt stock on growth (Kadenge et al, 2012) and effects of debt on poverty (Saungweme *et al.*, 2013). Empirical examination of aggregated debt stock will lack precision on the effect of external debt on growth as this component of debt reflects net resource outflows through external debt servicing hence is likely to burden the country as compared to domestic debt. Saungweme used an Ordinary Least Squares (OLS) approach to estimate the debt-poverty relationship in Zimbabwe. This estimation technique likely suffers from endogeneity and non-linearities that exist in the debt-growth relationship. Thus, results from the above mentioned studies are possibly inadequate for policy making hence the need to reiterate the same studies based on different methodologies and data set.

A study conducted on the impact of external debt on economic growth in Zimbabwe by Nakunyada (2001) has some methodological flaws. The study analyzed the impact of external debt on Zimbabwe's economic growth covering the period 1980 to 1999, which implies an

information gap since the year 2000 to date. On the other hand, the study used the Johansen test to test for cointegration which may not be the best test for small samples. The results may be distorted since it heavily depends on asymptotic properties (Sjo, 2008). In addition, failure to include lags in the models may have led to biased estimates as growth may both be affected by the past and future debt as well as initial levels of growth. None of the studies mentioned above quantified the impact of external debt on economic growth. This study attempts to correct these methodological flaws.

While the above few studies have indicated a negative relationship between debt and growth, external debt in Zimbabwe had been on the rise and indications are that the country needs more external finance. In fact, one of the major reasons of resolving debt problem is to ensure that the country has access to new financing (external borrowing). Is external debt good for growth? We found out that there is no single study in Zimbabwe that can absolutely predict the impact of external debt on economic growth. Therefore, this study seeks to provide empirical evidence on this subject through the use of a different methodology from those of past studies and also including the period of economic decline (2000-2008) in the evaluation process.

1.2 Objectives

- To establish the short and long term impact of external debt on economic growth in Zimbabwe
- To provide direction to policy makers in Zimbabwe based on the results.

1.3 Research Questions

- What is the impact of debt on growth in Zimbabwe?
- What policy guidance can be deduced from the study results?

1.4 Hypothesis

The study will test the hypothesis that debt has a negative impact on economic growth.

1.5 Justification of the Study

An in-depth analysis of the impact of Zimbabwe's public external debt stock on economic growth that proffers solutions and policy recommendations aimed at coming up with successful debt management plan for sustained economic growth is required. This will enable the country to objectively source finance for the successful implementation of the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim-Asset). The study is critical for

policy makers, academia and the general public in understanding the impact of external debt and thereby advising on future borrowing. The evaluation and analysis of results will positively contribute to the debate on debt management in the country. It will be used as a guiding tool to update policy dialogue on debt, debt resolution and debt management. The study is valuable to government policy makers, civil society, international financial institutions, academics and researchers in understanding the long term impact that external debt has had on economic growth.

1.6 Methodology

This study applies the Auto-Regressive Distributed Lag model of the Error Correction approach (ARDL-ECM) to investigate the relationship between external debt and economic growth. The ARDL-ECM model was chosen based on its ability to correct for endogeneity and heteroskedasticity if appropriate lags are used. The technique further enables us to outline the short run and long run relationships in a model. Model specification is guided by the Solow-Swan (1956) neoclassical growth model. Estimation is done using Eview 7.1.

1.7 Organization of the Study

This dissertation is structured as follows: Chapter two provides an overview as well as the progression of economic growth and external debt progression in Zimbabwe. Chapter three looks at the theoretical views on the growth effect of external debt. The Chapter also scrutinizes empirical studies that were done on Zimbabwe and elsewhere in the world in an attempt to focus the present study. Based on theoretical and empirical literature review, Chapter four outlines the methodology employed in this study. Chapter five gives an econometric analysis, presentation and interpretation of results. Finally, Chapter six concludes the study by giving the study conclusions and policy recommendations, and weaknesses of the study as well as identification of areas for future research.

Chapter Two: Background of the Study

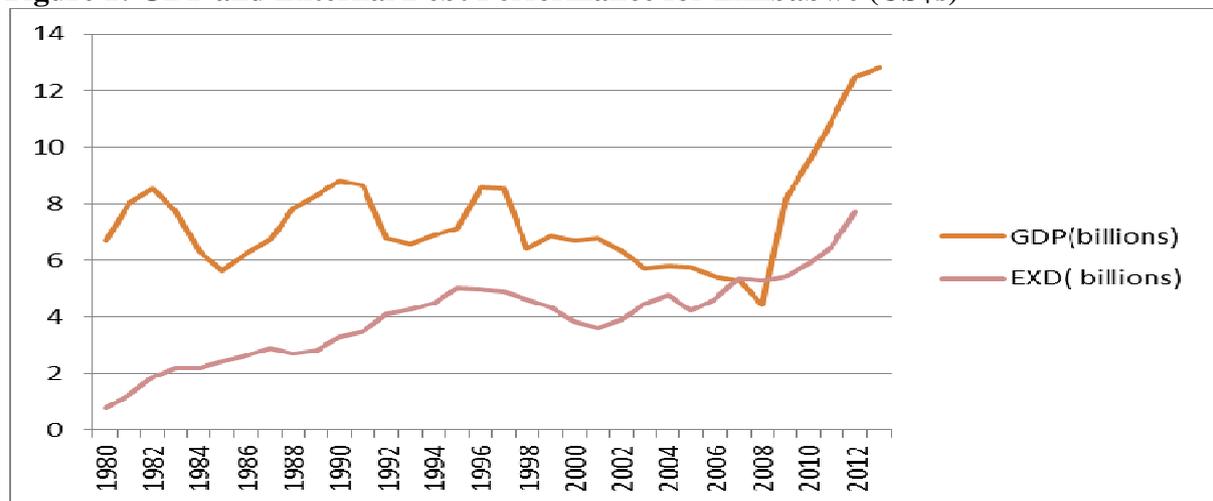
2.0 Introduction

This chapter describes the economic performance and debt trends for Zimbabwe over the study period. Focus is on the performance of the country in the four economic periods: 1980-1989, 1990-1997, 1998-2008 and 2009-2014. This discussion enhances understanding of debt and growth in Zimbabwe, thus further clarifying the extent of the problem that this study is addressing.

2.1 Economic Growth in Zimbabwe

The economic performance of Zimbabwe as measured by GDP can be categorised into four distinct periods. These are: the period of modest growth (1980-1989), period of economic market led reforms (1990-1997), period of economic meltdown (1998-2008) and the period of economic recovery (2008-2014). These periods are characterised by distinct macroeconomic performance, policies and droughts. The three decades under consideration had lacklustre and largely oscillating economic growth as depicted in figure 2.1 below.

Figure 1: GDP and External Debt Performance for Zimbabwe (US\$)



Data Source: World Bank Development Indicators, 2014

2.1.1 The Period of Economic Controls (1980-1989)

This period experienced modest economic growth as GDP grew at an average rate of 4.2 % (LEDRIZ, 2012). Other economic indicators performed fairly well (average annual inflation was 12% and employment growth was 0.2%). Economic growth can be explained by a robust agricultural sector and a diversified manufacturing sector that existed during this period. The decade benefited from the lifting of sanctions previously imposed on the Unilateral Declaration of Independence (UDI) government, positive growth in world markets, good rainfall, redistributive policies that stimulated aggregate demand and opening of external markets (Makina, 2010). While the government implemented macroeconomic controls, the economy performed generally well through the diversified commercial sector and a stronger agricultural sector. However, economic growth was high during the first half of this decade and declined in the second half, indicating constrained growth.

2.1.2 The period of Market-led Reforms (1990-1997)

The period 1990-1997 is primarily characterised by the adoption of the market-led reforms prescribed in the Economic Structural Adjustment Programme (ESAP) that was adopted in 1991. ESAP transformed the government approach from a state-led growth towards market based development strategy. LEDRIZ (2012) indicated that the adoption of ESAP was recognition by the government that the state-led growth of the 1980s failed to generate sufficient jobs largely because of the lack of investment. Mumbengegwi (1998) indicated that policies followed in the 1990s were meant to reduce budget deficits for macroeconomic stability. ESAP was meant to open up the market through liberalization of trade, financial and labour markets and the dismantling of price controls, subsidies and other regulations of the economy. Opening up of the economy was expected to achieve annual GDP growth rate of 5%, increase savings to 25% of GDP and investment of 25% of GDP and reduce budget deficit from an average of 10% of GDP in the late 1980s to 5%.

Economic growth performed dismally during this period. Real GDP growth averaged 2.8 % while annual inflation rate averaged 26.6% (LEDRIZ, 2012). Employment growth rate slowed down to 0.12% leading to unsustainable unemployment levels. The contribution of the manufacturing sector to GDP declined from 20.4% the 1980s to 16% in the 1990s. The agricultural sector also slowed down from contributing 16% of GDP in the 1980s to 14% in the ESAP period. Despite the failure to achieve its economic targets, ESAP period improved savings and investment marginally as indicated in Table 2.1 below. Overall, the ESAP period did not improve the economic performance of Zimbabweans.

Table 1: Economic Performance Indicators of Zimbabwe, 1980-1996

Indicators	1980-1990	1991-1996
	%	%
Real GDP growth	4.2	2.8
Average Annual Inflation	12.0	26.6
Employment Growth	1.9	0.1
Manufacturing/GDP	20.4	16.0
Agriculture/GDP	16.2	14.0
Mining/GDP	4.3	4.0
Savings/GDP	18.0	23.0
Investment/GDP	17.0	21.7
Budget Deficit/GDP	-3.0	-5.8
Export growth	0.2	0.1
Export/GDP	23.0	41.0

Source: Central Statistical Office and the Reserve Bank of Zimbabwe (various publications).

ESAP was abandoned in 1995 and new economic blue prints were adopted to guide the economy. Economic growth and policy measures prescribed in the period post 1995 were not of major difference from the ESAP period. One of the policy documents that guided development was the Zimbabwe Programme for Economic and Social Transformation (ZIMPREST). ZIMPREST was never implemented. Policies followed during this part of the decade were ad hoc in nature characterised by inconsistencies and reversals. Economic progress was at minimal and far from targeted.

2.1.3 The Decade of Economic Crisis, 1998-2008

This decade realised an overall decline in economic growth of about 49% (Makina, 2013). Failure of ESAP and increased discontent and protest by civil society marked the beginning of the economic crisis in 1997. Key features that precipitated the economic crisis during this decade include the decisions to pay war veterans unbudgeted gratuities and pensions on the 14th of November 1997, the fixing of the exchange rate starting in the month of February 1998 and the adoption of price controls on all basic commodities that began in the same month. Further to this, unbudgeted participation of Zimbabwe in the DRC war in August 1998 constrained government finances. The onset of the Fast Track Land Reform Programme in June 2001 severely disturbed agricultural production. This disturbed the flow of raw materials to the manufacturing sector.

The disturbance in agricultural production destroyed the backward and forward linkages between the manufacturing and agricultural sector. The 1994/5 drought, and state controls on prices, exchange rate and the financial markets were a binding constraint for economic

activity. As a result, key contributors to economic growth, thus agriculture, manufacturing and mining sectors dwindled. Economic activity was also suppressed by high money growth which culminated in hyperinflation. This contracted government revenue as well as the economic growth. Budget deficit increased from 6% in 1998 to 18% in 2000. Savings as a proportion of GDP declined from 15% in 1999 to 4% in 2008. Inflation reached the record level of 231 million % in June 2008. Cumulatively, economic growth contracted by 49% over the decade (1998-2008) as annual growth rate of GDP was -5.92 (Makina, 2013). This period is occasionally referred to as the lost decade given the decline in per capita income and deterioration of basic social services such as health and education.

2.1.4 The Period of Economic Transition (2009-2014)

From February 2009, the country started experiencing economic transition and recovery from the decade of economic meltdown. The introduction of the multiple currency system in February 2009 ended hyperinflation. The Short Term Economic Recovery Programme (STERP) I and II, and the Medium Term Plan (MTP) (2011-2015) largely drove growth as they ushered the revival of the productive sector, improved savings and investment through improvement of the investment climate, and ensured a stable macroeconomic environment. Growth during the period has been positive but largely fragile. The first period (2009-2012) experienced modest growth averaging 9.1% (AfDB, 2013). However, since the year 2013 real GDP growth has slowed down; the year 2013 achieved a growth rate of 5% of GDP which was expected to further slow down to 3.2% in 2014 (AfDB, 2013). Thus, the early years of economic recovery experienced high and positive growth while low and positive growth was realized since the year 2013.

The fragility in growth is a concern for the recovering economy. Poor growth performance is a result of poor infrastructure in roads, water and energy that limits the productiveness of the recovering economy and reduces its competitiveness. Lack of finance for recapitalisation of the manufacturing and mining industries further constrain growth. Finance is lacking because the country has low savings (bank deposits are mainly short term deposits) while access to external finance is constrained by poor credit rating of the country (due to high and defaulted external debt). Government is operating on a limited and declining fiscal space and is under pressure from high employment costs consuming more than 72% of the national budget. It was indicated in the new economic blue print, Zim Asset (2013), that the country needs about US\$27 billion to meet its developmental needs against its budget of US\$4.1 billion and total GDP of US\$13 billion. The above mentioned constraints limited the recovery of the country.

2.2 Debt Development in Zimbabwe

Figure 2.1 above indicated a consistently growing debt over the period 1980 to 2012. At independence in 1980, Zimbabwe inherited an external debt of US\$700 million from the Ian Smith government (15% of GDP). Jones (2011) stated that the inherited debt was contracted as a vehicle of funding the civil war during Ian Smith government, the debt was of high interest and short term nature; imposing a heavy burden to the post-independence government. In pursuit of its own economic and social policies, the government of Zimbabwean tapped into external financiers as domestic resources were exceeded by the needs. During the first decade after independence (1980-1989) external borrowing was necessitated by the need to expand funding of the health and education social sectors of the economy in order to reduce pre-independence social inequalities.

Borrowing during the first decade after independence was also necessitated by debt repayment, drought relief and national development. Jones (2011) noted that the inherited loans consumed 7%-15% of export income between 1981 and 1982 such that the government (with increased needs of reconstruction and inequality reduction) had to resort to external borrowing for reconstruction and debt repayment. Drought that hit the country in 1982, 1984 and 1987 reduced agricultural production, export income and the overall output of the economy. This induced shortage of foreign currency for both investment and debt repayment, thus forcing the government to further rely on external financing for debt repayment and drought mitigation. Loans were further constructed for developmental projects such as the Hwange Power Station. Continued increase in external debt during the period 1980-1989 is further accounted by the devaluation of the Zimbabwean Dollar (Z\$). External debt was on a positive growth path during the 1980s because repayment was mainly for the interest rate while borrowing was continued.

The country entered the second decade of independence (1990-1999) highly constrained by debt, spending 25% of export revenue on debt and 25% of government revenue on external debt. Social spending in education, health and other social sectors increased down side risks of the economy as budget deficits were unsustainable. The government adopted the liberalization programme, the Economic Structural Adjustment Programme (ESAP), meant to speed economic growth by removal of state controls of the economy and rationalizing government expenditure. The other key features of ESAP include trade liberalization, deregulation prices, devaluation of exchange rate and removal of labour laws. The ESAP

was supported by loans from, the World Bank, the IMF, AfDB and bilateral institutions. Loans were also provided to mitigate the effects of drought which occurred in the 1992/3 cropping season.

Throughout the 1990s, debt service averaged US\$600 million per annum, approximately 30% of export earnings (Jones, 2011). There were fewer loans contracted after the year 1995 when the government abandoned ESAP in favour of home grown economic policies. The debt stock started declining following non-contraction of new loans while debt repayment was continued, implying net-outflow of resources.

The period 2000 and 2008 was marked with debt default and rising debt stock with limited new loans. Zimbabwe defaulted on debt repayments obligations in the year 2000 resulting in suspension of loan disbursements and further access of finance from the World Bank, the IMF and foreign governments. Despite being under lending sanctions, Zimbabwe mainly accessed bilateral loans from China. These were for the funding of steel production, the construction of a defence college, funding agricultural production (fertilizers and equipment) and for export promotion (export credits). Debt stock continued growing over this decade of macroeconomic crisis as debt repayment was compromised and the country accessed minimal bilateral loans.

Zimbabwe's total public external debt during the period of macroeconomic stabilization remained above 60% of GDP largely due to accumulated arrears and interest. Gono (2012) indicated that the total debt for Zimbabwe was at US\$8.4 billion comprising of 81% in external debt and 19% in domestic debt. At the end of December 2013, external debt was estimated at US\$13.5 billion (IMF, 2013). Of the total external debt, public external debt constitutes 73 percent while publicly guaranteed debt is 20 per cent and the Reserve Bank of Zimbabwe (RBZ) debt constitutes 7 per cent. This huge external debt is regarded a major constrain of economic recovery from the decade long of economic decline (1998-2008).

Growth is limited by economic growth in the period post economic crisis. Accumulated external payment arrears have undermined the country's credit worthiness. This has limited the ability of the country to access new capital for recapitalization of industries and for operations. The country is also unable to access new finance from the multilateral and

bilateral lenders while it is facing a huge gap of about US\$27 billion. These views have prompted the government to devise a debt resolution strategy aimed at reducing the debt to sustainable levels. The strategy is a hybrid solution that combines the traditional debt mechanisms of using new loans to repay older loans and leveraging on the natural resources of a country.

2.2.1 Composition of External Debt

At the end of December 2013, total external debt to bilateral creditors stood at 54 per cent of which 41% are arrears (MoFED, 2014). Of the total bilateral debt, 82% is owed to Paris Club creditors while the other 18% is owed to the Non-Paris club. Multilateral creditors which include the IMF, the World Bank and AfDB are owed 46% of the total Zimbabwean external debt with arrears constituting 82% of the multilateral debt. Zimbabwe's arrears to the multilateral institutions are mainly owed to the World Bank (49%), AfDB (29%), IMF (6%) and others (16%).

The composition of the external debt outlined above have some important consequences on economic growth. Firstly, bilateral debt surpassed multilateral debt following the economic decline of the 1998-2008 decade. Before this period, debt was mostly contracted from multilateral institutions (Jones, 2011). Zimbabwe therefore relied more on multilateral debt until it was sanctioned in the year 2000 following debt default and the ensuing accumulation of arrears. The country then resorted to bilateral lending from the Asian countries particularly China. Multilateral debt is more concessionary; however it is attached to conditionalities. The debt conditions maybe misguided due to the creditors' lack of full knowledge and political and institutional understanding of the borrowing economy. Multilateral debt is also inflexible in debt servicing compared to bilateral debt. On the other hand, bilateral debt is more flexible on debt servicing but loans are frequently attached to material supply of inputs.

Input supply attached to bilateral loans has been and remains their feature. In the 1980s, loans extended to Zimbabwe by the British government were attached to supply of inputs for various projects; mechanisms meant to promote British exports (Jones, 2011). Since the decade of economic crisis, multilateral loans mostly provided by China are attached to input and contract supply. As an example, the loan for building the Defence College was contracted to a Chinese company to undertake the project. Experts and materials were also supplied by

Chinese companies. These developments prejudice the country of the multiple effects that the loan would generate if local companies were given the contract and materials were purchased locally. Bilateral lending of this nature is dangerous as the country is only left with the infrastructure to benefit from yet the funds are paid back to the bilateral lenders.

2.3 Conclusion

The discussion above indicates that Zimbabwe was in debt from 1980-2012 that grew dynamically to unsustainable levels. The pattern of economic growth has been oscillating throughout the four major growth phases highlighted as: period of modest growth (1980-1989), period of market led economic reforms (1990-1997), period of economic decline (1998-2008) and economic recovery phase (post 2009). The major composition of debt had been from multilateral lenders until the year 2000, when the country turned to bilateral creditors following debt default to multilateral institutions.

The increasing debt and lacklustre economic performance for the period under review (1980-2012) makes it difficult for one to understand why the government would want to continue relying on external finance. In addition, we have presented that Zimbabwe lacklustre economic growth path was affected by different macroeconomic policies (state controls, ESAP, ZIMPREST, FTLRP and droughts). It is therefore important to control for these factors in studying the debt growth relationship. Edet-Nkpubre (2013) indicated that it is interesting to continuously evaluate the debt-growth nexus even in countries where it has been widely examined, but particularly in those countries where debt is increasing while growth is non-impressive. Chapter three below discusses the literature that can help our understanding of the relationship between debt and growth.

Chapter Three: Literature Review

3.0 Introduction

In this chapter the study outlines the theoretical and empirical abstractions of the relationship between external debt and economic growth. We build our understanding of the problem we are attempting to solve from the neoclassical theory of economic growth, Two- Gap model and the Debt Overhang hypothesis. The section further review empirical literature on the relationship between external debt and economic growth in order to direct and position this study as well as to identify the variables included in the debt-growth model.

3.1 Solow-Swan Growth Model

Solow (1956) and Swan (1956) developed the basic neoclassical model that has famously guided the evaluation of economic growth across countries for the past decades. The model is based on the assumptions of a single composite good, two factors of production (labour and capital), two economic agents (firms and households) and a closed economy. The model is an extension of the classical growth function and it stipulates that economic growth is a function of capital accumulation. Taking the Cobb-Douglas function:

$$Y = Af(K, L) \dots\dots\dots (1)$$

where Y is aggregate output, A is technology, K is capital and L is labour. An increase in one factor of production, capital or labour, results in diminishing marginal returns. The model was reformulated to:

$$y = Af(k) \dots\dots\dots (2)$$

where y is the output per worker and k is capital per worker. The expression implies that output per worker is a function of capital per worker. Given equation (2) and assuming diminishing marginal returns, countries with small capital stocks tend to be more productive. On the demand side, Solow-Swan (1956) noted that income is either saved or consumed. In the model, savings are used for investment into capital accumulation (K); investment is a proportion of income. Given investment as a proportion (s) of income and a constant (exogenous) annual depreciation rate of δ , the law of motion that shows how capital accumulation depends on investment and capital depreciation is given by:

$$\Delta K = sY - \delta K \dots\dots\dots (3)$$

The model predicts that the population growth rate of n results in more labour force hence less capital per worker. Thus there is a negative relationship between population growth and the accumulation of capital. This can lead to modification of equation (3) above to:

$$\Delta k = sk - (\delta + n)k \dots\dots\dots (4)$$

Solow-Swan predicted a steady-state growth rate (y^*) where output per worker depends positively on savings rate and negatively on population growth rate and depreciation of capital. If technology (A) is static, population growth reduces per capita growth. In the long run GDP per capita growth equals to zero. Thus growth in savings affects growth in the short run (when growth adjusts to new equilibrium) through the accumulation of capital. Long run growth is therefore accounted by the accumulation of capital.

Steady-state is the long run equilibrium where depreciation in capital stock is equally offset by savings per worker. Knight *et al* (1993) stated that the Solow-Swan growth model envisages a steady-state equilibrium per capita level of income determined by the current technology (embodied in the production function) and the saving rates, population growth, and technical progress. The savings rates, population growth and technical progress are all assumed exogenous. The model has testable predictions as it allows savings, technical progress and population growth rates to differ across countries; it has testable predictions on economic growth.

The Solow-Swan model (1956) has been under considerable attack for its failure to explain the drivers of technical progress. It has also failed to outline the causes of observed cross country differences in economic progress. Barro and Sala-i-Martin (1992) also indicated that the condition of a negative correlation between growth in GDP per capita and the initial GDP per capita is disputed. Aghion and Howitt (2009) also stated that the neoclassical model of growth is highly ungenerousness but its major flaw is the failure to explain the causes of technical progress. The model further failed to offer channels through which the economic environment influences economic growth. However, given that technical change is initiated by economic decisions of profit seeking firms, funding of science, accumulation of human capital and other economic activities meant to influence human welfare, there is reason to believe that technical progress is endogeneous.

3.2 Endogenous Growth Theories

This group of theories stipulates that growth is an endogenous outcome of the economic system itself, not simply an outcome of the external forces that impinge from the outside. Endogenous models of growth have since been developed mainly from the neoclassical insinuations that are: A is exogenous, growth for low and high income countries converge and the need for an alternative to perfect competition. Arrow (1962) specified an explicit function where growth can be sustained endogenously ($Y = A(K)f(K, L)$). The function implied that technological progress is enhanced by the accumulation of capital. Lucas (1988) altered the neoclassical growth model and specified a growth function where human capital explains technical progress ($Y = A(H)f(K, H)$). Romer (1994) stated that Arrow (1962) and Lucas (1988) accommodated the facts that there are many firms in a market economy, discoveries differ from other inputs, physical activities can be replicated and technological advance come from the things people do. Romer (1986) ($Y = A(R)f(R, K, L)$) model of endogenous growth captures that many individuals and markets have market power and earn excess rents on discoveries. This motivates research (R) that improves the stock of knowledge, A .

The models of economic growth do not explicitly provide for the channels through which variables such as debt can affect growth. However, Romer (1994) indicated that the neoclassical model is a giant step in the process of constructing a formal model of growth. We evaluate the two gap model below in an attempt to indicate the relationship between growth and debt.

3.2 The Two Gap Model

Harrod (1939) and Domar (1946) explained the importance of domestic and foreign savings in the growth process. Domestic and foreign savings are important in financing investment which is necessary for growth. According to this model, growth in output (g) equals to the rate of savings (s) divided by incremental capital to output ratio (v). Algebraically, this relationship can be given as:

$$g = s / v \dots\dots\dots (5)$$

Equation 3 implies that given a specific growth target, and capital to output ratio, a specific rate of investment is required to achieve the growth target. In the event that the required investment rate exceed the average savings rate for a desired growth rate, the government has

either to cut down its intended growth or borrow. Precisely, Harrod and Domar identified that two gaps exist given growth target, domestic savings are short of the requirement needed to finance growth (savings gap) and inflows of foreign exchange are too small to finance the imports of capital goods (foreign currency gap). Consequently, the two gaps are bridged by inflow of aid or by net inflow of capital goods imports. The model offers a simple way of calculating the amount of aid or capital required to achieve a defined growth target. This model offers a channel through which debt affects growth. Debt augments the domestic savings to promote investment which is necessary for economic growth.

The model has been criticised in the literature. Firstly, it fails to explain the deviations in growth from the short run to the long run. Short term instabilities such as aggregate demand, cyclical inflation and unemployment cause long term disturbances in the growth process and these are not accounted for in the model (Bender and Löwenstein, 2005). The model also puts at heart the availability of savings and foreign exchange as drivers of growth neglecting other factors that affect growth such as efficiency in the use of the savings and foreign exchange. Similarly, the model assumes the existence of a direct one on one relationship between aid inflows and capital imports and investment, and pre-excludes other potential uses of such resources, such as consumption. Despite its criticisms, the Harrod-Domar model offers a simple understanding of how debt augments the growth process.

Chenery and Strout (1962) noted that assumptions of the two gap model were unrealistic in explaining growth in developing countries. Chenery (1962) pioneered the “Dual Gap” model where borrowing may also be seen as a complement to foreign exchange earnings from exports and required imports. The Dual Gap theory emphasizes the role of foreign exchange and imports in the development process. It is based on the notion that excess of imports over exports funded by external borrowing allows a country to spend more than it produces or to invest more than it saves and therefore, the economy grows. Chenery and Bruno (1962) proposed that growth is restricted by two constraints which are the savings gap and the foreign exchange gap. The savings gap limits the nation’s capacity to save and invest. The foreign exchange gap emanates from restricted export incomes and the set economic growth rate causes imports to surpass the economy’s capacity to finance them. Even if the dual gap theory is related to the HarrodDomar growth model, its main influence is that it indirectly describes the link between economic growth and external debt. Thus it reveals itself through the foreign exchange gap and savings gap.

3.3 The Debt-Overhang Hypothesis

The negative relationship between economic growth and debt has been highlighted in the debt overhang hypothesis. Krugman (1988) and Sachs (1989) posited that high debt is a disincentive to investment thus it stifles growth by constraining capital accumulation. Krugman (1988) defined debt overhang as a situation in which investments are reduced or postponed since the private sector anticipates that the returns from their investment will serve to pay back creditors. Ideally, high debt discourages investment leading to stagnation in economic activities.

Under the Debt overhang hypothesis, private businesses experience uncertainty over future taxes and other policies required for debt servicing, hence reduced investments. Claessens *et al* (1990) posited that investment will be crowded-out as resources are transferred externally reducing resources available for domestic investment. An economic stagnation that is initially induced by liquidity constraints of debt servicing and private business uncertainty will further stifle investment in a cyclical manner thereby increasing the debt-GDP ratio. The debt overhang hypothesis predicts a negative relationship between external debt and economic growth.

Literature above suggests that debt is both an important source of and a constraint to growth. External debt can augment the savings-investment gap and stir economic progress through capital accumulation and productivity growth. Contrasting arguments suggest that debt cannot improve capital accumulation, can suppress productivity growth and impinge economic growth through crowding out domestic investment in the debt service process or private entrepreneur invest in short-term projects to avoid the future taxes imposed on long term projects for debt repayment. Debt is also assumed to have non-linear effects, thus it can be of positive impact at low levels of debt and a negative impact at higher debt levels. It is upon this theoretical inconclusiveness that empirical work reviewed below is founded.

Mostly, it is believed that when there is an increase in public debt, government will service the debt through distortionary measures such as inflation tax (Agénor *et al* 1996). In this regard, potential private investors will tend to use the wait and see approach (Serven 1997). Therefore, investors tend to invest in those projects with quick returns or short term projects rather than high risk, long term, irreversible projects. Therefore, debt burden lowers investment and capital maintenance and at the same time discourages installation of new

technologies. Subsequently, investment is overtaken by population growth. Experience has clearly indicated that elimination of debt stock overhangs and reduction of debt service problems is vital for economic turnaround and growth (World Bank, 1994).

3.4 Empirical Literature

Empirical literature widely suggests the existence of a negative impact of external debt on growth. Levy and Chowdhury (1993) concluded that a surge in the public and publicly guaranteed external debt indirectly lowers the level of Gross National Product by promoting capital flight and discouraging capital formation as investors expect future increases in taxes. Cunningham (1993) also discovered that debt burden negatively affect economic growth as productivity of capital and labour declines with debt. Sawada (1994) deduced that heavily indebted countries (HICs) are associated with debt overhang problems as their expected future returns are below their present external debts. Arguments of negative debt effect on economic growth are also provided by Siddiqui and Malik (2001), Chowdhury (2001), Sen (2007) and Easterly (1999, 2001, 2002).

Panel studies on African and other developing countries have largely supported the debt overhang hypothesis. Elbadawiet *al* (1996) supported the debt overhang after analyzing the effect of and channels through which external debt affects economic growth. This panel study used data for 99 countries from SSA, Latin America, Asia and the Middle East. Debt service, past debts and the ratio of debt inflow to GDP ratio were classified as direct channels while the public expenditure was classified as an indirect channel through which debt negatively impacts on growth. Elbadawiet *al* (1996) concluded that external debt accumulation constrains economic growth while the debt stock spurs growth in developing countries. Cohen's (1993) correlation study on external debt in Less Developed Countries (LDCs) and investment in the 1980s showed that the level of debt stock does not have significant power to explain investment while debt service tends to crowd out investment.

Fosu (1996) examined the direct effect of debt on growth for 29 Sub-Saharan African countries over the period 1970 to 1986. The study was a departure from the previously existing literature that had focused on examining the indirect debt-effects on growth through the investment and savings channel. The study was founded upon high levels of indebtedness of most Sub-Saharan African countries and inconclusiveness of the results from previous empirical studies. World Bank data was used to evaluate an augmented production function

with debt variables in an OLS estimation framework. Debt was found to have an average deleterious effect of 1.1 percentage points on growth through reduced productivity. External debt diminishes marginal productivity of capital. Additionally, Fosu (1996) found that debt was non-monotonic in that a positive relationship exists at low levels of investment while a negative relationship exists once a Debt-GDP threshold of 16% is exceeded. Caution was however pointed on the interpretation of results due to endogeneity of external debt and growth. Thus, the results imply the existence of a debt threshold in sub-Saharan Africa.

In 2008, Fosu did a follow up study to the 1996 study above in an attempt to evaluate how African growth is constrained through debt servicing. The 2008 study was a departure from the 1996 study in both time frame and methodology. A Seemingly Unrelated Regression of panel data for 35 countries indicated that external debt servicing negatively affects growth by constraining spending in the social sector, particularly health and education. Thus, we can conclude that external debt affects growth by impinging human capital accumulation. However, Zimbabwe has performed well in education and health sectors since independence (excluding the period of economic decline). Could it be concluded that external debt had positively contributed to economic growth through these sectors?

Country specific studies have pointed out that growth declines with debt. Were (2001) found that past debt discourages investment while current debt encourages investment in Kenya. Were (2001), adopted the model which was used by Elbadawiet *al* (1996) and the model used the following variables: interest to export ratio, debt to GNP ratio, debt service ratio, and debt to export ratio. The study strongly supports the theory of debt overhang in the sense that external debt can only affect economic growth through investment. The study confirmed the presence of a debt overhang and crowding out of today's investment due to debt servicing of large sums of external debt. The study concluded that there is a negative correlation between economic growth and external debt, while economic growth and the terms of trade are positively related and that economic growth and investment are highly and positively related. Thus, Were (2001) confirmed the existence of debt overhang and crowding out effects; these results were similar to earlier findings by Ochieng (1991) and Manundu (1984).

Ezeabasili *et al* (2011), Ogunmuyiwa (2011), Adesola (2009) and Adam (2004) evaluated the relationship between external debt and growth in Nigeria. The key objective of these studies was to outline the relationship between external debt and economic growth.

Ezeabasili *et al.* (2011) found a negative relationship between external debt and economic growth in Nigeria using data for the years 1975 to 2006. The study deduced that a 1% increase in external debt would result in a 0.027% reduction in GDP, while a 1% rise in total debt service caused a 0.034% decline in GDP. The results show that there is a short-run negative relationship between current external debt and economic growth in Nigeria. There is also a short-run negative relationship among two lags of economic growth and external debt service payment.

Nevertheless, Ogunmuyiwa (2011) deduced non-significant effect of external debt on economic growth of Nigeria. Ogunmuyiwa (2011) tested whether external debt supports economic growth in developing nations by focusing on Nigeria. The results portrayed that there is no causal relationship between economic growth and external debt as causation between the two was found to be very weak. The study concluded that external debt could not be used to predict improvement or downturn in economic growth.

Adesola (2009) reviewed and analysed the impact of external debt payment systems on economic growth and development in Nigeria for the period 1981 to 2004 using Ordinary Least Squares method. The study employed variables such as gross domestic product, debt service and gross fixed capital formation. The results concluded that there is some significant correlation between external debt service and gross fixed capital formation. It also indicated that there is a significant correlation between external debt service and gross domestic product. The study concluded that debt service impacts on economic growth both positively and negatively. These results are in contradiction to those found by Ogunmuyiwa (2011).

Adam (2004) studied the relationship between economic growth and external debt by evaluating Nigeria's foreign debt sustainability. This study used a standard inter-temporal debt model adopted from a number of authors like Fishlow (1988), Gunning and Mash (1998), Barbosa and Cal (1989) and Rapu (2003). Adam (2004) also employed the analytical method of evaluating the external debt and growth link. It was noted that Nigeria's debt was very high and unsustainable due to high initial debt stock, low real GDP growth, high interest rate, and large trade deficits. Acknowledgement was also made on the fact that a huge external debt undermines long-term development plan of a nation, drains the country's limited resources, imposes restrictions on the country's development prospect and depresses investment.

Diallo (2007) adopted the approach used by Ahmed and Shakur (2011) and Patillo *et al* (2002) to evaluate the effect of external indebtedness on economic development of Guinea for the period 1972 to 2005. Results showed that debt ratios and growth rate of GDP per capita are negatively correlated, both in the short run and the long run. The results show that debt to-export ratio is one of the main hindrances to economic growth and development as a one-point rise in the debt-export ratio resulted in a six-point fall in growth. The results indicated that there is a negative correlation between the debt service to export ratio and the growth ratio which implies that, external debt has a negative influence on per capita growth.

Hameed *et al* (2008) analysed the short-run and long-run relationships between economic growth and external debt in Pakistan using time series data for the years 1970 to 2003. The study analyzed the impact of GDP, capital stock, labour force, exports and debt service on economic growth by adopting the neoclassical production function which was used by Cunningham (1993). Precisely, the following debt-inclusive production function was specified:

$$Y = A(K, L, Debt)$$

where Y is GDP, K is capital stock, L is labour force, Debt is public debt and A represents other constant factors. The model assumed that input elasticities of output and technical change are neutral and constant. Their result depicted that debt service ratio has a tendency to impact negatively on GDP. The results also show that, there exists a long-run and short-run causal relationship between debt service and GDP.

Akram (2010) and Malik *et al* (2010) examined the debt-growth relationship using an augmented production function for Pakistan and data for the periods 1972- 2009 and 1972-2005 respectively. Akram (2010) used the two-step approach of examining the direct relationship between economic growth and external debt first and then the link between external debt and investment secondly. The results showed that external debt reduces both investment and economic growth. Similarly, Malik *et al* (2010) found a negative and significant relationship between external debt and economic growth. However, Akram (2010) ruled out the possibility of crowding out as the relationship between debt servicing and growth was found insignificant. The results were also supported by Ahmed and Shakur (2011) who used data set for the period 1981 to 2008 and reported that there is an independent

relationship between external debt and growth; external debt among other macroeconomic factors causes low economic growth in Pakistan.

Karagol (2002) also investigated the relationship between economic growth and external debt in Turkey by taking into account the channels through which external debt may impact on investment and output. The channels include interest rates, debt overhang effect, and the truncated profitability due to the slowdown in economic activity. External debt service was found to negatively impact on economic growth in the short-run. This study showed a uni-directional causal relationship between the level of Gross National Product and debt service. Consequently, the study concluded that the effects of debt overhang need to be addressed to drive economic growth of Turkey's economic performance.

A positive impact of external debt on growth has also been established in the literature. Abbas (2005) postulated that debt has a positive impact on economic growth of low income and emerging market countries even at high levels such as 93% of GDP. These results are largely surprising given the vast literature that points towards the existence of a negative relationship between debt and growth. Similarly, *Pescatoriet al (2014)* found that debt does not compromise growth in developed countries though countries with high debt experience high volatility in growth. There is need for reiteration of these studies to find out if the results can be validated by a different methodology and data set.

In Zimbabwe the scarce literature available posits that external debt stifles economic growth. In 2012, Kadenge qualitatively argued that external debt is important for funding the developmental and infrastructural requirements of the country. However, the debt threshold had been exceeded and debt overhang effects are being realized through low levels of savings, low investment and lack of access to developmental aid. In addition, the country has lost credit worthiness because of debt default consequently depriving the private sector resources needed for recapitalization. Similarly, results from OLS approach and data set for the years 1980-2012 indicate that external debt reduces per capita income and increases poverty (Saungweme and Mufandaedza, 2013). There is surprisingly scarce literature on the debt-growth relationship in Zimbabwe despite the high level of indebtedness the country is facing and the need to borrow identified in the debt strategy (Gono, 2013).

3.5 Conclusion

Theory suggests that external debt has an important role of augmenting domestic savings in promoting capital accumulation. External debts arise as a natural economic phenomenon where some countries have financial surpluses while others are in deficit. As depicted under the neoclassical theory of growth, investment enhances economic growth. External debt provides the country with the opportunity to invest in capital in excess of its own financial capability through borrowing excess capital (Klein, 1994). Thus debt created is supposed to generate growth and boost development. It is clear from the theory that for external debt to promote growth the latter must be utilized in an efficient and productive manner that ensures capital accumulation.

Empirical literature has produced mixed and inconclusive results on the relationship between external debt and growth. The debt overhang and threshold hypotheses are widely supported in the literature signifying the importance of debt at reasonable levels upon which once exceeded debt will negatively affect economic growth. However, a mixture of reported results makes it difficult to take a position from the broad literature except to make reference to a specific study. In Zimbabwe, scarcely existing literature suggests a negative relationship between debt and economic growth. Debt has continued to grow while the newly developed debt strategy indicates borrowing for debt-repayment as one of strategies towards resolving the debt crisis. Thus the country continues to rely on debt despite that it is highly indebted. We seek to provide further evidence on the impact of debt on growth given the transformation in the economy that transpired since independence.

Chapter Four: Methodology

4.0 Introduction

This chapter focuses on outlining the methodology adopted in order to achieve the study objectives. The ARDL-Error Correction Model used for data analysis is specified and we discuss the measurement of variables included in the model. The chapter further details the estimation procedure and econometric tests necessary for time series data analysis (econometric). The sources of data are also outlined in this chapter.

4.1 Model Specification

Based on the Two-Gap model, the Debt-Overhang hypothesis and arguments by Fosu (1996, 1999), external debt has an important direct effect on growth. Subsequently, Cunningham (1993) and Akram (2010) specified the Neoclassical, Debt-Augmented production function as:

$$Y = Af(K, L, Edebt) \quad (6)$$

where Y is economic growth, K is the capital stock; L is the labour force, $Edebt$ is the external debt and A represents other constant factors.

The theoretical model (6) above was empirically specified and estimated in an Auto-Regressive Distributed Lag (ARDL) form of the error correction approach (ECM). The use of the ARDL-ECM approach has been widely supported in the literature. Pesaran and Pesaran (1997) argued that the ARDL approach has the advantage that it can be conducted for series integrated of order zero (I (0)), order 1 (I (1)) or mutually integrated. In addition, Nayaran (2004) posited that the ARDL approach yields better results in small samples compared to other approaches such as the Ordinary Least Squares approach. Jalil and Ma (2008) credited the ARDL approach for its ability to adjust results for serial correlation and endogeneity if the adequate lags are included in the model. Similarly, Khan *et al* (2005) credited the use of ARDL-ECM technique as an instrument that provides the simultaneous estimation of the short run and long run dynamics among variables while correcting variable omission and autocorrelation. We specified the ARDL-ECM as follows:

$$\Delta GDP_t = \alpha + \beta_1 \sum_{i=1}^I \Delta GDP_{t-i} + \sum_{j=0}^J \beta_2 \Delta K_{t-j} + \sum_{m=0}^M \beta_3 \Delta EXD_{t-m} + \sum_{l=0}^L \beta_4 \Delta EDSEX_{t-l} + \sum_{u=0}^U \beta_5 POP_{t-u} + \sum_{z=0}^Z \beta_6 \Delta TOP_{t-z} + \sum_{l=0}^L \beta_7 \Delta INFL_{t-l} + \tau_1 GDP_t + \tau_2 K_t + \tau_3 EXD_t + \tau_4 EDSEX_t + \tau_5 POP_t + \tau_6 TOP_t + \tau_7 INFL_t + \varepsilon_t \quad (7)$$

In equation (7) above, GDP represents economic growth, K represents the gross fixed capital formation, EXD is the external debt, $EDSEX$ represents external debt service, POP represents population, TOP refers to trade openness, ε is the error term and t is a time (year) subscript. In the equation, β represents the short run coefficients of the variables while τ represents the long-run coefficients of the model. The measurement of variables in equation (7) is discussed below.

4.1.1 Measurement and Justification of variables

Theoretical and empirical review provided in Chapter 3 provides the appropriate variables that were used in the model. Unlike most specified debt-growth equations, the study used population growth, trade openness and inflation as control variables. The decision for the inclusion of these variables will be as discussed under each variable below.

Economic Growth (GDP)

Equation (7) specifies economic growth as the dependent variable. Economic growth is measured by growth in Gross Domestic Product (GDP). In the literature, the variable had been included in the growth model either as nominal GDP growth rate, per capita GDP growth or Real GDP growth. In this study, we used real per capita GDP since it captures economic progress and welfare effects of the growing economy. The variable is also included as an explanatory variable because future levels of economic growth may respond to the initial levels of growth. This specification is consistent with literature (Fosu, 1996, 2009; Hameed *et al.*, 2008; Chenery and Bruno, 1962). The study expects a positive relationship between GDP and the initial levels of GDP ($\beta_1, \tau_1 \geq 0$)

Gross Fixed Capital Formation (K)

Capital is an important determinant of economic growth from both the Neoclassical and endogenous growth perspectives. Investment in capital increases output through the formation of additional employment, consequently increasing the level of output (Keynes, 1993). Generally literature uses gross domestic investment (gross fixed capital or gross

capital formation) as a variable for capital stock. This study used gross fixed capital formation as a ratio of GDP. The variable was expected to have a positive effect on growth ($\beta_2, \tau_2 \geq 0$).

External Debt (*EXD*)

The external debt to GDP ratio measures the debt overhang. Hypothesis postulates that the accrued external debt of a nation acts as a levy on future output and therefore depresses investment as well as economic growth. The variable on external debt is included in the model measured as the percentage of the external debt stock in GDP. External debt is projected to be negative correlated with growth as identified by the debt overhang hypothesis and empirical literature ($\beta_3, \tau_3 \leq 0$).

Debt Servicing (*EDSEX*)

This variable is meant to capture the crowding out effect of debt service obligation. We measure the variable as the percentage of annual debt service payments to GDP. A negative correlation is hypothesized between debt servicing and economic growth as servicing debt will imply crowding out the private sector and failure to invest such funds where they are needed. Given that Zimbabwe has been facing financial resource constraints, there is reason to believe that debt repayments had serious and severe consequences on growth. The study expected a negative relationship to exist between external debt servicing and economic growth in Zimbabwe ($\beta_4, \tau_4 \leq 0$).

Population Growth (*POP*)

This variable is measured as the annual growth rate of the population size. Population negatively affects economic growth from the neoclassical perspective. As discussed in the theoretical literature, growth in population was indicated as a constraint to economic growth. However, Jones (1995) has argued that increased population increases the supply of labour force leading to increased growth through the innovation. Increased population and labour implies a larger market for successful innovation; thus population growth enhances higher productivity through higher rates of innovation. Given that unemployment rate in Zimbabwe is very high (over 70%), and arguments by Jones (1995) may not suffice. Therefore, it is important to include this variable in our growth model. The study expected a negative relationship between the two variables ($\beta_5, \tau_5 \leq 0$).

Trade Openness (*TOP*)

Trade openness is the extent to which the economy is opened to world business transactions. The study used the ratio of the sum of imports and exports as a percentage of GDP to measure trade openness. This approach of measuring trade openness is consistent with literature (Akram, 2010). Literature has supported positive contribution of trade openness to growth and this has been the major driver of the market oriented development followed by Zimbabwe (ESAP) and other African countries in the 1990s. Balianoune-Lutz and Ndakumana stated that trade positively influences growth, hence the need for countries to open. However, Rodriguez and Rodrik (2001) and Yanikaya (2003) indicated that empirical literature on the influence of trade on growth is largely mixed. Following the opening up of the Zimbabwean economy to the world market during the ESAP era, it is expected that economic growth has been promoted ($\beta_6, \tau_6 \geq 0$).

Inflation (*INFL*)

Inflation refers to the general rise in the price level of goods and services of a country. The study used the GDP deflator to measure the inflation rate. Maintaining stable prices is one of the major macroeconomic objectives for any country. Kasidi and Mwakanemela (2013) indicated that low levels of inflation are associated with sustainable economic growth and they found a negative relationship to exist between the inflation rate and growth in Tanzania. Given the high level of inflation that had been experienced in Zimbabwe for the study period, it was expected that this variable has been influencing growth. The study expected a negative relationship between growth and the inflation rate ($\beta_7, \tau_7 \leq 0$).

4.2 Estimation Procedure and Econometric Tests

Estimation of model (7) begins by evaluation of multicollinearity, stationarity and cointegration of variables. To test for multicollinearity among the model variables we used the Pearson's correlation coefficient. A coefficient above 0.8 indicates that variables are correlated hence estimated coefficients of the model will be biased. If variables are correlated, we will drop one of the variables on the condition that by dropping the variable we will not introduce inefficiency due to model misspecification.

In order to avoid spurious regression in time series regression variables should have a constant mean and variance (stationary). We therefore evaluate whether the series is

stationary or not. In this study Augmented Dickey Fuller (ADF) unit root test was used to test for stationarity. If it happens that some variables are non-stationary then they will be differenced to make them stationary.

In the presence of variables that are stationary in levels and others stationary after differencing, cointegration tests will be undertaken so as to check if a long run relationship among the variables exists. If the variables are cointegrated, then an analysis of the Error Correction approach will be conducted. The study will use the Engle-Granger Two Step Cointegration method and Phillip-Perron test to test for cointegration.

The literature has identified possible feedback effects between external debt and growth in the debt-growth model. The Granger Causality test (Granger (1969; Sims, 1972) was used to test the feedback effects between debt and growth. If debt and growth are found to have reverse causality, the Vector Error Correction Model becomes the best estimation technique.

Model (7) will then be estimated by first running the long run model of growth given that variables are cointegrated. The long run results will be used to generate residuals that will be factored as an adjustment variable in the short run equation. Following this estimation procedure, residuals will be tested for serial correlation (Breusch-Pagan Serial Correlation LM test), normality (Normality test) and heteroskedasticity (Breusch-Pagan-Godfrey Heteroskedasticity Test) while model specification will be evaluated using the Ramsey RESET test.

4.3 Sources of Data

Time series data for the period 1980-2012 was sourced from the World Bank Development Indicators database (World Bank, 2014). Domestic sources of data, the Reserve Bank of Zimbabwe, Zimbabwe Statistical Office (ZimStat) and Ministry of Finance and Economic Planning, complemented the World Bank data set where data gaps exist but on the condition that data was comparable over the years.

Chapter Five: Presentation and Analysis of Results

5.0 Introduction

This chapter provided the descriptive statistics of the data, econometric tests and estimated results. The ARDL-Error Correction Model was estimated providing the short run and long run coefficients of variables utilized in the study. Interpretation and discussion of the results is also done in a way that guided the study's recommendations.

5.1 Descriptive Statistics

This study utilizes yearly data collected from the World Bank Development Indicators (WBDI) data base (World Bank, 2014). Table 2 below provides the summary statistics of the variables employed in the study. The table indicates that there are huge variations in all the variables over the period under study.

Table 2: Descriptive Statistics

	EDSEX	EXD	GDP	INFL	K	POP	TOP
Mean	0.169526	39.89261	1.576812	1.328320	14.26869	2.026753	0.845646
Median	0.187368	38.79686	2.099029	2.712949	15.56941	1.924602	0.799447
Maximum	0.540275	82.75290	14.42068	31.05339	24.57726	3.995295	1.273519
Minimum	0.035936	10.04886	-17.66895	-27.04865	2.000441	0.107875	0.668646
Std. Dev.	0.104968	16.36289	7.752111	10.50882	6.416477	1.353235	0.139433
Skewness	1.221427	0.351424	-0.661477	-0.266467	-0.559574	0.028505	1.440121
Kurtosis	5.875073	3.220891	3.249393	4.679869	2.356325	1.644786	4.630970
Jarque-Bera Probability	19.57117	0.746333	2.492057	4.270720	2.291865	2.529802	15.06430
	0.000056	0.688551	0.287645	0.118202	0.317927	0.282267	0.000536
Sum	5.594345	1316.456	52.03479	43.83455	470.8667	66.88283	27.90633
Sum Sq. Dev.	0.352583	8567.813	1923.047	3533.930	1317.478	58.59987	0.622128
Observations	33	33	33	33	33	33	33

5.2 Econometric Tests

Pearson's correlation coefficients were used to detect the possibility of multicollinearity in the model. As in Table 3 below, low values of Pearson's correlation coefficients ruled out the possibility of multicollinearity among the explanatory variables. A negative coefficient of 0.65 indicates the possibility of a negative relationship between external debt and GDP growth.

Table 3: Correlation Coefficients Matrix

	EDSEX	EXD	GDP	INFL	K	POP	TOP
EDSEX	1.00						
EXD	0.26	1.00					
GDP	0.38	-0.69	1.00				
INFL	-0.24	0.02	0.15	1.00			
K	0.53	-0.51	0.40	-0.36	1.00		
POP	0.38	-0.25	0.55	-0.21	0.30	1.00	
TOP	0.70	0.01	-0.33	0.14	0.32	-0.08	1.00

Variables were tested for unit root using the Augmented Dickey-Fuller (ADF) test. The calculated values of ADF test were greater than the critical values at 5% for all variables except GDP growth and inflation rate. There is therefore ample evidence to conclude that the variables, GDP growth and inflation rate, are stationary in levels whilst all the other variables are non-stationary in levels. As shown in table 5, variables that were non-stationary in levels were found to be stationary after first and second differencing.

Table 4: ADF test for unit root in levels

Variable	ADF statistic with intercept	ADF statistic with intercept and trend	lags	Conclusion
GDP	-3.6926	-3.6285**	Max	Stationary
K	-2.1767	-2.4555	Max	Non-stationary
EXD	-2.1494	-1.6898	Max	Non-stationary
EDSEX	-2.3729	-2.3260	Max	Non-stationary
POP	-2.5338	-1.1348	Max	Non-stationary
TOP	-2.5820	-2.8972	Max	Non-stationary
INFL	-4.0141	-4.5239*	Max	Stationary

*and ** implies significance at 1 % and 5% levels of statistical significance.

Table 5: ADF test for unit root in first differences

Variable	ADF statistic	Critical Values			Integration
		1%	5%	10%	
DGDP	-7.3132*	-4.2846	-3.5629	-3.2153	I(0)
DK	-7.3443*	-4.2846	-3.5629	-3.2153	I(1)
DEXD	-5.4407*	-4.2846	-3.5629	-3.2153	I(1)
DEDSEX	-5.6794*	-4.2846	-3.5629	-3.2153	I(1)
DDPOP	-3.6737**	-4.3098	-3.5742	-3.2217	I(2)
DTOP	-3.7260**	-4.2846	-3.5629	-3.2153	I(1)
DINFL	-4.3913**	-4.4143	-3.6220	-3.2486	I(0)

*, ** and *** implies significance at 1%, 5% and 10%.

As variables in the model are integrated of different order there is no likelihood of co-integration. This study tested co-integration among variables using the Eagle-Granger Two-Step cointegration test (see appendix). The variables were regressed in levels and residuals were generated from the long run estimates and tested for stationarity. The calculated ADF statistic of 5.1988 was greater than the critical value of 4.2846 implying that the null hypothesis of unit root was rejected at 1% level of statistical significance.

The study tested for reverse causality between external debt and growth in GDP. We found that causality from external debt to GDP as presented in the appendix. The null hypothesis that GDP does not Granger cause external debt was only rejected at 12.87% implying significance at 1% and 5%. The hypothesis that external debt does not Granger cause GDP was rejected at 5% level of statistical significance. We therefore proceeded to use the ARDL-Error Correction approach.

5.3 Presentation of Results

Parsimonious results of this study are presented in Tables 6 and 7. Both the short run and long run models are of good fit in terms of the adjusted R-squared and the F-statistics. The adjusted R-squared for the short run model of 0.84 implied that 84% of variation in the dependent variable is explained by the variation in explanatory variables. Similarly, in the long run model, the adjusted R-squared of 0.68 implied that 68% of variation in the explanatory variable is explained by variation in the explanatory variables. The F-statistics of

both models indicate that the coefficients of explanatory variables are not jointly equal to zero at the 1% level of significance. The study found out that gross fixed capital formation and external debt servicing promote growth while external debt, population growth and trade openness retard growth in GDP.

Table 6: Long Run Coefficients: Dependent Variable, LGDP

Variable	Coefficient	Std. Error	t-Statistic
LK	1.03**	0.21	3.13
LEXD	-0.92*	0.33	-2.75
LPOP	-0.18**	0.12	-1.51
LEDSEX	0.43**	0.24	1.81
LINFL	-0.06	0.18	0.33
LTOP	-0.54***	0.16	-3.38
C	6.97***	1.67	4.17
R-squared	0.7984		
Adjusted R-squared	0.6826		
F-statistic	4.3057		
Prob(F-statistic)	0.0038		

***,**and* imply significance at 1%,5% and 10% statistical levels of significance.

Table 7: Short run Coefficients, Dependent Variable D(LGDP)

Variable	Coefficient	Std. Error	t-Statistic
D(LGDP(-1))	0.10**	0.0338	2.97
D(LK)	0.26**	0.1095	2.34
D(LK(-1))	0.07**	0.1343	0.51
D(LEXD)	-2.44***	0.5374	-4.55
D(LEXD(-1))	-0.96*	0.4384	-2.19
D(LPOP)	-0.90**	0.3487	-2.58
D(LPOP(-1))	-0.83	0.4950	-1.68
D(LEDSEX)	-0.32*	0.1706	-1.88
D(LEDSEX(-1))	-0.24***	0.1772	-3.59
D(LEDSEX(-2))	0.52**	0.2112	2.44
D(LINFL)	-0.24	0.1696	-1.39
D(LTOP)	-1.19**	0.4000	-2.98
ECM(-1)	-0.96***	0.3120	-3.09
C	0.02***	0.0050	5.04
R-squared	0.92		
Adjusted R-squared	0.84		
F-statistic	12.01***		

***,**and* imply significance at 1%,5% and 10% statistical levels of significance

The Error Correction Term (ECM) has the correct negative sign and has the coefficient size of 0.96. This implies that 96% of disequilibrium in the short run is adjusted in the following year. This term was also found to be stationary in levels indicating the existence of long run co-integration among the variables in the model.

The residuals of the model above were tested for heteroskedasticity. An F-statistic of 2.10 and a P-value of 0.0876 was reported for the Breusch-Pagan-Godfrey Heteroskedasticity test. This means that there is no sufficient evidence at the 1% and 5% levels of statistical significance to reject the null hypothesis that residuals are homoscedastic. Inference can therefore be made given that the model residuals are normally distributed, and they are not serially correlated (see appendix). The model is also of good specification as reported by the Ramsey RESET Test (see appendix).

5.4 Interpretation and Discussion of Results

External debt is found to have a consistently negative impact on GDP growth in both the short-run and the long run. The long run coefficient of external debt was found to be -0.92 and is statistically significant at 1% level. Thus, a percentage increase in debt is likely to constrain growth by 0.92%. In the short run, external debt constrains GDP and has a coefficient of -2.44% which was statistically significant at 1% level. The one year lag of debt has a coefficient of -0.96 and was weakly significant at 10% level of statistical significance. The result shows that external debt hugely retards GDP growth in the short run. However, the effect is consistently negative.

This study therefore reconfirmed the negative relationship between external debt and economic growth as widely suggested in the literature (Ahmed, 2010; Hameed et al., 2008; Diallo, 2007). Possibly, the negative relationship between external debt and GDP growth is transmitted through constrained fixed capital accumulation and FDI growth (Pattillo et al., 2004; Fosu, 1999). Results indicate that external debt cannot be relied upon as a stimulant of economic growth. Zimbabwe's continued reliance on external debt will mean that lacklustre GDP growth will be maintained.

The coefficient of external debt service (EDSEX) variable has a coefficient of 0.43, statistically significant at 5% in the long run. In the short run, external debt servicing and its one year lag had coefficients of -0.32 and -0.24, statistically significant at 10% and 5% respectively. The two year lag of external debt in the short run had a coefficient of 0.52, statistically significant at 5%. The coefficient of external debt changes both its sign and doubles its magnitude as we migrate from short run to the long run. These results showed that external debt servicing constrains immediate growth in GDP but is positively related to GDP growth in the long run. The immediate short run negative effect of external debt servicing on growth may be a result of the crowding out of the funds that could have been used for

domestic investment. However, servicing external debt is important for medium to long term GDP growth.

The study found out that gross fixed capital formation drives growth in GDP. Gross fixed capital formation (k) had a long run coefficient of 1.03, statistically significant at 5%. This means that a percentage increase in gross fixed capital formation improves GDP growth by 1.03 percent. The variable and its one year had coefficients of 0.26 and 0.07 in the short run respectively, both statistically significant at 5% level. Thus growth is accounted by the accumulation of capital in both the long run and the short run. This is however against the neoclassical growth theory which postulated that capital accumulation accounts for growth only in the short run (not in the long run).

Population growth retards growth in GDP. The variable, POP, has a coefficient of -0.18, statistically significant at 5% in the long run. This implies that a percentage increase in population retards growth by 0.18 percent. In the short run, population growth, POP, had a coefficient of -0.9, statistically significant at 5%. This implies that a percentage increase in population growth will retard growth by 0.90 percent. Thus population growth has a consistently negative effect on growth in both the short run and the long run. However, the effect of population growth is quite large in the short run. The result confirmed the neoclassical postulation that population growth retards economic growth.

Trade openness, TOP, had a coefficient of -0.54, statistically significant at 1% in the long run. This means that a percentage increase in trade openness will decrease long run growth by 0.54 percent. In the short run, trade openness had a coefficient of -1.19, statistically significant at 5%. Thus, in the short run, a percentage increase in trade openness reduces growth by 1.19 percent. The negative effect of opening up seems to be more severe in the short run than in the long run. Thus, opening up to the world market has not been good for Zimbabwe. Possibly, the negative relationship was explained by the dominance of imports at the expense of exports in Zimbabwe's total trade.

This study therefore concluded that external debt is not good for Zimbabwe's GDP growth. However, servicing external debt may disturb short run growth but it has beneficial growth effects in the long run. Additionally, population growth and trade openness reduced GDP growth. Nevertheless, growth can be promoted by investment in gross fixed capital formation

Chapter Six: Conclusion and Policy Recommendations

6.0 Introduction

This chapter summarised this study. The study conclusion is outlined followed by policy recommendations. Weaknesses of the study are also detailed in the section as well as suggestions of areas of further research.

6.1 Conclusion of the Study

This study primarily focused on establishing the impact of external debt on economic growth. Zimbabwe has relied on external financing for a long time and is currently in external debt crisis. Despite that, the country continues to rely on external borrowing as a way of resolving the debt crisis (ZAADS, 2012). The country's external debt had been increasing despite the existence of literature that suggested that there is a negative relationship between external debt and growth. Firstly, the strategy highlighted the traditional approach of repaying debt by means of external borrowing. Secondly, the primary reason for resolving the debt issue is for unlocking new external finance. Thus, the surprise is the continued reliance on external finance despite the predicted negative relationship between external debt and growth.

The study used a broad data set covering the period 1980 to 2012. A linear model of growth augmented with gross fixed capital formation, external debt, external debt service, population growth and trade openness was estimated. The ARDL-ECM approach was utilised.

External debt has been found to have a negative and statistically significant relationship with GDP growth. Negative effect exists in both the short run and the long run. Servicing of external debt was however found to importantly contribute to economic growth in the long run. In the short run, external debt servicing constrains growth as domestic investment is crowded out.

Zimbabwe's growth in GDP is positively influenced by investment in gross fixed capital formation while it is constrained by growth of population as postulated by the neoclassical growth theory. While the neoclassical growth theory outlined that long run growth is explained by growth in total factor productivity, the study found out that capital accumulation explains growth in GDP both in the short run and the long run.

Trade openness has been found to retard growth in GDP. Opening up the domestic markets to the world market had a large negative affect on GDP growth in the short run. The negative

effect could be explained by the dominance of imports over exports in Zimbabwe's total trade.

6.2 Policy Recommendations

External financing cannot be relied upon as a stimulant of economic growth. Postulations that external debt augments domestic savings in spurring economic growth are non-existent in Zimbabwean empirical-based evidence. If debt is important for growth as postulated in the theory, Zimbabwe should reconsider its debt management policy and investment options. That is to say, the country needs to reconsider external borrowing questions of when to borrow and borrowing for what? In as far as the country's GDP growth is found to be negatively related to external debt, this study recommends that the country should emphasise on alternative mechanisms of clearing its debt as compared to external borrowing for the purposes of debt repayment. New external financing that is being sought after by the country may also prolong the country's fragile and lacklustre economic growth.

External debt servicing has been found to have an important positive GDP growth effect in the long run. Thus the government of Zimbabwe should step up efforts of servicing its external debt obligations. Defaulting on debt obligations has negative consequences on GDP growth. The study however, as stated earlier does not recommend servicing external debt through external borrowing. Mobilisation of domestic resources for external debt servicing is recommended.

The trade policy needs to be revised. Trade needs to be balanced as the imports are mostly dominating total trade. Domestic production needs to be beefed up to improve the country's exports in total trade. Trade openness seems to be unbeneficial possibly due to the huge contribution of imports in total trade. Exports need to be promoted through export incentives.

The country needs to promote fixed capital accumulation through creating a conducive macroeconomic and political environment. Servicing of external debt and clearing the debt arrears is also important in enhancing the country's external position that can lead to increased accumulation of capital. As factors such as variation in inflation and exchange rate, macroeconomic uncertainty and policy credibility are linked to accumulation of capital, it means the country has to ensure that these factors are favourable to investors. Economic incentives that promote the accumulation of capital are also encouraged.

Growth in population has been found to be negatively related to GDP growth. This may be a result of increasing population without corresponding increase in labour supply or effective aggregate demand that can positively stimulate growth. In addition, it indicates that population growth may be accompanied with less access to the factors of production such as land. The government needs a competent social policy. The policy may not simply inhibit population growth but rather seek to improve the population's command of goods and services and the population's participation in the economy.

6.3 Weaknesses of the Study

The study utilised secondary data that varies with data sources. The use of different data sources may produce different results. Additionally, the ARDL-ECM approach reduces the problem of endogeneity if appropriate lags are included. Reducing is not removing, thus the effects of endogeneity can still be present in the model. The use of a different methodology such as 3 Stage Least Squares, Vector-Auto Regression and Generalised Methods of Moments on the same dataset may produce different results. The study failed to demarcate physical capital from human capital. Human capital is an important aspect that needs to be factored in growth accounting. The assumption that population growth substitutes labour growth in the model may be an area of weakness. However, the labour variable was excluded due to insufficient data.

6.4 Areas of future Research

More rigorous research on this subject of external debt is required as developing countries continue to rely on external financing maybe due to scarce domestic resources. An important area that needs more research is on the channels through which external debt affects economic growth. Thus new research can be aligned on finding out if external debt constrains economic growth through physical capital accumulation, total factor productivity or human capital accumulation.

References

- Abbas, A and Jakob, C. (2007). The Role of Domestic Debt Markets in Economic Growth: An Empirical Investigation for Low-income Countries and Emerging Markets. *IMF WP 07/127*
- Adam, J. A. (2004). Foreign debt, Economic Growth, and Nigeria's debt servicing capacity. Doctoral Dissertation, Department of Economics, University of Ibadan.
- Adepoju, A.A., Salau, A.S and Obayelu, A.E. (2007). The Effects of External debt management on sustainable economic growth and development: lessons from Nigeria.
- Adesola, W.A. (2009). Debt Servicing and Economic Growth in Nigeria: An Empirical Investigation, *Global Journal of Social Sciences, Vol. 8, No. 2, 1-11*
- Agenor P. and Montiel, P.J. (1996, 2010). Development Macroeconomics. 3rd Edition, Princeton University Press.
- Aghion, P and Howitt, P. (2009). The Economics of Growth. The MIT Press, Cambridge, Massachusetts, London.
- Ahmed, M. & Shakur, M. (2011). Debt (a real hurdle in the economic growth of Pakistan): A time series analysis. Foundation School of Liberal Arts and Sciences, Foundation University, Rawalpindi, Pakistan.
- Ahmed, M.M. (2008). External Debts, Growth and Peace in the Sudan Some Serious Challenges Facing the Country in the Post-Conflict Era
- Akram, N. (2010). Impact of Public Debt on the economic growth of Pakistan. *Centre for Poverty Reduction and Social Policy Development, Islamabad*
- Akram, N. (2010). Impact of Public Debt on the economic growth of Pakistan.
- Alberto, A., & Tabellini, G. (1989). External Debt, Capital flight and Political risk. *Journal of International Economics*, 27(3-4), 199-220.
- Amin, A.A. & Audu, I. (2006). External Debt, Investment and Economic Growth: Evidence from Nigeria. *CBN Economic and Financial Review. Volume 44. ISSN 1957-2968.*
- and Lessons for Africa," *World Bank Policy Research Working Paper No. 1722*. Washington.
- Anwar, T. (2004). "Recent Macroeconomic Developments and Implications for Poverty and Employment in Pakistan: The Cost of Foreign Exchange Reserve Holdings in South Asia." *10 Years of ASARC an International Conference*. ASARC Working Paper 2004-14.
- Baliamoune-Lutz, M and Ndikumana, L. (2007). The Growth Effects of Openness to Trade and the Role of Institutions: New Evidence from African Countries. Working Paper 2007-05. <https://www.umass.edu/economics/publications/2007-05.pdf>. Accessed 30/03/2015.
- Barro, R. J and Sala-i-Martin, X (1992). Convergence. *Journal of Political Economy*, Vol. 100: 223-51.

- Bender, D., & Lowenstein, W. (2005). Two-gap models: Post-keynesian death and neoclassical rebirth. IEE Working Papers, 80.
- Blavy, R. (2006). "Public Debt and Productivity: The Difficult Quest for Growth in Jamaica." *IMF Working Paper No. 06/235*.
- Borensztein, E. and Aizenman, P. (1990). Debt Overhang, debt reduction and Investment: The case of Phillipines, *IMF Working Paper Vol. 18 No. 12*.
- Chenery, H.B. and Strout, A.M. (1966). Foreign Assistance and Economic Development. *American Economic Review* 56, 679-733.
- Chowdhury, K. (1994). A Structural Analysis of External Debt and Economic Growth: Some Evidence From Selected Countries in Asia and the Pacific, *Applied Economics*.
- Claessens, S. (1996). Analytical aspects of the debt problems of Heavily Indebted Countries, *IMF/WB Seminar*.
- Claessens, S. & Diwan, I. (1990). Investment Incentives: New Money, Debt Relief and the Critical Role of Conditionality in the Debt Crisis. *World Bank Economic Review*, Vol.14, No. 1.
- Cohen, D. (1993). Low Investment and Large LDC Debt in the 1980s. *American Economic Review*, 83 (3), pp. 437-49.
- Cunningham, R.T. (1993): "The Effects of Debt Burden on Economic Growth in Heavily Indebted Nations", *Journal of Economic Development*.
- Deshpande, A. (1997): "The Debt Overhang and the Disincentive to Invest", *Journal of Development Economics*, pp 169-187.
- Diallo, B. (2007). External Debt and Financing of Economic Development in Guinea. http://antiopa/Economica/002461G/Conference_2007_anglais/09-part-II-2
- Domar, E. D. (1946). Capital Expansion, Rate of Growth, and Employment. *Econometrica*, Vol. 14: 137-47
- Easterly, W. (1999). "How did highly indebted poor countries become highly indebted? Reviewing two decades of debt relief." Washington Dc: The *World Bank*.
- Easterly, W. (2001). *The Elusive Quest for Growth: Economists Adventures and Misadventure in the Tropics*, Cambridge, The MIT Press.
- Easterly, W. (2002). Can Foreign Aid Buy Growth? *The Journal of Economic Perspectives*, Vol 17(3): 23-48.
- Edet-Nkpubre, A. (2013). Exploring the Nexus between External Debt Management and Economic Growth. *International Journal of Economics*, Vol 4i (2).43-65.

- Elbadawi, I.A., Ndulu, J.B. &Ndung'u, N. (1997). Debt Overhang and Economic Growth in Sub-Saharan Africa, External Finance for Low Income Countries.
- Elmendorf, D. W., &Mankiw, G. (1999).*Government Debt in Handbook of Macroeconomics (Vol. 1)*.North Holland, Amsterdam.
- Ezeabasili, V. N., Isu, H. O. &Mojekwu, J. N. (2011). Nigeria's External Debt and Economic Growth:An Error Correction Approach. *International Journal of Business and Management*, 6 (5).
- Fosu, A. K (2008).Implications of the external debt-servicing constraint for public health expenditure in sub-Saharan Africa. *Oxford Development Studies*, 36(4): 363-377.
- Fosu, A. K (2010).The external debt-servicing constraint and public-expenditure composition in sub-Saharan Africa.*African Development Review*, vol. 22, no. 3, pp. 378-393.
- Fosu, A. K. (1996): "The Impact of External Debt on Economic Growth in Sub-Saharan Africa", *Journal of Economic Development*, pp 93-118.
- Fosu, A. K. (1999): "The External Debt Burden and Economic Growth in the 1980s: Evidence from Sub-Saharan Africa", *Canadian Journal of Development Studies*, pp 307-318.
- Gono, G (2012). Commentary on Zimbabwe Accelerated Arrears Clearance, Debt and Development Strategy. Reserve Bank of Zimbabwe.
- Government of Zimbabwe.Ministry of Finance. (2012). Accelerated Arrears Clearance, Debt And Development Strategy. <https://www.worldbank.org/data.worldbank.org/country/zimbabwe>
- Green, J. E. & Khan, S. M. (1990).The African Debt Crisis, *AERC Special Paper 3, Initiatives Publisher*; Nairobi.
- Guide to the Cross-National Evidence". In Bernanke B. and K, S. Rogoff (eds.).
- Gunning, J. W., & Mash, R. (1998). "Fiscal Implications of Debt and Debt Relief:Issues Paper". Mimeo.
- Haddad,H; Lim, J.J; Pancaro, C and Sabarowski, C. (2012). Trade Openness Reduces Growth Volatility When Countries are well diversified. Working Paper Series 1491/2012.<https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1491.pdf>
- Hameed, A., Ashraf, H.&Chaudhary, M. A. (2008). External debt and its impact on economic and business growth in Pakistan.*International research journal of finance and economics* 20, Eurojournals publishing inc., Available at <http://www.eurojournals.com/finance.htm> [accessed june 2011].
- Harrod, R. F. (1939). An Essay in Dynamic Theory.*Economic Journal*, 49, 14–33.

- Harrod, R. F. (1956). An Essay in Dynamic Theory. *Economic Journal*, Vol. 49:14-33
- http://www.zw.undp.org/content/dam/zimbabwe/docs/Poverty%20Reduction/UNDP_ZW_PR_BBag_The%20Debt%20Issue.pdf. Accessed 15 November 2014.
- <https://www.imf.org/external/pubs/ft/wp/2014/wp1434.pdf>. Accessed 04 January 2015.
- Isu, et al (2010).Nigeria`s External Debt and Economic Growth: An Error Correction Approach. *International Journal of Business and Management*, Vol. 6, No. 5.
- Iyoha, M. A. (1999). External Debt and Economic Growth in Sub-Saharan African Countries: An Econometric Study.
- Jalil, A and Ma, Y. (2008). Financial Development and Economic Growth: Time Series Evidence from Parkistan and China. *Journal of Economic Cooperation*, Vol 29 (2): 29-67
- Jones, C.I. (1995). Research and Development Based model of economic growth. *Journal of Political Economy* 103, 759-84.
- Jones, T. (2011).Uncovering Zimbabwe`s Debt: The Case for a Democratic Solution to the Unjust Debt Burden. United Kingdom: The Tawny Press.
- Kadenge, P. G. (1999). The impact of Debt on the economy and strategies for its management, Zimbabwe`s debt crisis and impact on development, derived from a Semina which to place at Juliasedale, Nyanga, Zimbabwe in May 1999.
- Karagol, E. (2002). The Causality Analysis of External Debt Service and GNP: The Case of Turkey. *Central Bank Review*.
- Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*. London, Macmillan.
- Khan, M.A, Qayyum, A and Saeed, S.A. (2005). Financial Development and Economic Growth: the Case of Parkistan. *The Parkistan Development Review* 44: Vol 4(2):819-37
- Knight, M., Loayza, N. and Villanueva, D. (1993). Testing the Neoclassical Theory of Economic Growth: A Panel Data Approach. *IMF Staff Paper*, 40: 512-41
- Krugman, P. (1988). Financing vsForgiving a debt overhang.*Journal of development economics*, 29, 253-268
- Krugman, P. (1989). Private Capital Flows to Problem Debtors in Sachs, J. (ed) *Developing Countries Debt and Economic Performance*. Chicago: University of Chicago Press.
- Labour and Economic Development Research Institute, Zimbabwe (LEDRIZ) .(2012). *Pro-Poor and Inclusive Development in Zimbabwe: Beyond the Enclave*. Weaver Press, Harare.
- Levy, A. &Chowdhury, K. (1993) “An integrative analysis of external debt, capital accumulation and production in Latin America, Asia-Pacific and Sub-Saharan Africa”, *Journal of Economics and Finance*, 17(3).
- Macroeconomics Annual 2000*.Cambridge, MA: MIT Press.

- Maghyereh, A., Omet, G., & Kalaji, F. (2002). "External Debt and Economic Growth in Jordan: The Threshold Effect." *The Hashemite University Jordan*
- Makina, D. (2010). Historical Perspectives on the Zimbabwean Economic Performance. *Journal of Developing Societies*, Vol 26(1): 99-123.
- Malik, S. et al (2010) External Debt and Economic Growth: Empirical Evidence from Pakistan, *International Research Journal of Finance and Economics*, **Issue 44**.
- Manungo, W.L (2013). Opening Remarks At the Official Opening of the High Level Workshop on Modernising the Legal and Institutional Framework for Public Debt Management in Zimbabwe ,Held at Kadoma Rainbow Hotel, Kadoma, Zimbabwe, 07 to 08 March 2013.www.zimtreasury.gov.zw/1-presentation?download=37. Accessed 14 February 2015.
- Metwally, N.M. (1994). The interaction among foreign debt, Capital flows and growth: Case studies, *Journal of Policy Modelling*, **16** (6).
- Ministry of Finance and Economic Development (MoFED). (2014). National Budget 2015: Towards an Empowered Society and Inclusive Economic Growth. Government of Zimbabwe, Harare.
- Mumbengegwi, C. (1998). Conference on Macroeconomic Policy, Management and Performance in Zimbabwe since Independence: Lessons from the 21st Century; Summary and Synthesis of Proceedings. Department of Economics, University of Zimbabwe.
- Nakunyada, W. (2001). The impact of external debt on economic growth in Zimbabwe (1980-1999)
- Narayan, P. K (2004). Reformulating the Critical Values for Bounds F-Statistics Approach to Cointegration: An Application to Tourism Demand Model for Fiji. Discussion Papers.
- Ogunmuyiwa, M.S. (2011). Does External Debt Promote Economic Growth in Nigeria? Department of Economics, Olabisi Onabanjo University. Nigeria.
- Panizza, U and Presbitero, A. F (2013). Public Debt and Economic Growth in Advanced Economies: A Survey. MOFiR Working Paper 13/78.
- Patenio, J. A. S. and Tan-Cruz, A., (2007), "Economic Growth and External Debt Servicing of the Philippines: 1981-2005", *10th National Convention on Statistics (NCS)*.
- Pattillo, C., Poirson, H. & Ricci, L. (2002). External debt and growth. *IMF Working Papers*. WP/02/69.s.n.
- Pattillo, C., Poirson, H. & Ricci, R. (2004), "What Are the Channels Through Which External Debt Affects Growth?" *IMF Working Paper*, No. 04/15.

- Pesaran, M.H and Pesaran B. (1997). Working with Microfit 4.0: Interactive Econometric Analysis. Oxford, Oxford University Press.
- Pescatori, A., Sandri, D and Simon, J. (2014). Debt and Growth: Is there a magic threshold? IMF Working Paper wp/14/34.
- Pescatori, A; Sandri, D and Simon, J (2014). Debt and Growth: Is there a Magic threshold? IMF Working Paper 14/34.
- Presbitero, A. F. (2005) “The debt-growth nexus: an empirical Analysis”. mimeo, http://www.unicatt.it/convegno/open_economy/Allegati/debtgrowth_presbitero.pdf
- Raffer, K. (2001): “Solving Sovereign Debt Overhang by Internationalising Chapter 9 Procedures”, *Arbeitspapier* 35, *OeIIP (Oesterreichisches Institut fuer Internationale Politik/ Austrian Institute for International Affairs), Vienna as Arbeitspapier 35 in June 2001.*
- Rapu, S.C. (2003). Assessment of Nigeria’s Domestic Debt Sustainability CBN. *Economic and Financial Review*, 42(2), 41-66.
- Reinhart, C and Rogoff, K. S. (2010). Growth in a Time of Debt. *American Economic Review*, 100(2):573-78.
- Reinhart, C. M; Reinhart, V. R. and Rogoff, K. S. (2012). Public Debt Overhangs: Advanced-Economy Episodes since 1800. *Journal of Economic Perspectives*, 26(3):69-86.
- Ricardo, R. (1951). *Principles of Political Economy and Taxation*. Cambridge, Cambridge University Press.
- Rockerbie, D. W. (1994): “Did Debt Crisis Cause the Investment Crisis? Further Evidence”, *Applied Economics*, pp 731-738.
- Rodriguez, F. and Rodrik, D. (2001). “Trade Policy and Economic Growth: A Skeptic's
- Romer, P., (1986), “Increasing Returns and Long Run Growth”, *Journal of Political Economy*, Vol. No. 94, pp 1002-1037.
- Romer, P.M. (1994). The Origins of Endogenous Growth. *The Journal of Economic Perspectives*, Vol. 8 (1): 3-22.
- Saungweme, T., & Mufandaedza, S. (2013). An empirical analysis of the effects of external debt on poverty in Zimbabwe: 1980-2011. *V4i6*, 20 – 27, pp. 1.
- Sawada, Y. (1994): “Are the Heavily Indebted Countries Solvent? Tests of Inter Temporal Borrowing Constraints”, *Journal of Development Economics*.
- Sen, S., Kasibhatla, K. M., & Stewart, D. B. (2007). “Debt overhang and economic growth—the Asian and the Latin American experiences.” *Economic Systems*, 31, pp 3–11.
- Serven, L. (1997). “Uncertainty, Instability, and Irreversible Investment: Theory, Evidence

- Siddiqui, R. & Malik, A. (2001), "Debt and economic growth in South Asia", The Pakistan Development Review.
- Siddiqui, R. a. (2002).Debt and Economic Growth in South Asia.*17th Annual General Meeting of PSED*. Islamabad: State of Pakistan.
- Smyth, D., Hsing, Y. (1995): "In search of an Optimal Debt Ratio for Economic Growth", *Contemporary Economic Policy*, pp 51-59.
- Sojo, B. (2008). Testing for Unit Roots and Cointegration
- Solow, R. (1956). A Contribution to the Theory of Economic Growth.*Quarterly Journal of Economics*, 70: 65-94.
- Solow, R. M. (1956). A contribution to the theory of Economic Growth.*Quarterly Journal of Economics*, LXX.
- Solow, R. M. (1956). Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, Vol. 50: 65-94.
- Swan, T. W. (1956). Economic Growth and Capital Accumulation," *Economic Record*, Vol. 32: 334-61
- Swan, T. W. (1956). Economic Growth and Capital Accumulation.*Economic Record*, 32, 334–361.
- Syed, I.R. (2010) "Public Debt and Economic Growth in Pakistan", a Time Series Analysis from 1972 to 2010.
- Todaro, M.P. (1994). *Economic Development*, Fifth Edition, Longman New York and London.
- United Nations Development Programme Zimbabwe (UNDP).(2012). Addressing Zimbabwe's Huge Debt Burden.
- Warner, A. M. (1992): "Did the Debt Crisis Cause the Investment Crisis", *Quarterly Journal of Economics*, pp 1161- 1186.
- Were, M. (2001). The Impact of External Debt on Economic Growth and Private Investment in Kenya: An Empirical Assessment. Wider Conference Helsinki.
- Were, M. (2001). The Impact of External Debt on Economic Growth in Kenya: An Empirical Assessment. *World Institute for Development Economics Research.Discussion Paper No. 2001/116*.
- Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim Asset) "Towards an Empowered Society and a Growing Economy" October 2013- December 2018. Government of Zimbabwe.<http://www.herald.co.zw/wp-content/uploads/2014/01/Zim-Asset.pdf>. Accessed 13 December 2014.

Appendix

Long Run Coefficients

Dependent Variable: LGDP
 Method: Least Squares
 Date: 03/29/15 Time: 10:50
 Sample: 1980 2012
 Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LK	1.027542	0.207474	3.132750	0.0154
LEXD	-0.915805	0.332898	-2.751006	0.0107
LPOP	-0.177415	0.220367	-0.805089	0.0281
LEDSEX	0.430867	0.238673	1.805264	0.0526
LINFL	-0.060886	0.184829	-0.329416	0.7445
LTOP	-0.540215	0.798648	-0.676412	0.0048
C	6.973451	1.671300	4.172472	0.0003

R-squared	0.798403	Mean dependent var	2.958400
Adjusted R-squared	0.682650	S.D. dependent var	0.588522
S.E. of regression	0.462412	Akaike info criterion	1.481110
Sum squared resid	5.559442	Schwarz criterion	1.798551
Log likelihood	-17.43831	Hannan-Quinn criter.	1.587919
F-statistic	4.305736	Durbin-Watson stat	2.320238
Prob(F-statistic)	0.003828		

Short run (Error Correction Results)

Dependent Variable: D(LGDP)
 Method: Least Squares
 Date: 03/29/15 Time: 11:18
 Sample (adjusted): 1983 2012
 Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	0.100489	0.033846	2.968958	0.0182
D(LK)	0.255978	0.109477	2.338189	0.0517
D(LK(-1))	0.068791	0.134334	0.512092	0.0460
D(LEXD)	-2.443760	0.537382	-4.547525	0.0004
D(LEXD(-1))	-0.961602	0.438380	-2.193535	0.0508
D(LPOP)	-0.899548	0.348666	-2.579971	0.0209
D(LPOP(-1))	-0.834680	0.495005	-1.686206	0.1124
D(LEDSEX)	-0.319972	0.170570	-1.875892	0.0803
D(LEDSEX(-1))	-0.237343	0.177289	-3.594943	0.0027
D(LEDSEX(-2))	0.515666	0.211172	2.441918	0.0275
D(LINFL)	-0.235665	0.169599	-1.389542	0.1849
D(LTOP)	-1.190566	0.399956	-2.976717	0.0262
ECM(-1)	-0.964792	0.311951	-3.092763	0.0074
C	0.025125	0.004984	5.036079	0.0045

R-squared	0.918118	Mean dependent var	0.003734
Adjusted R-squared	0.841694	S.D. dependent var	0.750261
S.E. of regression	0.298511	Akaike info criterion	0.726836
Sum squared resid	1.336637	Schwarz criterion	1.427435
Log likelihood	4.097459	Hannan-Quinn criter.	0.950964
F-statistic	12.01353	Durbin-Watson stat	2.336365

Prob(F-statistic) 0.000010

Appendix: Diagnostic Tests

Normality Test

Jargue-Bera	1.71
Probability	0.1628

Serial Correlation Tests: Breusch-Godfrey Serial Correlation LM Test

F-statistic	11.710761	Prob. F(2,24)	0.2020
Obs*R-squared	4.117577	Prob. Chi-Square(2)	0.1276

Linearity Test: Ramsey RESET Test

Specification: LGDP LK LEXD LPOP LTOP LEDSEX LINFL C

Omitted Variables: Squares of fitted values

	Value	df	Probability
F-statistic	6.50326	(1, 25)	0.0713
Likelihood ratio	5.51326	1	0.0825

Eangle Granger Two Step Cointegration Test

	ADF- Statistic	Critical Values		
		1%	5%	10%
Residual	-5.1988	-4.2846	-3.5629	-3.2153

Pairwise Granger Causality Tests

Null Hypothesis	Obs	F-statistic	Prob.
GDP does not Granger Cause EXD	33		0.1317
EXD does not Granger Cause GDP	33		0.0341