EMPIRICAL INVESTIGATION OF THE IMPACT OF EXTERNAL DEBT ON ECONOMIC GROWTH IN THE DEMOCRATIC REPUBLIC OF THE CONGO (DRC)

BY

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DECLARATION

I hereby declare that this dissertation is the result of my original work towards the Master of Science degree in Economics and to the best of my knowledge, it neither contains material published by another person nor materials which have been accepted for the award of any other degree of the University, except where due acknowledgments have been made in the text.

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DEDICATION

This dissertation is dedicated to the BEBUC family for the hard work of encouraging the youth for studies.

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ABSTRACT

This study investigated the long and short-run impact of external debt on economic growth in the Democratic Republic of the Congo (DRC) from 1972 to 2012. In addition, it investigated the relationship between external debt servicing and economic growth. The theories and different empirical investigations explained that external debt can either be positively related to economic growth or negatively related depending on the economic activity in which the external debt is injected. The variables used were integrated of different order (i.e. I(0) and I(1)) based on this the Autoregressive Distributed Lag bounds test to co-integration was used for the estimation. The result showed that external debt has a negative impact on economic growth in the Democratic Republic of Congo in both the long and the short-run. This outcome was statistically significant. However, the result demonstrated that external debt servicing has a positive impact on economic growth in the long-run. Yet it has a negative impact on economic growth in the short-run. The study recommended to policy makers to use the hedging strategy when contracting the external debt.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The problem of external debt and resource requirements in Africa are directly related to capital accumulation and economic growth. Thus, since the 1980s financial crisis in developing countries, foreign lenders have to transfer billions of dollars each year to countries with deficit in order to increase their national wealth. Unsustainable budget deficits have been characterized by financial crisis in most countries in sub-Sahara Africa decades after their independence. However, the balance of payment deficit in those countries was considered as a normal economic situation in the economy at that specific time. In order to enhance the economic growth and attract foreign investors, deficit countries were stimulated to borrow from outside. But not much effort was made for borrowed funds management. Due to scarcity of capital, it is usually expected that most developing countries are likely to increase the domestic saving by obtaining external debt. But to improve economic growth depends on whether the borrowing funds are used for productivity sector or consumption sector. An advanced management of the borrowed funds is the key needed in order to earn a higher return (Marsah, 2015; Mohd, 2013).

According to Atingi (2013), although progress has been observed in alleviating poverty and meeting the Millennium Development Goals (MDG), the Democratic Republic of Congo (DRC) has experience poor economic performance. A good management of macroeconomic policies and structural reforms led the DRC to receive debt relief under the advanced Heavily Indebted Poor Countries (HIPC) project in 2010. This debt relief serves to take care of the largest amount of debt owed by any eligible HIPC country and has reduced the DRC's external debt burden from

about 136 percent of GDP in 2009 to about 35 percent at the end of 2010. But the majority of the population still remains poor (about 70 percent of the population) and there is a higher probability that the objective of the MDG will be difficult to achieve.

Heavily indebted countries find it extremely difficult in achieving the HIPC completion point. For instance, in June, 2010, in DRC a large part of foreign debt (US $ 12.3 billion) was cancelled due to the reform in the field of economic and political governance. The financing of giant project in education, health, etc. were made using the savings that were made from the debt cancellation and it also helped to reduce the percentage of interest payment on the debt. Before the introduction of the debt service, this was a difficult task to achieve. In addition, there came a lot of controversies as how to manage the surplus, since there were no plans for reimbursing service of the debt owed to the IMF in 2011. The service on credit was reduced to $ 1 billion by the African Development Bank (AFDB). Since the country has always depended on outside support to finance several projects and is not always able to meet its debt obligations, therefore, there is a danger of further indebtedness to remain in the country (African Economic Outlook, 2012).

1.2 Problem Statement

Many developing countries generate funds through citizen taxes. Most of the time, these resources are not sufficient to fulfill public expenses. It requires different resources from other countries in order to perform effectively and efficiently. Mainly deficit countries tend to depend on external borrowing. Thus, the need for external debt is motivated by the lack of sufficient domestic capital resources in most developing countries. Therefore, the significance of foreign

financing on DRC's economic growth could not be over emphasized. Furthermore, the inability of generating sufficient domestic saving in DRC, leads the government into a borrowing situation. Thus, the external debts required are meant to complement internal funds that will normally help DRC government to enhance its productivity.

In addition, Hameed and Chaudhary (2008) emphasized that countries in the situation of current deficit saving are stimulated to enhance economic growth by using external debt from different advanced countries and some international communities as well. Genç (2015) argue that, in order to finance economic growth, the principal source required is domestic savings. However, when internal savings are not sufficient to finance domestic investments, external debts become an urgent support. In this point of view, external borrowing is the major way which may reduce the deficit. As a result, it is expected that the external debt should have a positive relationship with the economic growth. Yet, the external debt is negatively related with the development when it is not efficiently oriented. Therefore, the reimbursement of the principal and the interest rate may deteriorate the economic growth at a high level than before the borrowing.

According to Boyce (2012), the DRC economy has been characterized by some unmoral facts such as lack of competent governance, corruption, war, history of civil conflict, political and economic instability just to mention a few. DRC is known as the paradox of plenty (80% of cotton and 10% of copper in the world) meaning a country which has many potential resources which might not be found in some advanced countries but still have the majority of Congolese population (80%) who survives on a revenue of around US$ 0.20 a day. A brake on investment and growth is as a result of corruption especially on the government's lack of openness in

economic policies, war, poor infrastructure and an uncertain legal framework. Rising of economic debts and debt rating relations between creditors have being the end results of the various loans in the country and affecting the economic growth and development of the DRC. A crucial solution to this is to rebuild the trust that has being lost between borrowers and lenders. This is all important approach even though it can cost time and usually a slow process.

The main problem is not to get external debt but to respect the debt maturity. In some countries, war and corruption are permanent negative shocks as in the DRC and with the paradox of plenty, it is evident to wonder if such country can be able to gain from an external debt such that the external debt will have a positive impact on economic growth. Therefore, the question that follow is: what is the impact of external debt and debt servicing on economic growth in DRC. The current work is devoted this topic.

1.3 Objective of the study

Generally, the present study analyzed the impact of external debt on economic growth in the DRC. In order to attain this main objective, the following specific objectives are set:

1. Examine trends of external debt and debt servicing in the DRC.
2. Estimate the long and short-run impact of external debt on economic growth in the DRC
3. Estimate the impact of debt servicing on economic growth in the DRC.

1.4 Hypotheses

The study tests the following hypotheses:

1. H_o: External debt has no long-run impact on economic growth in the DRC

   H_1: External debt has long-run impact on economic growth in the DRC

2. H_o: External debt has no short-run impact on economic growth in the DRC.

   H_1: External debt has short-run impact on economic growth in the DRC.

3. H_o: Debt servicing has no long-run impact on economic growth in the DRC

   H_1: Debt servicing has long-run impact on economic growth in the DRC

4. H_o: Debt servicing has no short-run impact on economic growth in the DRC

   H_1: Debt servicing has short-run impact on economic growth in the DRC

1.5 Justification of the study

The present work is relevant due to the historical structure of the Congolese economy which is still having permanent negative internal shocks such as war and corruption. The study will therefore examine the need for an economy like the DRC to rely on external debt to finance economic growth. Further, external debt itself acts as major constraint to capital formation in an economy, since the accumulation of capital is supposed to be controlled up to a level that will bring economic growth to the steady state point. It will also help policy makers to determine which aspects of government spending financed by external debt is likely to promote growth.

Finally, other policy recommendations made based on the findings obtained is important for policy design, formulation, implementation, as well as monitoring and evaluation.

1.6 Scope of the study and delimitation

The study was limited to data covering the period 1972 to 2012. The choice of this period is dictated by data availability. Although this period is not so long for time series study, in general, the appropriate methodology is adopted to address this limitation.

1.7 Organization of the study

The present study is structured into five chapters. Chapter one captures the general introduction of the study which constitutes the background of the study, problem statement, and objectives of the study, hypotheses and the scope and delimitations of the study. Chapter two presents the literature review and the evolution of external debt in DRC while Chapter three is devoted to the methodology and the estimation strategy. Chapter four presents the analysis and discussion of the empirical results. Finally, Chapter five presents a summary of major findings of the study, policy recommendations, as well as the conclusions to the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents discussions on the literature review on the impact of external debt on economic growth. It is divided into three sections. The first presents discussions on the theoretical literature and the second presents discussions on the empirical literature and the last section presents a brief discussion on the evolution of external debt in the DRC.

2.2 Theoretical literature review

2.2.1 Neoclassical growth theory

The neoclassical economic growth theory, for instance the Solow model economic growth demonstrates that the long-run economic growth rate is supposed to be fixed and it is equivalent to the population growth or the labor force (Eichengreen, 1988). The assumption behind this is that there is a diminishing marginal return to capital, the constant returns to scale with a given technology. Since all variables grow at the same rate as well as the population, therefore, in this structure different countries will converge at the same steady state level with zero per capita growth. However, the big challenge here is to get and apply the golden rule meaning that the countries have to apply a saving rate maximizing the per capita across future generation consumptions. The implication behind this is that the absolute convergence hypothesis will be applied, thus, different countries will converge at the same level of steady state. By facilitating the convergence, the neoclassical assumption stipulates that rich countries have higher level of capital per worker which implies a lower marginal product of capital. Therefore, a beneficial

movement of capital from rich to poor countries will be observed. Meaning the developing countries' economic growth will grow faster.

2.2.2 The dual gap theory

According to Hunt (2007) it is observed that countries with low income have a weak economic growth. This is as a result of the lack of savings able to support the investment in public sector as well as private sector. In other words, the economic growth is supported and sustained by savings and investments. The economic growth is sustained and maintained when the capital gets to a certain threshold point. The increase of capital and investment caused by the increase in external debt, enhance automatically the economic growth due to the increase of savings over time. Thus this mechanism is known as the dual gap theory.

Moreover, Mckinnon (1964) explained that the external debt is an urgent support to feel the gap in developing countries. The necessary and sufficient condition of acquiring external debt is to make sure that the borrowed funds will generate a higher return able to meet the debt obligation during the maturity and provide the economic growth to the nation. Therefore, it is expected that the external debt is able to enhance the productivity meaning the nation output. The function of external debt in the developing countries is known as a dual-gap since it allows those countries to invest more than their domestic savings.

Laurenceson (2002) developed a two-gap model for sustaining external debt. This model implies that inflows of foreign capital cause economic growth in developing countries. Thus, the assumption in the present model is that when the developing countries will receive the external

debt, there will be observed an increase in investment greater than the domestic savings. By assuming that foreign exchange gap is binding, the increase in import is provided by a foreign capital inflow which implies economic growth.

2.2.3 External debt effect theories

According to Easterly (1999), the external debt is the main way of closing or filling the gap between the available domestic funds and the total investment inquired in the countries with low income. The idea behind this is that the investment spending and the total Gross Domestic Product (GDP) are proportionally related and they have a positive relationship. In addition, there are different stages when moving from low income country to advanced country. There is a proportionate association with investment, economic growth and development. When the investment increases from 5% to 10% of the return, then, if the domestic savings are not sufficient for the investment, the gap has to be filled with foreign funds.

In addition, Elmendorf (1999) explains the effects of external debt on economic growth models; assumes that the economic growth is the outcome of capital accumulation taking as savings. This system is known as the Harrod-Domar economic model. For meeting economic growth targeting, the investment has to be multiplied by the capital output ratio multiplier. Furthermore, theoretically, the school of thinking agrees that the external debt is positively related with the domestic savings as well as investment which enhance economic growth. Since the external debt is the element completing the gap of investment funds in developing countries. Therefore, outside borrowing is a balance to domestic savings and investment which implies a positive relationship to economic growth.

However, there are different cases in which the external debt is negatively related to the economic growth. Different elements such as the direct effect of debt hypothesis, import compression hypothesis, crowding out effect as well as debt overhang hypothesis explain the negative relationship between external debt and economic growth.

Fosu (1996), the direct effects of debt hypothesis as well as the debt crowding effect imply that there is a negative relationship between external debt and economic growth due to the debt servicing which is as a result of decrease in investment. Pattillo et al. (2002) argue that the relationship between external debt and economic growth is highlighted in the debt Laffer curve theory. This theory explains that there is a threshold of external debt level needed in the economy. Beyond that level automatically the external debt becomes negatively related with the economic growth due to the overhang and different challenges of debt servicing which will occur immediately in the economy. Serieux (2001) shows that education and the health are key elements in enhancing human capital. However, the debt service burden on the government has a negative relationship with the improvement of human capital since there is a negative relationship between debt servicing burden and public spending. In addition, some times the productivity in the economic growth may be hushed by the external debt due to a drag in the investment rate which in turn reduces economic growth.

2.3 Empirical review

Different empirical studies have been conducted on the impact of external debt on the economic growth in various countries including Nigeria, Ethiopia and Malaysia. Below is a brief review of some of such studies.

Nguyen et al. (2003) explained that there is a non-linear relationship between external debt and economic growth. This is as a result of the analysis of the impact of external debt on the economic growth of 55 low-income countries of Africa by using the panel data from 1970 to 1999 and the ARDL method.

Muhanji and Ojah (2011) attempted that most of countries in Africa have had the dishonor of being considered by indefensible outside borrowing. In spite of numerous announcement targets the development sphere in order to inverse that drift, the impression is that there is a no significant improvement. The study emphasized the causes which are the main problems of no significant impact of external debt on Africa's economic growth: the failure of determining appropriate levels of sustainable external debt, poor current governance organization, and unsuccessful managing of outside shocks.

Boboye and Ojo (2012) studied the effect of external debt on economic growth in Nigeria. The study applied the secondary data of the external reserves, interest rate, national income and debt payment. By adopting the OLS regression analysis, the study found out that there is an adverse effect of external debt on the nation income as well as the per capita income of Nigerian's population.

Legesse (2012) investigated the impact of external debt on economic growth in Ethiopia. By using the time series data from 1983 to 2013 and adopting the Johansson Maximum Likelihood approach with the vector correction model for short-run relationship investigation, the study

highlighted that the past external debt stock and debt servicing are negatively related to the economic growth.

Ejigayehu (2013) conducted the impact of external debt on economic growth in 8 poorest countries of Africa. The investigation area covered the time period 1991 to 2010. By using the ARDL method, the investigation highlighted that there is a positive statistical significance of the impact of external debt on the economic growth without taking into consideration the debt crowding out effect.

Mohd (2013) examined the impact of external debt on Malaysia's economic growth. The key objective of this analysis was to investigate how far outside debt has contributed to the long-run Malaysia's economic growth. The impact of external debt, gross domestic product, gross investment, population, government revenue, trade openness and debt service payment on the economic growth was analyzed by using the Autoregressive Distributed Lag (ARDL). The study adopted the time series data from 1991 to 2009 collected from the central Bank Malaysia's monthly bulletin statistics. Variables such as gross domestic product, population, gross investment, government revenue, trade openness, debt service payment and external debt, result from the study indicated that in Malaysia the external debt is positively related to the economic growth. However, the current work is far different from this investigation. Since the DRC economy has the perpetuity negative shocks (war, uncertain legal framework, lack of debt management and corruption) in its economy, therefore, the external debt is likely to have a negative impact on the economic growth in DRC.

Ejigayehu (2013) conducted the impact of external debt on economic growth in 8 poorest countries of Africa. The investigation area covered the time period 1991 to 2010. By using the ARDL method, the investigation highlighted that there is a positive statistical significance of the impact of external debt on the economic growth without taking into consideration the debt crowding out effect.

Korsi (2015) investigated the effect of external debt on economic growth in sub-Saharan Africa. The study used the sample of 39 sub-Saharan African countries from 1990 to 2013. The study used the Generalized Method of Moments for examining the robust estimates effect of external debt and economic growth. After checking all biases that might be characterized by the panel data, the result proved that external debt is negatively affects economic growth in sub-Saharan African countries. Furthermore, the external debt and economic growth relationship in this region is not influenced by the classification of the per capita income level.

Nwannebuike et al (2016) investigated the impact of external debt on economic growth in Nigeria. The study analyzed the time series data from 1980 to 2013. The different variables used in this analysis are: the external debt stock, external debt service payment as well as exchange rate taken from the World Bank International Debt Statistics and the Central Bank of Nigeria statistics. By using the Ordinary Least Square the result highlighted that the external debt has a positive relationship with the external debt in the short-run. However, in the long-run the external debt is negatively related with the economic growth in the long-run in Nigeria. In addition the exchange rate has a positive relationship with the GDP while the debt servicing has a negative impact on it.

However, there are three differences between the current investigation and the work discussed above: the area in which the work is investigated (the current work will investigate the impact of external debt only in DRC), negative internal permanent shocks which are the war, corruption and plenty resources find in DRC but negatively related to the economic growth in DRC. This investigation is focused on the external debt lend to the DRC in the period of war. It will want to investigate if it is necessary for a country with a permanent negative shock as the war and corruption to take a loan from outside even though the DRC has plenty natural resources and it will analyze how the external debt given to the DRC during the war period and the perpetuity corruption is correlated with the economic growth.

2.4 Evolution of external debt in the DRC

Musimbi (2007), in 1949 the external debt of the Belgian Congo was US $ 7.4 billion. In 1950, 10 years before the Independence Day, the colonial power engaged a ten-year-plan development representing its own interests. The colonial power looked for means in order to offset the deficit that would have led to a bankruptcy. However, all those borrowings in interest of the colonial power were transferred to the DRC barely independent. In 1957, with the aim of enhancing the economic growth, the country external debt increased from US $ 7.4 billion to US $ 92 billion which was the correction of deficit balance. At that specific time there was observed a catastrophic inflation in the country, a progressive diminishing coverage in gold as well as the depreciation of the Congolese francs.

In 1960, the decrease of gold price and the depreciation of the Congolese francs representing the loss of 90% of the Congolese francs purchasing power. Therefore, the total treasure bankruptcy

and the massive flight of capital to Belgium were observed. The DRC is trapped in the heavy external debt cycle that is grafted on colonial debt since the accession to national sovereignty. Thus, the colonial power loans were like a shot to a young independent nation. The millions of dollars have been spending completely by the Congo's colonial administration for purchasing products exported by Belgium. When the Belgian Congo became independent, the main shareholders had agreed to transmit the burden of debt contacted by the Belgian colonial power from the World Bank. Thus, the loans contracted by the Belgium with the World Bank have become the DRC's debt today. Simply, the World Bank has credit the debt to the new independent state.

In 1960s, most of African countries got their independence. There was an urgent need to begin the process of economic development including the various building of infrastructures. The indebtedness of the Congo remains low in the early 1960. Then a new money market grows with dollars flowing out of the United States without being subject to the laws and interest rate in this country. European Banks and US banks located in Europe subsidiaries were seeking to put the dollars that they have attracted in large quantities in the financial system. These are Eurodollar which will be lent at a very low interest rate. Those who held power in the time of 'pretty colonies' choose thus becoming creditors in 1960s and 1970s in order to continue to pull the strings behind the scenes, with more discreet but equally implacable.

Until 1959 the changes in Congo external debt remained normal. The evolution began in 1965. From 1965 to 1969 the stock of external debt has increased from US $ 32 million to US $ 159 million. In 1970 the external debt experiences acceleration sharp. In the same year, there was

observed the first break in the evolution of external debt. Early in 1971, the external debt increased from US $ 159 to US $ 342 million. The same year the Congo became Zaire under an unprecedented financial crisis. In addition, in 1973, the second break was observed, the external debt rose from US $ 670 million in 1972 to US $ 1040 million in 1973. Between 1973 and 1979, the external debt increased steadily about US $ 700 million each year. From 1978 to 1983 the stock of debt increased slightly, Zaire attempting to service its debt.

Burns and al (1997), the sustainability of corrupt and oppressive regime was made by the external debt since us $ 14 billion external debt accumulated by DRC under Mobutu's regime contributed a poor tangible profit to the nation. At the end of 2008, the public and publicly guaranteed(PPG) external debt was estimated at US $ 13.1 billon, US $ 7.1 billion from bilateral creditors, US $ 4.4 billion from multinational institutions, US $ 1.5 billion from commercial creditors and US $ 1.5 billion from Paris club creditors. Furthermore, the DRC has a strong particular vulnerability shock in the export. However, the government relies on cautious borrowing approach and concessional borrowing. In 2014 the DRC's external debt was from the following sectors: 60% of external debt was from multinational creditors, 4 % from bilateral official creditors and 36% from commercial creditors.

2.5 Conclusion

The nature of the relationship between external debt and economic growth has been a theoretical and empirical issue. Theoretically, there are two schools of thought. The first school concluded that the external has a positive impact on economic growth. This school illustrated that the

external debt is a complement to the domestic savings. Then it helps the developing countries to invest more than their savings. Therefore, there is an increase in investment meaning increase in economic growth. On the other hand, the second school of thought proved that the external debt has a negative impact on economic growth. This is as a result of the import compression, crowding out effect of debt, overhang situation direct effect of debt, etc. Empirical investigations are different in the methodology of the study, time period for investigation and the geographic area. Most of the investigations demonstrated that the external debt has a negative impact on economic growth. The history of external debt in the DRC demonstrated that the management and the inflows of external debt were directed in a wrong way from the DRC's colonial period up to now.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the methodology used to achieve the objectives of this study. It is presented in five sections: the next section specifies the model followed by the description of the variables and their measurement, the data source and the discussions on the estimation strategies.

3.2 Model specification

To investigate the impact of external debt on economic growth in DRC the study adopts the model stated below. The variables included in the model are based on the theoretical and empirical literature.

$$RGDP_t = f\left(ED_t, DESV_t, ER_t, FDI_t, FINDEV_t, GOVSPEND_t, POL2_t\right) \quad 3.1$$

Where $RGDP$ represents economic growth, ED represents external debt, $DESV$ represents debt servicing, ER represents exchange rate, FDI represents the foreign direct investment, $FINDEV$ represents financial development, $GOVSPEND$ represents government spending and $POL2$ represents democracy, $t(t = 1, 2, 3...)$ implies the time variant nature of the variables.

The estimable form in logarithm form is given as:

$$\ln RGDP_t = \lambda_0 + \lambda_1 \ln ED_t + \lambda_2 \ln DESV_t + \lambda_3 \ln ER_t + \lambda_4 FDI_t + \lambda_5 \ln FINDEV_t + \lambda_6 \ln GOVSPEND_t + \lambda_7 POL2_t + \varepsilon_t \quad 3.2$$

λ_0 is the constant term, ε_t is the error term. λ_i (where $i = 0,1,2,...7$) are the coefficients of the independent variable, and $\ln$ represents the natural logarithm operator. All other variables are as previously defined.

3.3 Description and measurement of variables

3.3.1 Economic Growth

Economic growth is the increase of the aggregate national production by spending the scarce resource. It is known as the value of goods and services which are produced in the geographic territory in the given interval of time in the country. In addition, it is the value of the total consumption, investment and government spending in the country. In this study the economic growth is the dependent variable. It is measured by real GDP per capita.

3.3.2 External debt

The outstanding of current liabilities which required payments of principal as well as interest owed to nonresidents is called gross external debt. The effect of foreign debt on economic growth is ambiguous. It can either be positive or negative. It has a positive impact on the economic growth when the external debt is injected in the production sector and a negative impact when it is not properly oriented in the economy. Hence the coefficient of external debt is different than zero and statistically significant.

3.3.3 Debt servicing

Debt service is the total amount paid in interest and principal on debt during a specific time frame usually a year. Businesses may be required to publish their total debt service to lenders

when applying for a loan. Lenders use their information, along with the company's net income, to calculate the debt service coverage ratio. It is the percentage of net income used to pay for debt. The debt servicing can be negatively or positively related to the economic growth. It has a negative impact on the economic growth when there is overhang of the external debt. This implies that the return on the debt is lower than the service of the external debt. On the other hand, it is positively related to the economic growth when it creates a profitable atmosphere between creditors and other investors in the country. It allows the country to be a lower rated country. In the case of this study we expected that $\lambda_2 > 0 \, or \lambda_2 < 0$. therefore, the coefficient have to be statistically significant.

3.3.4 Exchange rate

It is known as the price at which the domestic currency is exchanged for the foreign currencies. Korsi (2015) concludes that the external debt becomes more costly in an economy where the domestic currency loses its purchasing power perpetually; in this case the foreign currency will appreciate over time. Therefore, the borrowing country will have a huge problem to meet his debt obligations. Thus, the domestic currency depreciation makes the external debt expensive. In this investigation the coefficient of the exchange rate has to be greater or less than zero. The coefficient is supposed to be statistically significant

3.3.5 Foreign direct investment

The foreign direct investment can be either positively or negatively related to the economic growth. The negative relationship is due to the repatriation of the profit to the owner country as well as the market stealing effect. On the other hand, the positive relationship is as the result of

competitive experience and knowledge which are a way of enhancing the production which implies the increase in economic growth. The foreign direct investment coefficient is supposed to be different than zero and statistically significant.

3.3.6 Financial development

The level of financial development is determined by macroeconomic policies, geographic characteristics, the level of income, cultural characteristics as well as the quality of the institutions. Financial development is positively related to economic growth since financial intermediaries allocates efficient capital for investment. Therefore, there is the production of efficient information for the resource allocation which enhances the economic growth. However, the financial development can be negatively related to the economic growth when the country has bad institutions. The coefficient of financial development is expected to be greater or less than zero. In addition, it has to be statistically significant.

3.3.7 Government spending

There is an opposition view about the relationship between the government spending and economic growth. The Wagner hypothesis highlighted that as the economy grows so does the size of the public sector. However, the Keynesian believe that the growth of the government spending implies the growth of the output (Salih, 2012). The coefficient is expected to be greater or less than zero depending on how government spending is used.

3.3.8 Democracy

Polity 2 used to represent democracy is as the result of free and fair election, inclusive suffrage, the right to run for office, freedom of expression, alternative information as well as associational autonomy. The government policy always has the significant influence on the economic growth. This can be positively or negatively related to the economic growth. It depends on the respondence of the economic growth. The coefficient of this variable is supposed to be greater or less than zero and statistically significant.

3.4 Data source

This empirical investigation uses secondary data from the period of 1972 to 2012. The different variables are mainly from the World Development Indicator (WDI) 2015. The different variables in this study are: the Real Gross Domestic Product per capita, the external debt, the debt servicing, and the exchange rate for Congolese francs and US dollars, the foreign direct investment, the financial development, the government spending. Polity 2 data is estimated from Polity IV project (Marshall and Jaggers, 2015).

3.5 Estimation strategies

3.5.1 Unit root test

The classical regression model assumes that the dependent as well as the independent variables are stationary. However this condition does not hold for most of time series data. There is always the problem of non-stationary. A regression made with non-stationary series may not have a meaning as it is spurious. Thus to avoid such mistakes in this investigation the unit root test has to be conducted.

Different test such as the Dick-Fuller (DF), the Augmented Dicker-Fuller (AD), etc. are used for testing the time series data non-stationary. In this study, the ADF will be used due to its resourcefulness of the integration of the autoregressive process of order ρ thus that investigation makes the ADF more superior than the DF. Its equation is as following:

$$y_t = \beta_o + \rho y_{t-1} + \sum_{i=2}^{p} \beta_i \Delta y_{t-i+1} + \mu_t \qquad 3.3$$

In case there is a trend in the model is therefore, the intercept in the model becomes as follow

$$\Delta y_t = A_0 + A_{1t} + \rho y_{t-1} + \beta_i \Delta y_{t-i+1} + \mu_t \qquad 3.4$$

With y_t the variable in the model testing for stationarity, A_1 the trend coefficient, μt the error term, A_0 the constant and Δ the first differential operator.

The null hypothesis is stipulated as follow: $\rho = 0$, with the alternative hypothesis $\rho < 0$. According to Enders (1996) concluded that the time series data is stationary when the null hypothesis is rejected. However, the non-rejection of the null hypothesis means that the time series data is non-stationary thus it contains the unit root.

3.5.2 The Autoregressive Distributed Lagged (ARDL) approach

The long-run and short-run relationships can be investigated by using several quantitative methods. However, Persaran et al. (2001) defines an appropriate approach for testing for that specific analysis. This methodology is appropriate for examining co-integration as it is able to make use of variables that are strictly *I*(0) or *I*(1) or a mix, provided such series are not *I*(2) or more. It is also appropriate for time series studies that have smaller number of observations (40 in this case). By co-integration, the study examines whether a long-run relationship exists

between the dependent variable and the independent variables. The test procedure adopts the error correction model (ECM) framework and also makes use of the Wald/F-statistic. The use of the ECM framework is significantly important for an economic study since it accounts for how previous disequilibrium is corrected in current periods. Therefore, spurious results are avoided. The test examines the null hypothesis of no levels relationship between the series in against the alternative hypothesis of the presence of such relationship.

The null hypothesis of no co-integration ($H_0 : \gamma_1 = \gamma_n = 0$) is tested against the alternative hypothesis of the presence of co-integration relationship ($H_1 : \gamma_1 \neq \gamma_n \neq 0$). The ARDL approach provides two bounds within which co-integration decisions are based. The upper bound assumes all series to be *I*(1) while the lower bound assumes all series are *I*(0). Given this, there is co-integration if the estimated F-statistic is greater than the upper bound critical value while no evidence of co-integration exists if the F-statistic estimated is less than the lower bound value. Where the F-statistic is found to be in between the lower and the upper bound values, inconclusive evidence for against co-integration emerges. The presence of co-integration will make it appropriate to estimate and analyze long-run and short-run relationship among the series.

3.5.3 Diagnostic and Stability Test

To ensure the estimations obtained are robust and reliable, a series of diagnostic and reliability tests will be conducted. The study examines functional form correctness using the Ramsey's RESET test while skewness and kurtosis of the residuals are adopted to determine normality. Serial correlation and heteroscedasticity will be examined using the Lagrange multiplier test and

the regression of squared residuals on squared fitted values respectively. Stability is tested using the CUSUM and the CUSUMSQ.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF EMPIRICAL RESULTS

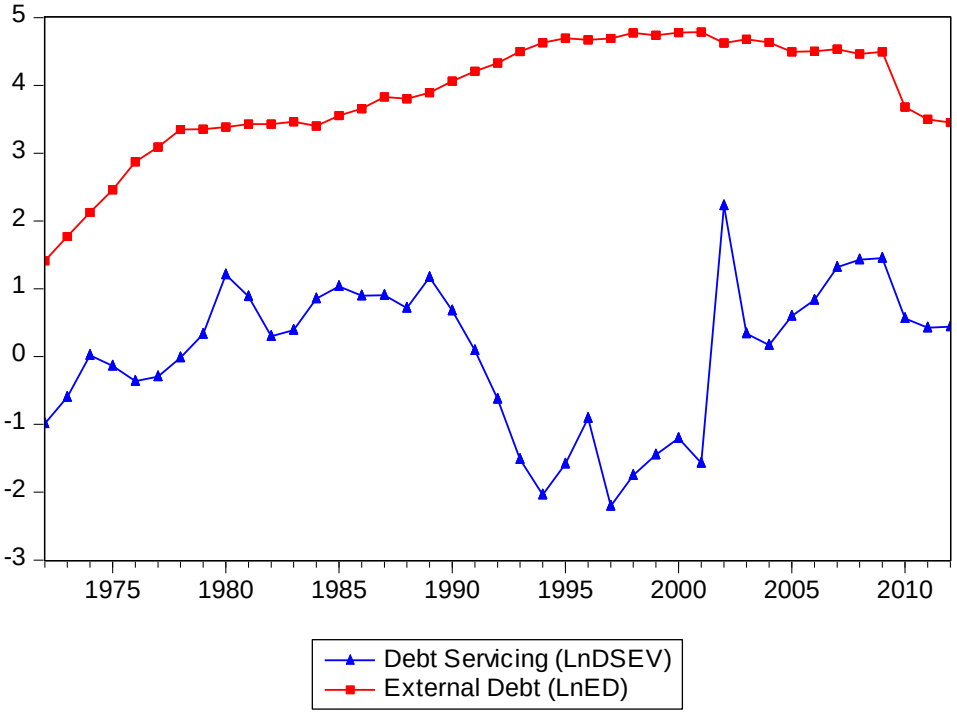
4.1 Introduction

This chapter presents the empirical findings. It is presented in six sections. The next section analyzes comparably the trends of external debt and the external debt servicing in the DRC. This is followed by the stationarity properties of the variables under study, the bounds test co-integration approach and the discussion of the long and short-run results.

4.2 Trends analysis

Figure 4.1 explains the trend observed in the external debt and the debt servicing in the DRC from 1972 to 2012.

Figure 4.1. The comparison analysis of external debt and debt servicing in the DRC



Source: Authors construction (2016)

From Figure 4.1, external debt for the DRC has been increasing for the sample period. This is as the result of rectifying the government budget deficit in the DRC. From 2010 to 2012 external debt did not follow the same direction. A small decline in the external debt was observed. During this specific period the DRC was declared Highly Indebted Poor Country (HIPC). Therefore, the country benefit from debt cancellation of US $ 12.3 billion external debt (African Economic Outlook, 2012).

In addition, it is observed from the Figure 4.1 that the external debt servicing has been fluctuating during the study period. It is also observed a higher decline in external debt servicing from 1990 to 1994. This decline is due to the maturity of the external debt of US $ 14 billion contracted by the President Mobutu. This particular debt was oriented in its own activities. Therefore, the DRC was not able to service that external debt (Musimbi, 2007).

From, 2001 to 2003, there was observed an increase in external debt servicing. This is as a result of a cooperation agreement between DRC and a Chinese consortium enterprises that involved US $ 6 billion injected in public infrastructure projects which was completely serviced (Plant, 2009). Therefore, there is a lager difference between the external debt and the external debt servicing. This is due to the lager part of the external debt which is not injected in the appropriate productive activities. Thus, the DRC has face the external debt servicing problem.

4.2 Unit root test

The unit root analysis for this study is summarized in the Table 4.1. The unit root of all variables was performed by the ADF test.

Table 4.1 Augmented Dickey-Fuller test

VARIABLES	LEVELS		FIRST DIFFERENCE	
	CONSTANT	CONSTANT AND TREND	CONSTANT	CONSTANT AND TREND
ln *RGDP*	-1.417805	-1.871764	-3.547569**	-3.515198*
ln *ED*	-4.179146***	-0.597891	-	-5.446677***
ln *DSEV*	-2.634840	-2.589679	-8.035041***	-7.929633***
ln *ER*	-0.731823	-2.206725	-3.113743**	-3.052344
FDI	-3.422015**	-3.918845**	-	-
ln *FINDEV*	-4.860616***	-6.176401***	-	-
ln *GOVSPEND*	-4.051119***	-6.594927***	-	-
POL2	-0.316921	-2.307319	-6.085092***	-6.039482***

Note: ***, ** and * represent significance at 1%, 5% and 10% statistical significance level respectively
Source: Author's construction (2016)

It is observed from Table 4.1 that real GDP per capita and external debt are respectively stationary at 5% and 1% significant level and they integrated at order one I (1) as well as the debt servicing. The debt servicing is stationary at 1% significant level. It is also demonstrated that foreign direct investment, financial development and government spending are integrated at order zero I (0) but at different significant levels. In addition, the debt servicing and exchange rate are integrated of order one I (1) at different significant levels, respectively 1% and 5%. The foreign direct investment is stationary at 5% significant level while the natural log of financial development and government spending are stationary at 1% significant level. In addition, the polity two is integrated at order one I (1) at 1% significant level. The result in the Table 4.1

demonstrated that the model is a mixture of order I (0) and I (1) variables. Therefore the appropriate estimation method in this case is the ARDL.

4.3 Bounds test to co-integration approach

The study conducts the bounds approach by using the ARDL method in order to test for the existence of long-run equilibrium among variables included in the model. This result is summarized in Table 4.2. The Schwarz information criterion (SIC) used in this study for the ARDL (2, 0, 3, 0, 0, 0, 3, 2) model selected. In addition, as the F-statistic of approximately 3.985497 which is greater than the upper bounds critical value (3.5) at 5% significant level, therefore, the Table 4.2 highlights that there is a long-run equilibrium and the null hypothesis of no co-integration is rejected at 5% error level.

Table 4.2 co-integration results

Test statistic	**5% Upper Bounds Value**	**5% Lower Bound Value**
3.985497**	3.50	2.32

Note ** represent significance at 5% statistical level

Source: Author's construction (2016)

4.4 Long-run results

The next step is to testify the long-run relationship for achieving objective two and three of this study. As the bound test approach certifies that there is co-integration among the variables included in the study model, therefore, the long-run relationship analysis have to be conducted. The long-run results are presented in Table 4.3.

Table 4.3 Long-run results

Regressor	Coefficient	Standard Error	T-Statistic
Constant	0.264241	1.895428	0.139410
ln *ED*	-0.108517***	0.028802	-3.767721
ln *DSEV*	0.027711**	0.013041	2.124907
ln *ER*	-0.031066***	0.004142	-7.499589
FDI	0.006278	0.004732	1.326674
ln *FINDEV*	-0.011862	0.019758	-0.600360
ln *GOVSPEND*	1.292205***	0.427498	3.022713
POL2	0.264241	0.009149	0.021560

Note: *** and ** represent significance at 1% and 5% respectively
Source: Author's construction (2016)

According to the impact of external debt on the economic growth in the DRC, the result demonstrates that there is a negative relationship between external debt and economic growth. Specifically, when the external debt increases by 1% economic growth decreases by 0.108517 % at 1% significant level. This result implies that the more the DRC goes for external debt the larger economic growth deteriorate. The external debt coefficient in the study model was expected to be either positive or negative, thus in the DRC the external debt has a negative impact on the economic growth. The negative impact is due to the miss injection of the external debt in the economic activities as well as the lack of appropriate external debt management. This result is consisting with some other previous studies such as Korsi (2015), Fekadu, (2014), and Ojo and Boboye (2012). However, different studies among them: Nwannebuike et al. (2016), Nurazira and Halim (2013) and Ejigayehu (2013) have demonstrated that the external debt has a positive impact on the economic growth in different developing countries.

However, the result highlights that there is a positive impact of debt servicing on economic growth. The increase of 1% debt servicing implies an increase of economic growth by 0.027711% at 5% significant level. The debt servicing coefficient was expected to have a negative or positive sign. In the case of this investigation debt servicing has a positive impact on economic growth since the debt servicing attract investors to provide loans to the DRC and it creates a good business atmosphere between the DRC and the lenders. In the long-run debt servicing ameliorate economic growth as it helps the DRC to avoid extra charges on the external debt. This study has a different view with the previous study of Nwannebuike et al (2016).

The long-run result shows that the exchange rate has a negative impact on economic growth in the DRC. As exchange rate increases by 1% then the economic growth will decrease by 0.031066 %. The exchange rate coefficient was expected to have either a positive or negative sign. The depreciation of this domestic currency made the external debt expensive as the US dollar was appreciated during that period. This finding clash with the result of Nwannebuike et al (2016) which demonstrated that exchange rate has a positive impact on economic growth in Nigeria.

A unit increases in foreign direct investment has a positive impact of 0.006278% on the economic growth in the DRC. This impact is not statistically significant. However, the foreign direct investment was expected to have a positive impact on the economic growth. The positive impact is as the result of the increase in production caused by the competitive experience and knowledge gain from foreign firms.

The result shows that there is no significant negative impact of financial development on economic growth. Therefore, by increasing the financial development by 1% this implies 0.011862 % deterioration of the economic growth. In the long-run, the coefficient of government spending shows a positive impact on economic growth in the DRC. The increase of 1% government spending generates 1.292205 % of economic growth in the DRC. Furthermore, this result implies that government spending is a significant determinant of economic growth at 1% significant level. The government spending coefficient was expected to either be positive or negative; the long-run result demonstrates that the government spending coefficient has a positive sign. This finding confirms the finding of Alshahrani and Alsadiq (2014).

4.5 Short-run Results

The study model includes the short-run dynamic analysis among the variables. The error correction term (ECM_{-1}) is used to measure the long-run equilibrium speed adjustment which represents the endogenous respondence of a shock in the independent variables. Further, Table 4.4 highlights that the ECM coefficient is negative, thus it confirms the co-integration between variables include in the model as well as the stability in the model. Therefore, the negative and significant coefficient shows the stability of the model at 1% significant level. The ECM coefficient proves that the external debt, the external debt servicing, the exchange rate, the financial development, foreign direct investment, government spending and democracy converge to the long-run equilibrium after the chock has occurred in the short-run. There is a speed of 48% to the long-run equilibrium after a shock has occurred in the short-run. This is explained by the presence of the shock in the short-run after one year.

Table 4.4 Short-run Results

Regressor	Coefficient	Standard Error	T-Statistic
$\Delta \ln RGDP_1$	0.316892**	0.117577	2.695185
$\Delta \ln ED$	-0.051560***	0.014252	-3.617865
$\Delta \ln DSEV$	-0.007042	0.006563	-1.072892
$\Delta \ln DSEV_{-1}$	-0.009722	0.006440	-1.509702
$\Delta \ln DSEV_{-2}$	-0.015915**	0.006635	-2.398629
$\Delta \ln ER$	-0.014760***	0.003425	-4.309049
ΔFDI	0.002983	0.002173	1.372536
$\Delta \ln FINDEV$	-0.005636	0.009412	-0.598823
$\Delta \ln GOVSPEND$	0.013979	0.095504	0.146375
$\Delta \ln GOVSPEND_{-1}$	-0.183894**	0.084309	-2.181191
$\Delta \ln GOVSPEND_{-2}$	-0.231834**	0.093355	-2.483357
$\Delta POL2$	-0.008117**	0.003705	-2.190652
$\Delta POL2_{-1}$	-0.015318***	0.003624	-4.226162
$ecm(-1)$	-0.475132***	0.077711	-6.114100
F-statistic	3.985497**		

Note: *** and ** represent significance at 1% and 5% level
Source: Authors construction (2016)

The short-run result shows that the external debt has a negative impact on economic growth. The result demonstrates that as the DRC increase its external debt by 1%, the economic growth declines by 0.051560% at 1% significance level. Therefore, the short-run result is consistent with the long-run result. However, the long-run negative impact on the DRC economic growth is larger than the short-run impact on the economic growth in DRC. Therefore, this result clashes

with the previous work which showed that the negative impact of external debt is less in the long-run than in the short-run.

Table 4.4 also reports that the debt servicing is negatively related to the economic growth in the short-run. Thus by increasing debt servicing by 1% in the short-run, there will be observed a decrease of 0.0007042% in the economic growth in the DRC. However, this result is not statistically significant. In addition, the result in Table 4.4 highlights that debt servicing lag one and two have a negative impact on the economic growth in the short-run. By increasing debt servicing lag one and two by 1%, there will be a decrease of respectively 0.009722% and; 0.015915% at 5% significant level on economic growth. However lag one is not statistically significant.

It also observed in Table 4.4 that the exchange rate significantly has a negative impact on economic growth. Increase exchange rate by 1% declines the economic growth by 0.014760% at 1% significant level. Therefore, the exchange rate has a negative impact on economic growth in the short-run as well as in the long-run. The foreign direct investment is negatively related with economic growth but this result is not statistically significant. Financial development has a positive impact on economic growth in the short-run. The increase of 1% of financial development causes an increase of 0.005636% in the economic growth. This result is not statistically significant.

In Table 4.4, the government spending is found with a positive impact on economic growth. Increase government spending by 1% means increase economic growth in the DRC by 0.013979%. This result is not statistically significant. However, the government spending is

statistically significant at lag one and two. Table 4.4 demonstrates that increase government spending lag one and two by 1% generate a decrease of respectively 0.183894% and 0.231834% at 5% significance level. This is as the result of Congolese francs depreciation which occurs due to the government spending in the short-run. It is observed that the polity two and polity two lag one have a negative impact on economic growth in the DRC. By increasing democracy and democracy lag one by 1% there is observed a deterioration of economic growth of respectively 0.008117% and 0.015318% at 5% significance level for polity two and 1% significance level for polity two lag one. Therefore, the result in the short-run confirms the result in the long-run.

4.6 Diagnostic and stability tests

Table 4.5 demonstrates the result about the diagnostic test as well as the stability of the model in the case of this study. The result in Table 4.5 shows that the model is stable and does not suffer from statistic problems. The serial correlation test of 0.26 implies the non-rejection of the null hypothesis meaning absence of autocorrelation in the model.

Table 4.5 Model diagnostics and stability Tests

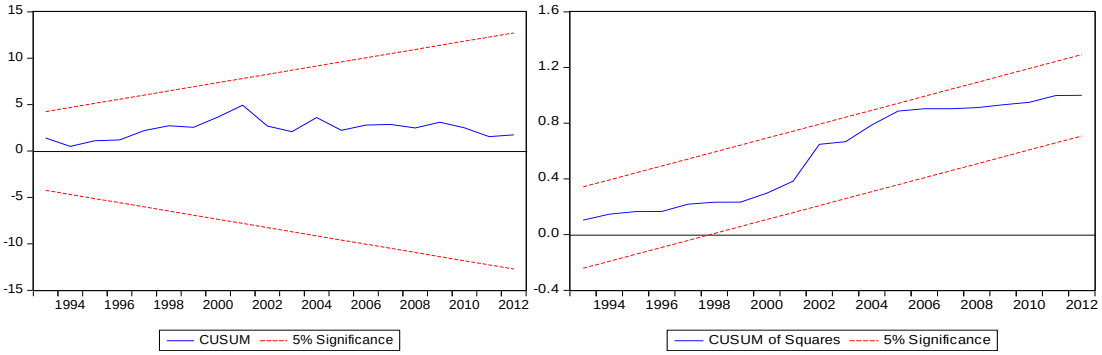
Test Statistic	Results
Serial correlation	1.448315
	(0.2611)
Normality	0.577939
	(0.74903)
Heteroscedasticity	0.472307
	(0.9383)
Functional Form	1.039854
	(0.32)

Note: values in parenthesis are probability values

In addition, the probability value of the normality test is insignificant this means that the model is normal. In addition, the model it does not have the Heteroscedasticity and functional problem

since the probability of 0.94 and 0.32 respectively implies the non-rejection of the null hypothesis. The estimation of stability conducted by the ARDL framework prove that the model is stable as the CUSUM and CUSUMSQ residual lies within the 5% critical value bounds. This means that the model is stable.

Figure 4.2: CUSUM AND CUSUMQ



CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATION AND CONCLUSIONS

5.1 Introduction

This chapter presents the summary of findings, recommendation and conclusion in three different sections. The next section summarizes the result analyzed in chapter four. In addition, section three highlights the recommendations from the findings obtained. Then section four concludes the study.

5.2 Summary of findings

The study investigated the impact of external debt and external debt servicing on economic growth in the case of DRC over the period 1972 to 2012. The ARDL co-integration approach was employed for the estimation. The major findings are presented below:

It is proved from the results that the increase in external debt deteriorate economic growth in the DRC. This result is proved in the short-run as well as in the long-run. This is as a result of the negative impact and statistical significant relationship between external debt and economic growth. The economic intuition behind this is that the more external debt is contracted in the DRC, economic growth decreases due to the wrong orientation of the external debt in different sectors.

It is also found that debt servicing is negatively related to economic growth in the short-run. This result is not statistically significant. The statistical significant result is observed in the debt servicing lag two in the short-run. In the long-run, debt servicing significantly increase economic

growth in the DRC. Meaning that as the external debt is serviced in the long-run, this ameliorate the business atmosphere between the DRC and the lenders.

The exchange rate has a negative impact on economic growth. This is as the result of a negative and statistic significant of the exchange rate coefficient in both the short-run and in the long-run. Further, the foreign direct investment increases economic growth in the DRC in the short-run as well as in the long-run. However, these results are not statistically significant. The government spending has a positive and statistically significance impact on economic growth in the DRC in the long-run. However, it has a negative impact on economic growth in the short-run. This is as a result of the depreciation of the Congolese francs which occurs due to the inflation influenced by the government spending in the short-run. Democracy has a negative significant impact on economic growth in the DRC in the short-run and positive but insignificant in the long-run.

5.3 Recommendations

Though the study finds a negative relationship between external debt and economic growth in DRC it cannot be totally ignored for the growth and development of a developing country like DRC. It is recommended that funds sourced from the rest of the world should be injected to production sectors capable of generating sufficient profit to service the accrued debt in the long-run to enhance economic growth in the DRC.

In addition, the policy makers should implement policies aimed at hedging their currency with that of the countries they borrow from because fluctuations in the DRC's exchange rate resulting from the demand and supply forces of the market may cause high interest payments. Hence in

order to avoid and/or reduce interest payments the policy makers should hedge their currencies so can be paid off and hence reduced.

5.4 Conclusions

This investigation analyses the impact of external debt on economic growth in the DRC from 1972 to 2012. The study aimed to analyze the impact of external debt on economic growth in the DRC. This was taken as the general objective of the study. Further, in order to achieve the key objective of this study, the specific objectives were set. This was the object of analyzing trends of external debt and the external debt servicing. In addition the assessment of the impact of the external debt on economic growth in the short-run and in the long-run conducted. In addition, the impact of external debt servicing on the economic growth in the DRC has drawn our attention. To achieve the three specific objectives, the graph analysis was used for the first objective. In addition the ARDL estimation approach was used in order to investigate the second and the third objectives. The results show that the external debt and the exchange rate have a negative statistical and significant impact on economic growth in the DRC in the long-run and in the short-run. The debt servicing as well as the government spending has a positive statistical and significant impact on the economic growth in the long-run. However, the foreign direct investment and the financial development are respectively positively and negatively related to economic growth in the DRC in the short run and in the long-run as well. These last results are however not statistically significant.

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APPENDIX

ARDL Cointegrating And Long Run Form
Dependent Variable: LN_RGDP_P
Selected Model: ARDL(2, 0, 3, 0, 0, 0, 3, 2)
Date: 09/01/16 Time: 16:36
Sample: 1972 2012
Included observations: 40

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LN_RGDP_P(-1))	0.316892	0.117577	2.695185	0.0139
D(LNED)	-0.051560	0.014252	-3.617865	0.0017
D(LNDSEV)	-0.007042	0.006563	-1.072892	0.2961
D(LNDSEV(-1))	-0.009722	0.006440	-1.509702	0.1468
D(LNDSEV(-2))	-0.015915	0.006635	-2.398629	0.0263
D(LNER)	-0.014760	0.003425	-4.309049	0.0003
D(FDI)	0.002983	0.002173	1.372536	0.1851
D(LN_FINDEV)	-0.005636	0.009412	-0.598823	0.5560
D(LN_GOVSPEND)	0.013979	0.095504	0.146375	0.8851
D(LN_GOVSPEND(-1))	-0.183894	0.084309	-2.181191	0.0413
D(LN_GOVSPEND(-2))	-0.231834	0.093355	-2.483357	0.0220
D(POL2)	-0.008117	0.003705	-2.190652	0.0405
D(POL2(-1))	-0.015318	0.003624	-4.226162	0.0004
CointEq(-1)	-0.475132	0.077711	-6.114100	0.0000

Cointeq = LN_RGDP_P - (-0.1085*LNED + 0.0277*LNDSEV -0.0311*LNER + 0.0063*FDI -0.0119*LN_FINDEV + 1.2922*LN_GOVSPEND + 0.0002 *POL2 + 0.2642)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNED	-0.108517	0.028802	-3.767721	0.0012
LNDSEV	0.027711	0.013041	2.124907	0.0462
LNER	-0.031066	0.004142	-7.499589	0.0000
FDI	0.006278	0.004732	1.326674	0.1996
LN_FINDEV	-0.011862	0.019758	-0.600360	0.5550
LN_GOVSPEND	1.292205	0.427498	3.022713	0.0067
POL2	0.000197	0.009149	0.021560	0.9830
C	0.264241	1.895428	0.139410	0.8905

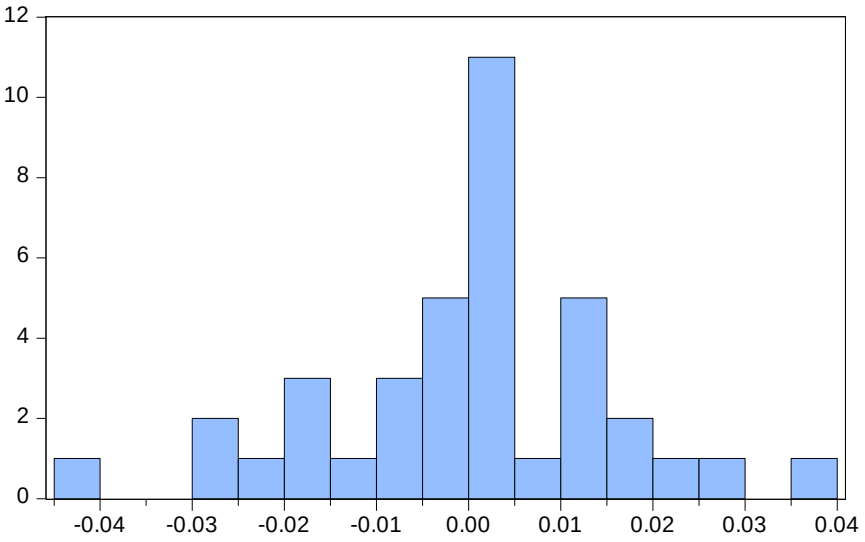
ARDL Bounds Test
Date: 09/01/16 Time: 16:38
Sample: 1975 2012
Included observations: 4
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k

F-statistic	3.985497	7

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26



Series: Residuals
Sample 1975 2012
Observations 38

Mean	2.78e-15
Median	0.001316
Maximum	0.037307
Minimum	-0.040426
Std. Dev.	0.015717
Skewness	-0.249808
Kurtosis	3.339704
Jarque-Bera	0.577939
Probability	0.749035

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.448315	Prob. F(2,18)	0.2611
Obs*R-squared	5.267449	Prob. Chi-Square(2)	0.0718

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.472307	Prob. F(17,20)	0.9383
Obs*R-squared	10.88544	Prob. Chi-Square(17)	0.8625
Scaled explained SS	3.527520	Prob. Chi-Square(17)	0.9998

Ramsey RESET Test
Equation: UNTITLED
Specification: LN_RGDP_P LN_RGDP_P(-1) LN_RGDP_P(-2) LNED LNDSEV LNDSEV(-1) LNDSEV(-2) LNDSEV(-3) LNER FDI LN_FINDEV LN_GOVSPEND LN_GOVSPEND(-1) LN_GOVSPEND(-2) LN_GOVSPEND(-3) POL2 POL2(-1) POL2(-2) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.019732	19	0.3207
F-statistic	1.039854	(1, 19)	0.3207

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000474	1	0.000474
Restricted SSR	0.009140	20	0.000457
Unrestricted SSR	0.008666	19	0.000456

Unrestricted Test Equation:
Dependent Variable: LN_RGDP_P
Method: ARDL
Date: 09/13/16 Time: 15:56
Sample: 1975 2012
Included observations: 40
Maximum dependent lags: 3 (Automatic selection)
Model selection method: Schwarz criterion (SIC)
Dynamic regressors (3 lags, automatic):
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LN_RGDP_P(-1)	0.166994	0.676797	0.246742	0.8078
LN_RGDP_P(-2)	-0.025777	0.308702	-0.083502	0.9343
LNED	-0.001026	0.051561	-0.019904	0.9843
LNDSEV	-0.003445	0.007445	-0.462798	0.6488
LNDSEV(-1)	-0.001567	0.007398	-0.211803	0.8345
LNDSEV(-2)	0.004130	0.008454	0.488484	0.6308
LNDSEV(-3)	0.006835	0.011101	0.615745	0.5454
LNER	-0.003267	0.011779	-0.277358	0.7845
FDI	7.09E-05	0.003587	0.019771	0.9844
LN_FINDEV	-0.000661	0.010593	-0.062408	0.9509
LN_GOVSPEND	0.014938	0.095413	0.156561	0.8772
LN_GOVSPEND(-1)	0.051227	0.154813	0.330898	0.7443
LN_GOVSPEND(-2)	0.061558	0.146582	0.419960	0.6792
LN_GOVSPEND(-3)	0.102805	0.157189	0.654020	0.5209
POL2	-0.001839	0.007183	-0.256029	0.8007
POL2(-1)	-0.001754	0.006568	-0.266961	0.7924
POL2(-2)	0.004375	0.011326	0.386262	0.7036
C	1.721757	1.809662	0.951425	0.3533
FITTED^2	0.065210	0.063948	1.019732	0.3207

R-squared	0.998999	Mean dependent var	5.895221
Adjusted R-squared	0.998051	S.D. dependent var	0.483745
S.E. of regression	0.021357	Akaike info criterion	-4.548066
Sum squared resid	0.008666	Schwarz criterion	-3.729273
Log likelihood	105.4133	Hannan-Quinn criter.	-4.256746
F-statistic	1053.579	Durbin-Watson stat	2.627538
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.