

**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

**FACULTY OF COMMERCE**

**DEPARTMENT OF ECONOMICS**



**THE IMPACT OF GOVERNMENT DEBT ON ECONOMIC GROWTH IN  
ZIMBABWE (1985-2012)**

**Submitted by**

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**A DISSERTATION/THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE  
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**APPROVAL FORM**

The undersigned certify that they have read and recommended the Bindura University of Science Education for acceptance, a project entitled, “The impact of government debt on economic growth in Zimbabwe from 1985 to 2012”, submitted by

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Date

## **DEDICATION**

This research project is dedicated to my late father Naison Philip Nyakudya, whose faith in me I will always treasure. Your words still echo in my head and I carry them in my heart. My mother Grace Nyakudya whose love, prayers and encouragement have made me who I am today.

**I love you.**

## **ABSTRACT**

External debt is considered as a significant source of income for developing countries. However, a group of sub-Saharan countries classified as HIPCs including Zimbabwe, have continued to experience difficulties in managing and serving their huge stock of external debt. Zimbabwe has experienced declining growth rates for the number of years and at the same period government debt was accumulating. Therefore, the study sought to determine the impact of government debt on economic growth in Zimbabwe using time series data from 1985-2012. The research paper also sought to determine the impact of foreign direct investment, gross capital formation, labour, and exports on economic growth. The study employed Ordinary Least Squares regression model to show the impact of external debt on economic growth. Zimbabwe is one of the countries severely affected by debt overhang. The research used data from World Bank and ZIMSTAT. The study found out that government debt has negative effects on economic growth which is in line with most Less Developed Countries (LDCs). From these results the researchers should be worried much with the increase in government debt due to the relationship it holds with economic growth. The results indicate that external debt has a deleterious impact on economic growth. Continuous borrowing from foreign sources would negatively affect Zimbabwe`s economic growth.

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## **CHAPTER I**

### **INTRODUCTION**

Most under developed countries, such as Zimbabwe, struggle with the development of measures that promote economic growth. Growth is obstructed by various economic factors and this study aims to focus on how government debt has affected economic growth in Zimbabwe for over two decades. In theoretical literature, the link between government debt and economic growth largely supports a negative relationship. Government debt costs create economic and financial uncertainties, which ultimately hinders gross capital formation by discouraging potential foreign investments and instigating capital flight. According to Krugman (1988), government debt becomes an issue of concern when the country's accumulated debt outstrips the ability to repay it. Krugman (1988) further asserts that, economic uncertainty brought about by rising government debt servicing obligations has compelled many world governments to adopt discretionary measures in order to finance their revenue-expenditure gaps.

The evolution of public debt stocks and public debt repayments in Zimbabwe dates back to the early 1980s when the country generally adopted a development strategy that relied heavily on foreign financing. The resultant escalating fiscal imbalances racked up government debt with the consequence of increasing domestic interest rates. By 1990, Zimbabwe's cost of public debt constituted a significant proportion of government revenue. In 1999, the inexorable cost of public debt servicing began to erode the capability of the state to effectively fund human developmental programs and public sector investments. A considerable amount of financial resources was diverted towards the payment of interest on both domestic and foreign public debt. Consequentially, the mounting cost of public debt servicing in Zimbabwe brought about stern structural

revenue reforms, in the form of economic and financial restructuring. These revenue reforms included the introduction of new taxes, increases in existing tax rates as well as the introduction of interest and exchange rate controls – which possibly crowded out private sector investment. The combination of shrinking economic base and rising public debt servicing costs inevitably constrained the economic growth prospects of Zimbabwe over the period under review.

### **1.1 Background of the study**

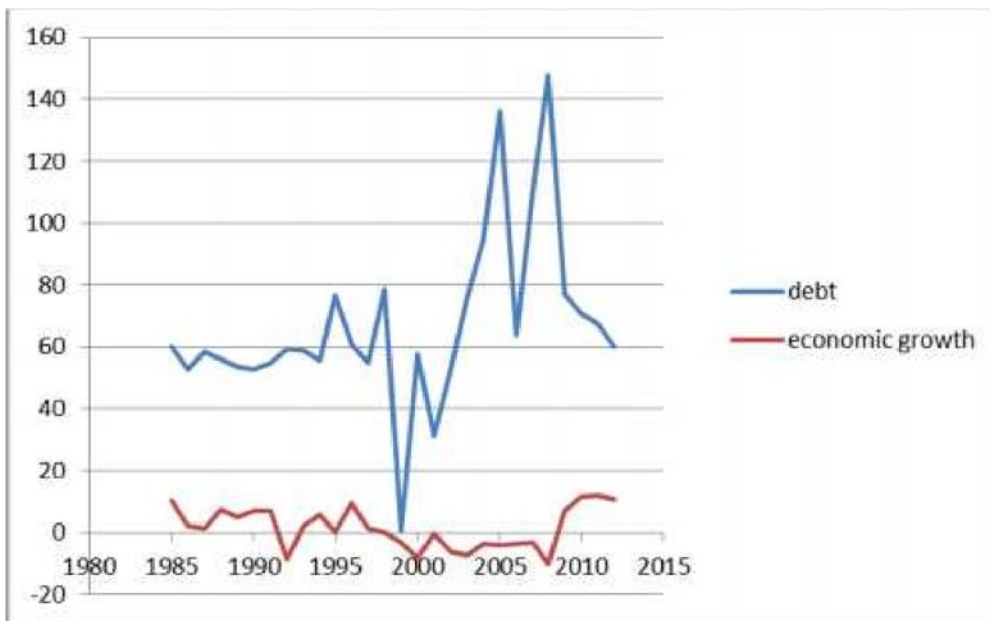
During the late 1970s and early 1980s, Zimbabwe amassed huge foreign public debt, which it subsequently found difficult to repay in the late 1990s, prompting a series of debt servicing reforms. In the early 1990s, the creditor community had started to embark on numerous massive debt reforms, such as debt relief initiatives and debt restructuring programmes after the realisation that most developing countries were failing to meet their external financial obligations. Unfortunately, Zimbabwe was not among the recipients of any of the debt relief initiatives by the Bretton Woods Institutions, the Paris Club and other creditors. Therefore, Zimbabwe's public debt repayment challenges varied from acute balance of payment difficulties to economic and financial problems. Resultantly, the debt levels and servicing position of the country worsened in the 1990s.

The servicing of foreign government debt after 1995 was absorbing huge budgetary and foreign exchange resources, more than 20 percent of exports of goods and services receipts, leaving little money to spend on health, education and social service delivery. Government debt costs in Zimbabwe were rising sharply due to the continuous accumulation of interest on foreign debt arrears. Consequently, the country undertook a series of non-HIPC (Highly Indebted Poor Countries) economic reforms with the intention of finding lasting solutions to the debt servicing crisis, and of seeking ways of unlocking fresh capital injections, so as to contribute meaningfully towards the accomplishment of sustainable economic growth and poverty reduction goals.

Zimbabwe's government inherited a colonial debt that amounted to US\$700 million. The debt required about US\$65 million annual debt servicing when the post-independence government entered office. After Zimbabwe's first decade of independence external debt had rose to US\$3.24 billion. Zimbabwe's major lenders

were the IMF, AfDB and the World Bank, who were owed 53%; bilateral creditors and commercial finance institutions were owed 16 percent and 31 percent respectively (Bond and Manyanya, 2002). However, the country maintained a positive economic growth throughout 1980s and 1990s this was due to the increase in private investment with the greater part in the agricultural sector.

**Figure 1** shows the trend of the foreign debt and the Zimbabwean economic growth for the period under review.



**Fig 1.1: Government debt and economic growth trends**

**Source: Reserve Bank of Zimbabwe and ZIMSTAT 2013**

### 1.2 Statement of the problem

Government debt costs create economic and financial uncertainties, which ultimately hinders gross capital formation by discouraging potential foreign investments and instigating capital flight. This has been the other factor that contributed largely to the poor performance of the Zimbabwe’s economy since 1980. With the concerns of decline in economic growth, this study investigates the impact of government debt on economic growth, giving focus to the Zimbabwean economy.

### 1.3 Research Objectives

The general objective is to examine the impact of government debt on the economic growth in Zimbabwe from 1985 to 2012. However specific objectives are as follows.

1. To assess the impact of foreign direct investment on economic growth.
2. To describe the trend of GDP levels of Zimbabwe in relation to the employment sector.
3. To find out if exports effects on economic growth.
4. To recommend policies based on the findings that can resolve problems emanating from debt overhang hypothesis.

#### **1.4 Research Questions**

1. What is the relationship of government debt and economic growth?
2. Does foreign direct investment affect economic growth?
3. Did exports affect economic growth?
4. Based on the findings, what possible measures can be employed to improve the existing economic conditions?

#### **1.5 Statement of Hypothesis**

Test the hypothesis that an increase in government debt reduces economic growth.

#### **1.6 Significance of the study**

The purpose of the study is to investigate the impact of government debt on economic growth. This study will inform national planners and policy makers during decision making on matters related to national debt. This study will assist government officials on the impact of government debt on the Zimbabwean economy and how to deal with past and present debts. Therefore, this study helps to keep policy makers, economists and governments, informed and hence use the results to assess the need for or against debt as a budget deficit fixing policy.

#### **1.7 Assumptions**

- Data obtained and given is accurate.
- Government debt is an important factor in analyzing economic growth and is not the only determinant of economic growth.

### **1.8 Delimitations**

The study was carried out for the Zimbabwean economy only for a period of 1985-2012. Theoretical evidence from other sources have been used to help assess the Zimbabwean economy. This study only focused on analysing economic growth and not on economic development. The researcher makes use of data from recommended authorities such as Zimbabwe National Statistics Agency (ZIMSTATS). Figures are on yearly basis and these were used in modelling the data to find the contribution of government debt to growth.

### **1.9 Limitations**

The major limitation to the research is the accessibility of reliable, adequate, and meaningful data due to some situations beyond the researcher's control. To overcome the problem the researcher used secondary data collected from Ministry of finance. Data from Ministry of Finance was accessed from the website, offices, and ZIMSTAT. The data is therefore reliable and the researcher drew meaningful conclusions from the research findings.

### **1.10 Definition of terms**

**Country Debt:** Is the total obligations owned by the country to non-residents.

**Debt Service:** Refers to the future repayments of debt of both the principal and interest amount.

**Debt overhang:** Is a situation in which the country's external debt level is expected to exceed the country's repayment ability in the future.

**Economic Growth:** Is the increase of capita per output of a country arising from changes in factor supplies, productivity of factors and technology.



**Economic Performance:** Refers to those issues dealing with the amount and value of money, wealth, debt and investment. It is the general outlook of the economy as measured by relevant economic indicators such as GDP/GDP per capita.

**Foreign direct investment (FDI):** Capital inflow in the form of capital goods.

**Government Debt:** Defined as the total government obligations in the form of bonds and short-term borrowings. Debt held by the public excludes bonds held by quasi-governmental agencies such as the Federal Reserve System. (Samuelson, 2000)

**Heavily indebted poor country`s:** Poverty reduction initiative by multilateral institutions of forgiving debts of less developed countries which are heavily indebted.

### **1.11 Summary**

This chapter looked at the background of the study that gives a clear understanding of the Zimbabwean economy and challenges of government debt to economic growth. The researcher identified the rate at which government debt affect economic growth in the country from 1985 to 2012. Chapter one also looked at the economic situations prevailing in the country as far as government debt is concerned. It focused on the background of the study, statement problem, purpose of the study, the hypothesis, significance of the study and research questions. These gave the main scope of the study and the importance to carry out the research. The rest of the study consist of Chapter two which reviews both theoretical and empirical literature, gathered by researchers from previous relevant studies.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter looks at the theoretical and empirical literature in the area of government debt and economic growth. The 1950's and 1960's are most often described as the "golden years" for developing countries in economic development literature because of the rate of economic growth which was not just high but also internally generated. In the above years these LDC's increased their investment reliance on external resources however most of the growth in the 1970s was "debt led" and this led to persistent current account deficits with massive borrowings from the international money and capital market (ICM) to bridge payment gaps. External debt has increased steadily over the years in developing countries and as such an analysis of the role external debt plays in economic growth and development is paramount. Aside from being an ardent booster of growth external debt has also been known to cause a number of problems for developing countries. The increases in external debt over the years in developing countries has brought the issue of external debt out of hiding and has become a matter of concern both to the international and local community. The need to constantly borrow as a means of financing has brought about an increasing literature among various economists. This chapter therefore carries out an extensive literature review on the subject matter of external debt and economic growth by looking at theoretical issues, empirical and methodological issues and summary.

#### **2.2 Theoretical Review**

Several theoretical contributions have been made as regards the subject matter of external debt and economic growth. These theories are of relevance to this study as they serve as a building block to this research work and as such the following theories will be discussed; the neo-classical growth model, debt overhang theory, Buchanan theory, Keynesian model, threshold school of thought.

### 2.2.0 Neo-Classical Growth Model

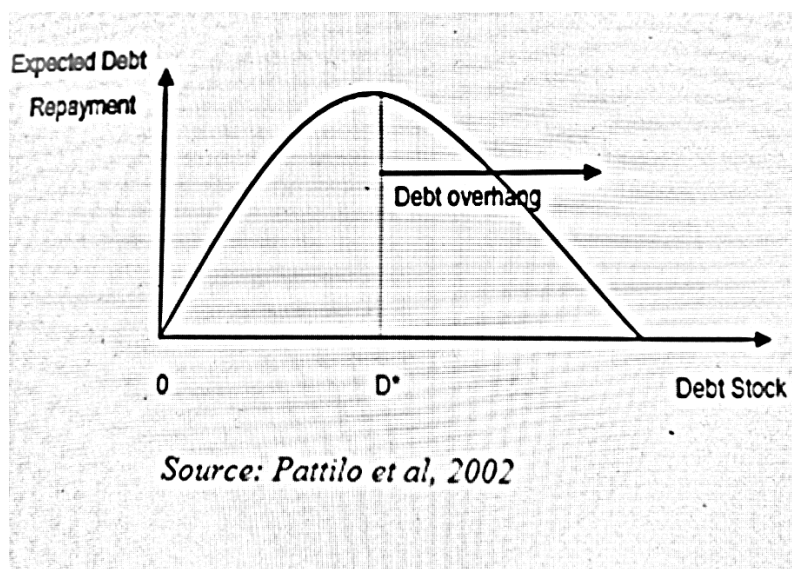
The model was developed by Frank Ramsey (1928) and he assumed that the production side of the economy is represented by representative firm which produce output according to Cobb Douglas production function.

$$Y(t) = K(t)^\alpha (A_t L_t)^{1-\alpha} \dots \dots \dots (1)$$

Where Y is aggregated output, K is the aggregated capital stock, L is the aggregated labour supply and A is the total efficiency of production and the subscript t denotes the time period. As the variable A captures the total factor productivity (TFP) effect on growth in output and it is assumed that the effect of government debt on growth operates through variable A. In neo-classical growth paradigm, there exists a positive relationship between debt and output growth because this is based on the assumption of perfect movement of capital in terms of international exchange and deployment of resources from one country to another. Hence, the general presumption is that debt burden exerts a “weighing own” effect on the rate of economic growth and development; through several channels related to the debt stock and consequent debt servicing. Also, according to neoclassical models of economic growth, foreign direct investment will only be growth-advancing if it affects technology positively and permanently. In this model, gross capita formation is considered to be an important source of human capital and technological diffusion. Technology thus increases the productivity or effectiveness with which natural resources, capital, and labour are used. Therefore, the researcher concluded that technological change takes place through inventions and innovations attained through research and development carried out in laboratories and institutes. As a result, technology has a positive impact to economic growth of the economy for example in Zimbabwe particularly.

### 4.2.1 Debt Overhang Theory

Krugman (1988) states the term of “debt overhang” as a situation in which a country’s expected repayment ability on external debt falls below the contractual value of debt. Cohen’s (1993) theoretical model posits a non-linear impact of foreign borrowing on investment as suggested by Clements et al (2003) who indicates that this relationship can be arguably extended to growth. It also argues that foreign savings may be used for consumption rather than investment leading to external debt non-sustainability. This is the familiar debt overhang theory which is explained by the debt-laffer curve thesis. The graphical representation is given below.



This theory relates to the potential negative effect of a heavy external debt burden on growth, the dominant paradigm is the debt overhang hypothesis. It is based on the premise that if debt will exceed the country’s repayment ability with some probability in the future, expected debt service is likely to be an increasing function of the country’s output level. Thus, some of the returns from investing in the domestic economy are effectively taxed away by existing foreign creditors and investment by domestic and new foreign investor is discouraged. Debt servicing, including interest payments and



In the chart above, the y-axis represents total production, and the x-axis represents labor. Curve OW outlines the total subsistence wages. If the level of population is ON, and the level of output is OP, the per capita wage is represented by NR. Consequently, the surplus or profit is RG.

Because of the surplus, the capital formation process comes into effect. Consequently, the demand for labor increases, leading to a rise in total wages, as the curve moves to GH. If the total population remains constant at ON, and wages exceed subsistence wages, i.e.,  $NG > NR$ , then total population and total manpower will increase as the curve moves toward OM. Because of the increase in population, surplus can be generated.

In such a manner, the process will continue until the economy reaches point E, as depicted by the arrow. Point E represents a stationary situation wherein wages and total output equalize, and no surplus can be generated. However, according to classical economists, with technological progress the production function will shift upward, as depicted by the curve TP2. Also, according to the Classical Growth Theory, economic stagnation can be postponed, although ultimately not avoided.

Ricardo et al others believe government borrowing is invariably wasteful, ruinous to prosperity, and even morally unjust. However there are exceptions including Hamilton, who stress the context of borrowing, distinguish productive versus wasteful spending and argue that certain state services are legitimate, productive and indispensable to prosperity.

### **2.2.2 Keynesian Model**

The Keynesian model states that there is no real burden associated with public debt and public debt has no effect on economic growth (Metwally and Tamaschke, 1994). The real burden occurs at the time when the expenditure made, real resources are used up. Internal public debt is “debt we owe to ourselves.” It does not add anything to our real resource base. External debt is different: it leads to an increment of real resources to the economy, and those resources will have to be repaid some time.

Substituting public debt for current taxation will lead to an immediate macro-expansionary effect that is an increase in public expenditure financed by a tax increase

invokes a different and lower multiplier than it does to debt-financed public expenditure (and indeed, in macro terms, public debt involves no contractionary force (Savvides, 1992).

### **2.2.3 Threshold School of Thought**

The threshold school of thought is majorly about the external debt burden which emphasises the non-linear relationship between debt and growth. It links debt and growth to problem of capital flight where at high debt level growth falls i.e. marginal cost of debt on growth becomes negative. As noted by the threshold theory, the fall in growth is due to the higher distortionary tax burden on capital required to service the debt. It leads to lower rate of return on capital, lower investment and hence lower growth. It maintain that low debt regimes have higher growth rate and lower strand of thought in the debt-growth nexus sees external debt as capital inflow with positive effect on domestic savings and investment and thus on growth which leads to poverty reduction via appropriate targeting of domestic savings and investment (Calvo,1998). Furthermore, Calvo expressed in his model that there exist three distinct debt areas: in the first area growth is an increasing function of debt, the second area is an intermediate region where country can exhibit either high or low growth path, and the third area is where growth is a decreasing function of debt

## **2.2 Empirical Review**

On the empirical side, many empirical studies have investigated the effect of external debt on economic growth. The initial studies on this topic limited themselves to a relatively smaller dataset and focused on time series analysis, but later, many studies used panel data and sophisticated econometric techniques to deal with various data periods on the issue on economic growth and government debt. Also, several empirical studies have been carried out to show the effects of a debt-financed expansionary fiscal policy (budget deficit) on output. While some focused only on the debt overhang effects of budget deficits, others just analysed the effect of such fiscal policy on the economy IMF on its working paper (2004) investigated the major channels through which external debt affects economic growth, specifically whether debt affects growth through

factor accumulation or total factor productivity growth. In addition, it tested for the presence of non-linearities in the effect's debt on the different sources of growth using panel data of 61 developing countries over the period 1969 to 1998. This analysis indicated that the negative impact of high debt on growth operates both through negative effects on capital accumulation and on total factor productivity growth. On average for debt-ridden countries, doubling debt will reduce GDP growth by about 1 percent and reduce both per capita physical capital and total factor productivity growth by less than that. According to the contributions to growth, approximately 1/3 of the effect of debt on growth occurs through capital accumulation and 2/3 through total factor productivity growth.

IMF (2003) working paper examined the channels through which external debt and debt relief affects growth. From their finding, conclude that the considerable decrease in the stock of external debt projected for highly indebted poor countries (HIPC) would straightforwardly increase per capita income growth by about 1 percent per annum. Reduction in external debt service could also offer an indirect boost to growth through their special effects on public investment. If half of all debt-service relief were channelled for such purposes without raising the budget deficit, then growth might speed up in some highly indebted poor countries by an additional 0.5 percent per annum

Another study finds strong support for a non-linear, Laffer curve type relationship between the stock of external debt and growth. Using a large panel data of 93 developing countries over the period 1969-1998, Pattilo et al (2002) find that the average impact of external debt on per capita GDP growth is negative for net present value of debt levels above 160-170 percent of export and 35-40 percent of GDP. These results are robust across different estimation methodologies and specifications, and suggest that doubling debt levels slows down annual per capita growth by about half to a full percentage point.

Fosu (1996) tested the relationship between economic growth and external debt with an empirical study for the sample of Sub-Saharan Africa countries over the 1970-1986 periods by employing the OLS method. This study examined to which degree debt had a negative impact on economic growth of Sub-Saharan African countries. This study estimates the direct effect of debt hypothesis and indirect debt hypothesis. The direct effect of debt hypothesis 31 proposed that if debt service payments do not decrease investment and saving levels considerably, the debt negatively affects growth directly



by reducing productivity. It is also argued that the direct effect of debt hypothesis suggests that both debt service payments and debt outstanding may affect GDP growth rate negatively even if debt outstanding and debt service payments do not affect investment levels.

The findings of this study also show that on average a high debt country faces about one percentage reduction in GDP growth rate annually. In addition, Elbadawi et al (1996) generated a Laffer curve of debt establishing a critical verge beyond which debt affects negatively on growth and investment. On the basis of their results, debt in excess of 97 percent of GDP is likely to have a negative impact on investment and growth. With respect to the private sector investment, they conceive that a debt to GDP ratio greater than 33.5 percent would generate a depressive effect by reducing investment. Faraji and Makme (2013) conducted a study in Tanzania to examine the link between foreign debt and economic growth for the time period of 1990-2010. The main finding revealed that there was significant impact of debt stock and debt service obligations on GDP growth. The total external debt stock has a positive effect and debt service payments have a negative effect. But in the long run there is no relationship of external debt and GDP.

On the other hand, Cohen's (1993) results on the correlation between developing countries debt and investment in the 1980s indicated that the level of stock of debt does not appear to have much power to explain the slowdown of investment in developing countries during the 1980s. It is the actual of flows of net transfers that matter. He found that the actual service of debt „crowded out“ investment. Similarly, Menbere (2004) explored that the past accumulated debt of least developing countries (LDCs), is negatively related to growth of real GDP; per capita signifying the existence of debt overhang phenomena across developing countries.

Karagol (2002) also examined the relationship between external debt service and GNP in Turkey. He found a long run relationship between GNP and debt burden and accepted the debt overhang hypothesis in Turkey. However, in the case of Sri Lanka, Wijeweera et al (2005) found conversely that external debt affected GNP positively in the long run equation and negatively in the short run. Both studies followed the model of Cunningham (1993). The prominent Study by Were, (2001) examined the relationship between external debt service and growth for Kenya. The result confirmed that external

debt service has a negative effect on growth. Therefore, this study concludes that debt overhang phenomenon happened to these countries.

Easterly (1999) found evidence from 41 HIPC that incremental debt relief over the past 2 decades has led to asset worsening and new borrowing. He argues that debt relief may have a perverse incentive effects as countries borrow in anticipation of debt forgiveness and delay policy reforms waiting for the best deal. It leads to moral hazard incentives to borrow in the expectation that part of the debt will be forgiven. He also argues that debt relief makes the poor worse off if it creates incentive to delay reforms needed for growth. In addition, according to Easterly, debt relief would lead to replacement of foreign direct investment (FDI) and private lending by official lending since countries lose their credit worthiness. There is a concern that official and multilateral lending may not follow the same standards of creditworthiness as a private lending. He concludes that debt relief is fruitless for countries with unchanged long preferences.

Different scholars, in addition to the above issues, conducted studies to know the relation between external debt relief and adjustment effort or investment. Much of the literature seems to agree on two conclusions. First, debt relief can increase investment if initially there is a debt overhang. There are several reasons for this, although the one emphasized by many authors is that investment depends on expected tax rates which, in turn, depend on the face value of the debt (Helpman, 1989). Hence, debt relief may be in the interest of the debtors as well as the creditor (Sachs, 1989).

### **2.3 Conclusion**

Given the above empirical findings, it is difficult to say whether external debt service has a negative or positive effect on investment and economic growth. The above studies showed that the effect of external debt service differs among countries. Based on these mixed results, it is improper to make any type of generalizations of the potential relationship between economic growth and external debt. Most of the literature reviewed herein employed cross country analysis. However, cross-country analysis is not easy and has some difficulties.

Developing countries in aggregate differ significantly in their economic and political environment, organizations and institutions. Thus, in designing a recovery

policy aimed at maintaining sustainable external debt and promoting economic growth, it is necessary to consider the case of each developing country separately. Such a recovery policy should be based on the country's interrelationships between its GNP and external debt. To shed some light on such an important and controversial issue, as well as contribute to the existing literature on Zimbabwe, this study investigates the effect of foreign indebtedness on economic growth for the Zimbabwean economy.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter assimilates the theoretical and empirical review into application to the Zimbabwean economy. Chapter three outlines, specifies and develops the empirical model the researcher is going to use in the study, as well as a description of how the research was carried out to achieve the main research objective of analysing the impact of government debt on Zimbabwe economic growth. Basically, this whole chapter explains in full everything and every method used to make this research a success.

### 3.1 Research Design

The researcher implements a quantitative research design which is the plan and structure of investigation regarded as to obtain answers of research questions. It points out at how the variables' behaviours are related to each other's. due to this viewpoint, this research design type is the most appropriate to employ.

### 3.2 Theoretical Model

Basing on the studies of Charles Cobb and Paul Douglas (1947), the model is specified as a trans log model since it is difficult to regress a Cobb-Douglas function. The trans log production function is a generalization of the Cobb–Douglas production function.

$$Y = AK^\alpha L^\beta e^\mu$$

Where  $Y$  is the output,  $K$  is capital and  $L$  is labour and  $A$  Total factor productivity efficiency of production.  $\alpha$  and  $\beta$  are the output elasticity of labour and capital, respectively. These values are constants determined by available technology.

$A$  captures the total factor productivity (TFP) it effects on growth in output. It is assumed that the effect of government debt on growth operates through variable  $A$ .

$A$  can be specified as:

$$A = f(D, X, FDI, \Phi)$$

Where

$A$  refers to the total factor productivity

$D$  is government debt

$X$  is net exports of goods services

$FDI$  is Foreign Direct Investment

$\Phi$  refers to other factors that affect TFP but not specified

Total factor productivity equals to total labour productivity and total capital productivity but FDI affects both labour productivity and capital productivity. The research once said total factor productivity equals to total labour productivity and total capital productivity, however total factor productivity is being represented by GDP. Labour productivity is affected by Labour (L) and capital productivity is affected by Gross Capital Formation (GCF). Hence the research can specify our model as follows:

$$GDP = \phi, D^{\beta_1}, FDI^{\beta_2}, X^{\beta_3}, GCF^{\beta_4}, L^{\beta_5}$$

Where GDP is the gross domestic product

D is the government debt

FDI is the foreign direct investment

GCF is the Gross Capital Formation

X is the value of exports

L is the amount of labour employed  $\beta_1 \dots \beta_5$  are subscripts of the variables

### 3.3 Model Specification

#### 3.3.1 Empirical model to be estimated

The researcher is going to use the OLS approach in finding the relationship between GDP and government debt. The method assumes a linear relationship within the variables, hence equation three is going to be linearized by inclusion of logarithms. Inclusion of logarithms can also help to reduce the variability on the minimum and maximum values of the variables.

$$LGDP = L\phi + \beta_1 LD + \beta_2 LFDI + \beta_3 LX + \beta_4 LGCF + \beta_5 LL + \varepsilon$$

Where:

*LGDP* is the natural logarithm of year on year real GDP

*LD* is the natural logarithm of year on year government debt

*LFDI* is the natural logarithm of year on year foreign direct investment

$LX$  is the natural logarithm of year on year exports of goods and services

$LGCF$  is the natural logarithm of year on year gross capital formation

$LL$  is the natural logarithms of year on year labour employed.

### **3.4 Data**

#### **3.4.1 Data Choices**

Secondary data has been the main source of information to use because it increases the credibility of the outcomes of the whole research. Secondary data mostly produce more accurate data compared to primary sources. It also reduces costs in that time and financial resources are saved.

#### **3.4.2 Data sources and problems**

Secondary data was used for all variables. Data for real GDP, total labour force, foreign direct investment inflows and gross capital formation was taken from the sites like the world bank, while data of total government debt and exports was taken from Zimbabwean sites like zimstat.

However, not all data was up to date as some websites, mostly from Zimbabwe, do not update their statistical articles, hence not current data was obtained from these sites. Also, the secondary data source provides more data or there is data overload, so there is need to be very careful in selecting the most relevant data for the research study.

### **3.5 Diagnostic Test**

#### **3.5.1 Stationarity test**

It occurs when the mean and variance do not vary systematically over time. It is important to test the stationary properties of time series as the use of stationary time series data in the Classical Linear Model will result in inflated results. In this research stationarity will be tested using the Augmented Dickey Fuller test. Time series data is said to be stationary if the absolute value of the ADF is greater than the critical value of the statistic.

### **3.5.2 Heteroscedasticity**

Heteroscedasticity test is carried out in order to yield consistent estimates. One of the important assumptions of the classical linear regression model is that the variance of each disturbance term is not equal, conditional on the chosen values of the explanatory variables. This is the assumption of homoscedasticity, or equal (homo) spread (causticity), that is, equal variance. White heteroskedasticity test for heteroskedasticity will be used in this study. It is estimated under the null hypothesis that there is heteroscedasticity and the alternative hypothesis that there is no heteroscedasticity.

### **3.5.3 Multicollinearity**

This is the presence of linear relationship among the explanatory variables. There are no perfect collinearity assumption concerns only the independent variables. As a result of the stochastic nature of most regressors' correlation and interrelationships are bound to exist among them making Multicollinearity inherent in most explanatory variables. It is important to note that Multicollinearity does allow the independent variables to be correlated, they cannot be perfectly correlated. If we do not allow for any correlation among the independent variables, then multiple regressions would not be very useful for econometric analysis. In this study coefficient of determination is used to test for Multicollinearity.

### **3.5.4 Auto-correlation**

Auto-correlation refers to the relationship between successive values of the variables. A test for autocorrelation will be carried using the Durbin-Watson statistic. In the presence of autocorrelation of the OLS estimators are biased and consistent but not efficient.

It is estimated based on the null hypothesis that there is no serial. Using this method, any value of the DW statistic not close to 2 will imply serious autocorrelation. If the DW-statistic is found to be close 2 in the model, we accept the null hypothesis and conclude that there is no first order autocorrelation, either positive or negative.

### **3.6 Justification of Variables**

The variables in this chapter, have been chosen in line with the previous chapter. The use of the mentioned variables is mainly because they have real effect on the dependent variable, that is, economic growth.

#### **Gross Domestic Product**

In this study real GDP will be employed since it is the most widely used measure of economic growth. GDP shows the total output produced in an economy, it is the sum of the gross value added by all residents and non-resident producers in the economy plus any taxes and minus any subsidies not included in the value of the products. Total output is a product of efficient mix of resources in an economy, therefore increases in output implies increase in efficiency and therefore has a positive effect to economic growth. In this study, real GDP is used as a proxy for measuring economic growth.

#### **Government debt**

Government debt is the total value of government bonds outstanding at any particular time. A sustainable public debt is that level which allows a debtor country to meet its current and future debt service obligations in full, without recourse to further debt rescheduling. However, the researcher expects to see the negative



impact of government debt on economic growth, assuming that the causality goes in that direction.

### **Foreign Direct Investment**

Capital inflows related to capital goods investment which may have future productivity gains and an increase in future export income that could counterbalance today's deterioration of the current account. Most importantly, this kind of nominal appreciation will be an ex post equilibrium phenomenon only if productivity advances materialize and export revenues actually increase. A priori, it is expected that an increase in foreign direct investment is expected to raise the real exchange rate by increasing the supply of foreign currency and putting inflationary pressure on the domestic market.

### **Gross capital formation**

To approximate investment gross fixed capital formation is used. Investment variable is used to analyse the possible differential impact that it has on economic growth. It is an important component in the economy that needs to be given necessary attention, since it raises long-term rate of economic growth. Khan and Reinhart (1990) recognize the important role played by private investment in generating economic growth. Investment is one of the major determinants of economic growth as it enhances output through the creation of more employment and hence more output is produced. A part of every additional income received by the additional worker employed as a result of more investment expenditure is consumed and the other part is saved. This continues until the initial amount invested is saved. As such, the relationship between economic growth and gross fixed capital formation maybe described as a positive association

### **Error term**

According to Wooldridge (2004) error term is the variable in a simple or multiple regression equation that contains unobserved factors that can affect the dependent variable. The error term also includes measurement errors in the observed dependent

or independent variables. In this study the error term captures all those factors that affect economic growth but have not been taken into account explicitly.

### **3.7 Summary**

Model specification is a significant procedure in carrying out the study since it enables the researcher to capture significant variables in estimating the equation. The justification of variables is a fundamental analytical procedure that captures only significant variables to the essence of the study. The above specified model justifies the significance of the explanatory variables in relation to the endogenous variable GDP. This chapter outlined the methodology and estimation procedures that will be used in this research. The Ordinary Least Square regression will be used in this econometric analysis. This chapter also looked at the theoretical and empirical review and from the chapter it is noted that they support each other in sense that they all draw the conclusion that public debt impacts negatively on economic growth. In the next chapter the researcher will look at the model to be used in the research and also justify the variables.

## **CHAPTER IV**

### **DATA ANALYSIS, PRESENTATION, AND INTERPRETATION**

## 4.0 Introduction

The previous chapter looked at research methodology at aspects like the research design, model specification, data sources, and diagnostic tests. This chapter presents the model estimation results. Descriptive statistics will be presented first, while correlation matrix, stationarity results, model diagnostic tests and regression results will follow respectively. The chapter will look at results interpretation which includes statistical and economic interpretation.

### 4.1 Diagnostic Tests

#### 4.1.1 Stationarity test – unit root test

The stationarity of the variables was carried out using the Augmented Dickey Fuller tests (ADF). The unit root tests are done under the null hypothesis of non stationarity of variables.

**Table 4.1: Stationarity tests (trend and intercept)**

| Variable    | Order of integration | ADF Statistic | CRITICAL VALUES |        |        |
|-------------|----------------------|---------------|-----------------|--------|--------|
|             |                      |               | 1%              | 5%     | 10%    |
| <b>LGDP</b> | I(1)                 | 6.899924      | 4.3738          | 3.6027 | 3.2367 |
| <b>LD</b>   | I(1)                 | 5.024272      | 4.3738          | 3.6027 | 3.2367 |
| <b>LL</b>   | I (1)                | 5.202489      | 4.3738          | 3.6027 | 3.2367 |
| <b>LGCF</b> | I (1)                | 3.248971      | 4.3738          | 3.6027 | 3.2367 |
| <b>LFDI</b> | I (1)                | 4.140253      | 4.3738          | 3.6027 | 3.2367 |
| <b>LX</b>   | 1(1)                 | 4.037428      | 4.3738          | 3.6027 | 3.2367 |

*Source: E Views 3.1 software packages*

The results showed that all the variables are now stationarity both at 1%, 5%, and 10% level of significance. Since the ADF statistics are greater than the critical values, we reject the hypothesis of non-stationarity. However, all the variables become stationary at 1 st difference, hence it is difficult to explain the long run relationship using this model since it produces spurious results. Since all variables are stationary at 1st difference, differencing all the variables at the same level where they are all stationary is another way to put the variables at the same wave length. Also, this problem can be solved by using the methods such as the vector auto regressive model and the ARDL model but all these methods are not important to this research since they are beyond the scope and they can violate objectives of this research.

#### 4.1.2 Multicollinearity (correlation matrix)

The results of the correlation matrix to detect for the presents of Multicollinearity are shown in the following table: the hypothesis is no present of Multicollinearity

Table 4.2 (correlation matrix)

| <b>Variable</b> | <b>LD</b> | <b>LFDI</b> | <b>LGCF</b> | <b>LL</b> | <b>LX</b> |
|-----------------|-----------|-------------|-------------|-----------|-----------|
| <b>LD</b>       | 1.000000  |             |             |           |           |
| <b>LFDI</b>     | 0.227513  | 1.000000    |             |           |           |
| <b>LGCF</b>     | 0.249484  | 0.064532    | 1.000000    |           |           |
| <b>LL</b>       | 0.029786  | 0.150715    | 0.164202    | 1.000000  |           |
| <b>LX</b>       | 0.096705  | 0.697563    | 0.311166    | -0.176415 | 1.000000  |

*Source: E views 3.1 software packages*

The above table showed that though there was present of Multicollinearity, it is below the recommended range of below 0.8. The highest relationship that is close to collinearity is 0.697563 that of LX and LFDI but it is acceptable because it is below 0.8. Therefore, we can conclude that there was no multicollinearity. Hence explanatory variables do not move together in systematic ways and hence their individual effects on the explained variables can be isolated.

### 4.1.3 Heteroscedasticity

This is a situation where the variance of the error term is not constant. It may be caused by the presence of outliers, if an important variable is omitted in a model and when there is an incorrect functional form used in a model. The presence of heteroscedasticity will result in biased standard errors. Biased standard errors will also lead to biased inferences which will result in wrong hypothesis tests.

**Table 4.3 Heteroscedasticity**

---

|               |          |             |          |
|---------------|----------|-------------|----------|
| F-statistic   | 1.288581 | Probability | 0.310348 |
| Obs*R-squared | 12.07271 | Probability | 0.280220 |

---

*Source: E-views3.1*

### White Heteroscedasticity (no cross) Test

Using the white test for heteroscedasticity the F-Statistic is significant at 10%; therefore, the variance errors are homoscedastic at 10% levels of significance. Since the diagnostic tests are satisfied, the study proceeds to interpret the results. We also accept the null hypothesis that the variance of the error terms is homoscedasticity because F-cal which is equal to 0.310348 is greater than 0.1.

### 4.2 Descriptive Statistics

Descriptive statistics showed a summary statistic for all variables in the presented model. The results are presented in the following table:

**Table 4.4: Descriptive statistics**

|         | LGDP     | LD       | LFDI     | LL       | LGCF     | LX       |
|---------|----------|----------|----------|----------|----------|----------|
| Mean    | 9.909491 | 9.261636 | 1.539405 | 4.170714 | 8.902461 | 9.348818 |
| Median  | 9.919587 | 9.290350 | 1.590922 | 3.900000 | 9.072900 | 9.303750 |
| Maximum | 10.00718 | 9.874900 | 2.647676 | 7.000000 | 9.183700 | 9.671700 |
| Minimum | 9.796664 | 8.571900 | 0.447715 | 1.100000 | 7.932100 | 9.097500 |
| St.dev  | 0.051235 | 0.418473 | 0.638289 | 1.769559 | 0.366831 | 0.129777 |

*Source: E Views 3.1 software packages*

The table above reports the maximum and minimum statistics and the statistics shows that there are no outliers. Descriptive statistics was carried out whilst the data was in logarithmic form shown with behind the variables in the table. This was done so as to reduce variability of the data of the variables. From the table it shows the dependent variable is LGDP and explanatory variables are LD, LFDI, LL, GCF, and LX for the period of 1985 to 2012. LGDP has mean and median values of 9.909491 and 9.919587, minimum value of 9.796664, and maximum value of 10.00718 this is because there is a variability of standard deviation of 0.051235. LD has mean and median values of 9.261636 and 9.290350 minimum and maximum values of 8.571900 and 9.874900 respectively with the standard deviation of 0.418473. LL has mean and median values of 4.170714 and 3.900000 minimum and maximum of 1.100000 and 7.000000 respectively.

This is because of the wide variability of the standard deviation of 1.769559. LGCF has mean and median of 8.902461 and 9.072900, minimum and maximum values of 7.923100 and 9.183700 with a standard deviation of 0.366831. LX has mean and median of 9.348818 and 9.30750, minimum and maximum value of 9.097500 and 9.671700 with a standard deviation of 0.129777. From the table it can be noted that LL has a wide variability. LL and LGCF 's mean and median values are not in the same range. This actually means the data is not normally distributed. However, although the assumption of normality assumption is not satisfied, we can still proceed to run the regression and still retain the intended results. According to Greene (2003), the assumption of normality is viewed as unnecessary and inappropriate addition to the regression model and hence it is simply for convenience purposes.



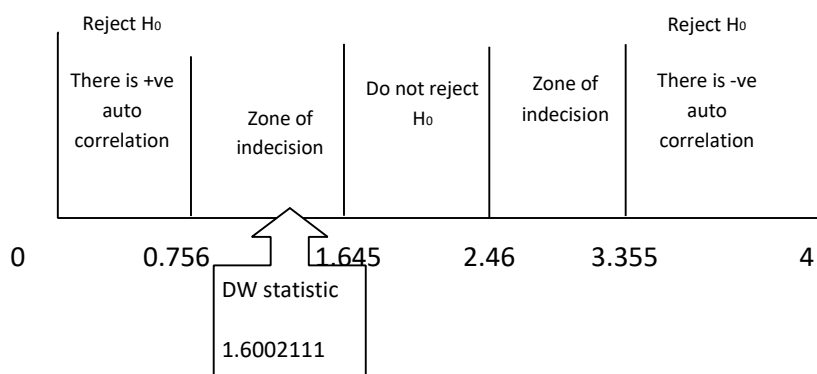
#### 4.4 Model Specification Test

The model specification tests which include the R Squared and the Probability (F statistics) all showed that the model is correctly specified. The R Squared of 0.747582 showed that about 75% of the variations in LGDP are explained by the variables in the model, and about 25% of the variations are determined outside the model or captured by the error term. The adjusted 2 R of 0.690214 shows that the explanatory variables explains about 69% of the variation in economic growth (dependent variable) and about 31% are explained by other variables such as those that affect the dependent variable LGDP. The probability value of 0.000006 showed that the model is correctly specified as the value is less than 0.01 and it showed that it is significant 1% level of significant.

#### 4.5 Autocorrelation

Taking into account the DW statistic of 1.6002111 it showed that we cannot conclude that there is serial autocorrelation or no serial auto correlation.

**Table 4:6: Durbin–Watson Statistic.**



Considering the graph above, DW-statistic is 1.6002111 which lies between 0.808 and 1.626; therefore, we cannot conclude that there was no autocorrelation in the model. According to Granger and New bold (1995)  $R^2 < DW$  statistic is a good rule of thumb



to show that the estimated regression is spurious. In this study  $R^2$  is 0.766301 is less than D Watson is 1.6002111 and this can be concluded that there is absence of spurious. Since the D Watson statistic is greater than the R Squared, we can conclude that there was no autocorrelation between the variables.

#### **4.6 Interpretation of results**

##### **Government debt (LD)**

Government debt has a negative relationship with GDP ( $\beta = -0.049292$ ) and is significant at 1% level. This indicates that government debt is significant predictor of GDP. This also means that an increase in government debt will lead to a decrease in economic growth by 4.9%. In Zimbabwe, if the government increases its borrowings; the growth of the economy will deteriorate.

##### **Labour (LL)**

The statistic of this variable is significantly not different from zero at 1% sign level with a coefficient with a negative value of 0.005262 which means that there is a negative relationship between labour and economic growth and P-value of 0.1705. This means that the impact of labour in the Zimbabwean economy has been found to be insignificant in explaining the variability of economic growth (GDP). This actually means labour failed to contribute the growth of the economy of Zimbabwe.

##### **Foreign Direct Investment (LFDI)**

The statistic of this variable is significantly not differently from zero at 1% significant level with a coefficient with a negative value of 0.001666 which indicates a negative relationship between FDI and economic growth and a P-value of 0.9111 .The impact of foreign direct investment on economic growth in Zimbabwe has been found to be insignificant in explaining the variability of economic growth (GDP). This means that FDI failed to attract GDP in Zimbabwe.

### **Exports (LX)**

Recent studies extended this analysis to include the gap between import and export as the other source that limits growth. This approach is based on the assumption that all investment goods are not produced locally. That is, some level of capital import is necessary in order to achieve the desired investment level. When foreign exchange earned through export are insufficient, actual import will be lower than the level required achieving a targeted growth rate. The statistic of the variable is significant in explaining the variations in GDP at 1% significant level. This have the coefficient of 0.214513 that means an increase in change in exports by 1% will leads to a change in change in GDP with 21.45%. This means that export earnings contribute significantly to the growth of the economy of Zimbabwe.

### **Gross capital formation (LGCF)**

Gross Capital Formation (GCF) is found to be positively related to economic growth and statistically it exhibits a significant impact of economic growth. It is significant at 1% level. This research shows that capital inflow will contribute to the growth of the Zimbabwean economy. This actually indicates that if the level of capital increased by 1% the growth of the economy will also increase by 6.76%. The objective that seeks to see if gross capital formation helps in explaining economic growth has been achieved. Since it has been denoted that the variable is statistically significant hence it helps in any way in the period under study to explain economic growth.

## **4.7 Discussion**

This research finds out that government debt has a negative impact on economic growth. This agrees with the findings of Patillo et al. (2004) who indicated that public debt causes increased uncertainty about future policy decisions, with a negative impact on investment and further on growth. In addition, the presence of “debt overhang effect” and “crowding out effect” in the long-run means that the efficiency of total investment will suffer as government cuts its budgets, tax returns on private investments, or uses capital inflows to service its external debt obligations. This also goes in line with the empirical findings of Afxentiou and Serletis (2005), for developing countries, shows

that there exists a negative relationship between indebtedness and national productivity from 1980-1990 which concurs with the findings from this study.

External borrowing decisions must be linked to a general policy framework that will guarantee profitability of invested funds and generation of sufficient foreign exchange earnings for external debt servicing, a study by Fosu (2004) which examined the degree to which debt had an impact on economic growth in Sub-Saharan African countries found that debt increased growth in some countries but hampered growth in others. The country should introduce effective debt management as a major policy concern to achieve the benefits of external finance without creating difficult problems of macroeconomic and balance of payment stability. Proper macroeconomic management of the economy as a whole is important since it also determines the value and servicing external debt as well as the credit rating.

However, the findings disagree with the Keynesian model which postulates that there is no real burden associated with public debt and it has no effect on economic growth according to Metwally and Tamaschke (2004). This study agrees with the study carried by Patillo et al (2002)'s findings. Patillo et al (2002) whose study empirically investigated the relationship between total external debt and growth rate of GDP for developing countries over a period of 29 years, starting from 1969 keenly concluded that the relationship between external debt and economic growth is non-linear in the form of an inverted U-shaped curve.

The researcher found out that exports have positive impact to the growth of the Zimbabwean economy from 1985 to 2012. This agrees with the findings of Moki (2012) in Nairobi, who analyzed the relationship between public debt and economic growth. In his study he also analyzed the relationship that exist between net exports and economic growth and he found out that there is a positive relationship.

In this study it is also concluded that labour force is insignificant to influence the growth of the economy. This contradicts with the neoclassical theory which suggests that human capita have a positive impact on economic growth. This actually means that in Zimbabwe labour force does not have any significant contribution to the growth of the economy.

In the study of Moki (2012), he concluded the FDI have a positive impact on economic growth. This disagrees with the findings of this study. In this study it was concluded

that FDI is insignificant to explain the variations in economic growth which means that there is an insignificant relationship between FDI and economic growth.

The researcher found out that there is a positive relationship that exists between gross capital formation and economic growth. This research agrees with that of (Beddies 1999) which yield a positive relation between  $\Delta K$  and  $\Delta GDP$ .

#### **4.8 Summary**

The purpose of this research was to determine the impact of government debt on economic growth in Zimbabwe. This study has contributed to both theoretical and empirical literature review on the impact of government debt on economic growth. The results suggest a negative relationship between government debt and economic growth. The objectives of this study were achieved through the use of Classical Linear Regression Model (CLRM). The main finding from the study was that government debt significantly affects GDP and therefore the researchers do not reject the null hypothesis of the study that there is a negative impact of government debt on economic growth. The impact of gross capital formation (GCF) and exports on economic growth is positive and rising as the economy is also recovering. The study was also able to find out that GDP have got other important variables that affect its variability in Zimbabwe. It concluded that GDP is negatively affected by foreign direct investment and labour hence these have been found to be insignificant in explaining the variability in economic growth in Zimbabwe. However, foreign direct investment and labour are in contrast with empirical evidence.

## **CHAPTER V**

### **CONCLUSIONS AND POLICY RECOMMENDATIONS**

#### **5.0 Introduction**

The study was based on data collected from secondary sources and covered the period from 1985-2012 with the aim of examining the relationship between external debt burden and the Zimbabwean economy. The study has investigated the impact of

government debt on economic growth which is measured with GDP per capita growth for Zimbabwe from 1985 to 2012 using Ordinary Least Square technique (OLS). This chapter gives a summary of the conclusions and findings of the whole study. It also further provides more information on whether the objectives were met and hypothesis claimed in Chapter one is accepted or rejected. This chapter will also give the policy recommendations.

## **5.1 Summary of Findings**

The main objective of this study was to determine the impact of government debt on economic growth in Zimbabwe using the time series data for the period for the period 1985 to 2012. This study had four other specific objectives to which was targeting, these are to assess the impact of foreign direct investment on economic growth, to describe the trend of GDP levels of Zimbabwe in relation to the employment sector, to find out if exports effects on economic growth and to recommend policies based on the findings that can resolve problems emanating from debt overhang hypothesis

The main objective of the study, that is, to determine the impact of government debt on economic growth in Zimbabwe is hereby achieved. This brings us to the conclusion that in Zimbabwe economic growth is mainly affected (negatively) by government debt. The researcher also found out that exports and gross capital formation have a positive impact to the growth of the economy. Therefore, labour and foreign direct investment does not have any significant impact to the growth of the Zimbabwean economy. Regressions approximations prove the hypothesis of negative effects of economic growth on economic growth in Zimbabwe is true thus, the acceptance of the hypothesis that an increase in government debt results in reduction of economic growth.

## **5.2 Conclusion**

The main objective of this study was to determine the impact of government debt on economic growth of Zimbabwe from 1985 to 2012. This research concludes that government debt has a negative impact on economic growth. External debt can affect economic growth through crowding out effect, and increasing uncertainties that the government might inflate the economy to repay the debt. The government should invest

foreign loans so as to afford its repayment from returns. The research also seeks to determine the impact of foreign direct investment on economic growth, to determine the impact of exports on economic growth, to determine the impact of labour on economic growth and to determine the impact of gross capital formation on economic growth. It is hereby concluded that exports and gross capital formation have positive impact on the growth of the Zimbabwean economy for the period under the study. It is also concluded that labour and foreign direct investment have an insignificant impact on economic growth of the Zimbabwe for the period (1985-2012).

### **5.3 Policy Recommendations**

Addressing the Zimbabwe's external debt requires various options. The high debt ratios suggest that better policies alone are unlikely to make the country's debt situation sustainable; therefore, there should be a significant debt relief from both multilateral and bilateral creditors would have to be part of the recovery programme. This should be followed by a genuine political settlement for a period of about five years. Thereafter, there should be a raised financial aid package to smooth out the debt relief. Secondly, Zimbabwe have to be classified as an International Development Association IDA-only country, that is a country deemed poor enough to access only the most concessionary of funds from The International Development Association (IDA) arm of the world bank preonation for access to highly indebted poor countries initiatives (HIPC) debt relief . This would allow it to access the bank's long term interest free loans and grants. Thirdly, there is also greater need to improve domestic governance on the productivity of capital. Good governance enhances accountability and reduces leakages of funds in the form of political patronage party by the responsible monetary and fiscal authorities. These leakages include access to subsidized foreign currency and investment windfall profits in more foreign currency trading. There is also need for conditional disbursements of borrowed funds including reference to fiscal consolidation and orderly returns to the donor funds as well as further privatization and removal of price controls. Bond (2007) recommended that tariffs on luxury should be removed and this would effectively remove some concessions of redistributive policy won from the government domestically. Finally, in view of the centrality of the debt question in Zimbabwe's recovery, it would not be surprising if a movement emerged to champion debt

cancellation altogether. Such a movement would draw all the experiences and the perspectives of organizations such as the Zimbabwe Coalition on Debt and Development (ZIMCODD) and the Zimbabwe Congress of Trade Union (ZCTU) in their campaigns around the link between debt social and growth issues.

#### **5.4 Suggested Area of Study**

Areas of further research this study aimed to determine the impact of government debt on economic growth from 1985 to 2012 in Zimbabwe. There is need for further researches to find out the impact of government debt on economic growth focusing on the dollarization period only. There are various indicators of external debt burden. These indicators measure the solvency and liquidity tendency of the economy. This studies only measure the solvency of the Zimbabwean economy considering the indicator used in this research work but it did not consider the liquidity of the economy. Therefore, as an area of further studies, the liquidity of the Zimbabwean economy given the rising nature of external debt should be researched. The recent indicator used to measure the liquidity of an economy is the net present value of external debt to export. Furthermore, only an aspect of total public debt is considered in this study, therefore as a suggestion for further study other aspect such as domestic debt and public debt in general could also be examined.

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