# The Effects of External Public Debt on Economic Growth of Rwanda

**Mrs. NIBEZA Sylvie (AQEPD, Msc, PGDE)**

**Assistant Lecturer in the Faculty of Education, University of Technology and Arts of Byumba (UTAB)**

**DOI: https://dx.doi.org/10.47772/IJRISS.2024.803143**

**Received: 16 January 2024; Revised: 15 February 2024; Accepted: 20 February 2024; Published: 16 April 2024**

## ABSTRACT

This study investigated the effect of External public debt on Economic growth of Rwanda through GDP, it considers the period from 1980 to 2015. The study used annual time series on external public debt, debt services and GDP (-1). It is that, most of developing countries like Rwanda depend on external debt due to their budget deficits and fill the gap of low saving to finance its consumption and investments. Objective of the study were to establish empirically effect of external pubic debt on economic growth of Rwanda. The study used data from World Bank international account, and OCED national account file, and World Bank international debt statistics. Autoregressive distributed lag model and Cointegration test are used for showing long run relationship between variables. The study showed that there is significant impact of external public debt, debt services and GDP (-1), External debt are negatively to GDP where the increase in one unit of external public debt GDP decrease by 0.101 on average, while Debt services and GDP (-1) affect GDP positively, the increase in 1 unit of DS and GDP (-1) increase GDP by 0.254 and 0.92 on average.

**Keywords:** Debt Services, Economic Growth, External Public Debt, GDP, Rwanda.

## BACKGROUND OF THE STUDY

In developing countries, the burden of external debt has become a hindrance to development with the coexistence of several factors such as low saving, deficit balance of payment and low economic growth. Many developing countries want to improve standard of living of theirs population so to promote investment and to boost economic growth they need to take debt from external source (Ishan, 2014). Due to their income which is low, their savings for investment also is low so they need to borrow from developed countries and international community to full fill their lakes (Kasidi, 2013).

So, developing countries take the foreign debts for many purposes as mentioned by Chenery (2012) such as to fulfil lack of saving-investment “gap”, budget or balance of payment deficit due to low investment. Public debt also is necessity on government during the period of war, times of depression where public debt creation is considered very significant to remedy a depression, to meet unprecedented expenses, and development finance. External debt occurs when the government borrows from abroad to finance its budget, many times the external public debt caused by low capacity of country to finance its expenditure which called budget deficit while the Economic growth is the increase in productivity of country or values of goods and services produced within a country. External debt takes some percentages on GDP of countries (Gohar et al., 2013; Salundo, 2013).

(Krugman, 2014) and (Sachs, 2012) state that a large public debt might create debt overhang which is a

situation in which investment are reduced or postponed since the private sector anticipate that the returns from their investment will serve to payback creditors. Also, Eduardo Boreinstein (1990) defines debt overhang as: a situation in which the debtor country benefits a very little from the return to any additional investment because of the debt services obligation.

Benedict et al. (2013) suggested that foreign borrowing has a positive impact on investment and growth of country up to threshold level but external debt services can potentially affect the growth as most of funds will go in the repayment of the debt rather at the investments. (Fosu, 2010) found out that debt servicing shifts spending away from the social sector, health and education as a result, creates a great hindrance in the economic growth of a country due to high interest payments on the external debt, heavy public expenditures and foreign exchange to repay that debt. In this case future generation does bear a burden. More modern view: Overlapping Generations' models: capture potential interaction of different generations of individuals in the market place. Neoclassical model of the debt stresses that government borrowing crowds out investment in the private sector." crowding out hypothesis" a reduction in demand that results when a fiscal expansion raises the interest rate is called (crowding out effect).

While Ricardian models: all of the previous discussion ignores individual's international transfers across generation. (Barro, 2014) argued that when the government borrows, members of the "old" generation realize their heirs will be made worse off. If the "old" increase their bequests by the tax burden on the "young" they can undo the government transfers. Ricardian models conclude that tax and debt finance are essentially equivalent, form of government finance is irrelevant.

In Rwanda like most developing countries, the economy is currently characterized by budget deficit and balance of payment deficit. By referring to the World Bank data provide for Rwanda from 1970 to 2015. The average value of external debt for Rwanda for these years was 34.05% with a minimum 0.9% in 1971 and maximum of 127, 41% in 1994 (World Bank). The external debt of Rwanda and others countries is reported as the total international obligation of the country as percentages of its GDP. External debt of less than 60% of GDP is not a problem at high levels paying the interest on the debt may start to become a difficult (World Bank, 2015).

IMF chief Christine Lagande(c) during her visit to Rwanda in 2005, interact with minister Claver Gatete (r) and Governor John Rwangombwa of the national bank of Rwanda in June 2005, a dollar 1.5 billion debt owed by Rwanda to creditors was cancelled under the Heavily Indebted Poor Country (HIPC) initiative but as "Kigali Today press" reports, 10 years later, government has accumulated debt that is double the amount which was written off. As the post-1994 government took power, they found Rwanda's foreign debt alone was equivalent to 85% of country's Gross Domestic Product (IMF, 2015).

The Central bank records show that for the fiscal years 2014/15, total debt was about $2.8 billion, a 30% rise compared to 2.3 billion dollar the previous year. The central bank and ministry of finance have established a debt management unit (DMU) that keeps an eye on the numbers reminding government on the red lines. Central bank Governor John Rwangombwa said in June that the debt levels remained sustainable and well below the incentive thresholds for debt distress (BNR, 2015).

Since 1980's debt crisis can as macroeconomic problem for many developing countries like Rwanda. After this, different studies are carried out to find out the cause, consequences and positive solution to the way out from the crisis. According to Cline (2012): If marginal productivity of each available external debt is greater than or equal with the principal and the interest payment, external debt will have a positive impact on the economics of the borrowing country. This in turn will require the foreign debt to be used in productive sectors and is basic infrastructures which can enhance the productivity of other sectors.

Under this condition external debt servicing doesn't affect economic growth but, if the borrowing country

failed to services its debt, it will lose its credit worthiness and this turn might affect economic performance of the borrowing country by reducing the available of foreign debt (Mjema & Nursanda, 2014). Thus, the objectives of this paper were to examine the effect of external debt on the economic growth performance of Rwanda country during the period between 1980 and 2015.

## THE PROBLEMATIC

A country with budget deficit may finance it by using borrowing both domestic and external debt. Debt may increase due to many reason such as war period, depression period (period of low productivity) and to meet unprecedented expenses, while Krugman (2014), (Sachs, 2012): state that a large public debt might create debt overhang which is the situation in which investment are reduced or postponed since the private sector anticipate that the returns from their investment will serve to payback creditors. Rwanda as developing countries has been experiencing a persisting deficit in the balance of payments and in the public finance at the same time. To finance these deficits, Rwanda has used different sources of financing, domestic and external financing. The most important financing is by external resource. Since 1994, more than 90% of the total budgetary deficit financing are made of external financing which is composed by loan and grants from different donors. In addition, the Gross National Production has been unable to cover consumption need and the country has been importing to fill the gap. Therefore, Rwanda has been facing lack of saving and the need fill up the gap led the country to depend on external borrowing for its investment. For recent years the external public debt has been restrictive since it has become a heavy burden compare to the country's economic capacity. The inadequate level of domestic savings, combined with the need to finance development programs, has brought foreign public debt to levels which are currently unbearable. But the question of interest in this study is whether there is any impact of external debt on Rwanda economic growth? To what extent of these debt?

## OBJECTIVES OF THE STUDY

The general objective of this study is to find empirically the effect of external public debt on economic growth of Rwanda. To achieve this goal, the research did the following tasks: establishing relationship between external debt and economic growth of Rwanda, if is positive or negative; determining the extent to which external public debt affect economic growth in Rwanda; and analysing long-term correlation between external debt and economic growth of Rwanda.

## LITERATURE REVIEW

Different studies (both theoretical and empirical) were carried on relationship between external debt and economic growth and show different result. Different theoretical model shows different things and shows different on government debt in general. This section summarizes views of literature on theoretical model and different theory on external debt and economic growth, and empirical relationship of external public debt on economic growth, it is concluded by showing gap between different authors and particularity of the study as partial conclusion of this section. Theoretical model included different definitions, theory of economic growth, debt and economic growth, Empirical relationship of external debt, different critics on literature review (gap from effect of external public debt on economic growth of Rwanda) and conceptual frame work.

### Theoretical Review

According to the World Bank definition total external public debt is a debt owed to non-residents repayable in foreign currency, goods or services. (Hasan & Pervin (2012) and (Abera., 2013) defines external debt as the part of debt in any national economy that is owed to a borrower outside the country, the borrowers can

foreign countries, international organization, corporation or private households. Wilson and Clark (2013) define external debt as the part of national debt that is owned by people or governments outside the country.

External debt has increased steadily in developing countries in recent decades. The analysis of the roles of external debt in financing the development process is important, (Marcel, 2013). (Avramovic, 2010) proposed a thesis called the debt cycle thesis, he confirmed that for an economy, characterized by low domestic saving, external debt was considered as an important funding. While David C. colander state that Debt is accumulated deficits minus accumulated surplus whereas deficits and surpluses are flow measures (they are defined for a period of times). Most of the decrease in the debt to GDP ratio in US history occur through inflation (rise in nominal but not real GDP) or through real growth. Considering debt services as a factor, Cunninghan (1993) explained the relationship between debt services and economic growth using a standard model. The model is as following: Y= f (K, LF, DS) where Y stands for the gross national product, K for the capital stock, LF for labour force and DS for debt services. He explained that high indebtedness has adverse effects on both capital and labour productivity. In addition, local investors don't benefit from increasing in productivity factors.

Karagol (2012) extended cunninghan's model to human capital according to Romer's conceptualization of human capital. Model become: Y= f (K, LF, DS, H). External debt doesn't affect growth priori, but also countries with better economic performances may better manage the external debt phenomenon. In fact, high economic growth in turn increases a country's credit worthiness and this may attract more capital inflow.

Wilson and Clark (2013) said that borrowing money is an important part of modern economy and the economy may be healthier if government spending is increased without increasing taxes in the periods of unemployment which means increasing in debt. They said also that the most important worry about the national debt is the effect that it has on business investment where when the government borrows large amounts of money, it may reduce the flow of money to business and cause people to shift their money to government bonds and away from kinds of savings that provide money to business" this shift is called crowding out effect" which is the effect of on private business when increased government borrowing raise interest rate and reduce private borrowing.

According to the research carried by Elom-Obed et al. (2015) on effect of external debt, He shows that generally external debt affect economic growth in two ways. One is debt overhang effect: a situation when an accumulation debt discourages or overhang investment, mainly private investment, as private investors expected an increase in tax by government to pay the accumulated debt. 2$^{nd}$ is crowding out effect, a situation when income from export is used to pay the accumulated debt. This in turn may affect investment.

While Gordon and Cosimo (2014), said that "public debt levels among advanced economies have reached levels not seen before in the absence of a major war"; Johnny and Johnnywalker (2013) besides, a high level of public debt can have adverse consequences on the macroeconomic stability of a country and discouraging capital inflows while increasing capital flight, (Joy & Panda, 2010), other than debt stock, also the associated payment flows might impinge on growth and investment. Debt services in several countries soaks up a significant amount of government revenue. Reducing the available resources to fund (much needed) public in infrastructures (Madow et al. 2015).

In line issue of debt overhang policy makers that focused on debt crisis tried to find out whether the problem is a solvency or a liquidity problem (Mhlaba, Phiri & Nsiah, 2013). As per Ogbonna et al. (2012), a liquidity problem is a short term problem faced by countries to service the forth coming debt based on the initial contract. i .e. when countries failed to service current obligation. In the other hand a solvency problem is a long run problem faced by countries when their total liabilities are beyond their ability to pay at any time. For Pattillo, Poirson & Ricci, (2014) most developing countries were solvent. For him the present

value of their respective resources (calculated based on discounted value of their total debt obligations).

Theoretical literature on the relationship between public debt and economic growth tends to point to a negative relationship particularly in a neoclassical setting. Paul (2014), refining contributions by Ring (2015), argued that the national debt is a burden for next generations which comes in the form of a reduced flow of income from a lower stock of private capital.

According to Saungweme, Odhiambo & Camarero (2012), large government debt or budget deficits may encourage excessive monetary expansion and therefore lead to greater inflation. The possibility of running budget deficits may encourage politicians to underlie government spending and taxes. A high level of government debt may increase the risk of capital flight and diminish a nation's influence around the world. Also, Gregory Mankiw points out that when a government spends more than it collects in taxes, it has a budget deficit, which financed by borrowing from the private sector, the accumulation of past borrowing is the government debt. He continues to stress debate about the appropriate amount of government debt of a country. Alexander Hamilton believed that" a national debt if it is not excessive, will be to us a national blessing" while James Madison argued that "a public debt is a public curse". Also, Mankiw state that the primary cause of increase in the government debt is a war and shows that when national saving falls people start financing investment by borrowing from abroad, causing a trade deficit. A part from a direct crowding-out effect he also pointed out to the impact on long –term interest rate, possibly in a non-linear form "if the government operation is of sizable proportion, it may significantly drive up (long term). Modiglian considered that a situation in which the gross burden of national debt may be offset in part or in total is when debt finances government expenditures that could contribute to the real income of future generation.

Spilioti & Vamvoukas (2015) adds the effect of taxes on the capital stock and differentiates between public external and international debt and he conclude that, through the impact of taxes needed to finance the interest payment both types of public debt reduce the available life time of consumption of tax payers, as well as their saving and thus the capital stock.

Udeh, Ugwu & Onwuka (2014) theoretical model posits on nonlinear impact of foreign borrowing on investment as suggested by Clements et al. (2013), this relationship can be arguably extended to growth. In the same vein, the growth model proposed by as Abdulkarim & Saidatulakmal (2011), in which public capital has a non –linear impact on economic growth can be extended to cover the impact of public debt.

Adepoju, Salau, & Obayelu, A.E (2014). was drawing attention to the fact that the removal of the "dead weighted debt "would: i) raise the incentive of households to save (the Pigou-effect), ii) improve the incentive for work and enterprise, iii) possibly allow for a decrease in income taxation at a later stage as a result of saving interest payments on the budget.

An important channel through which public debt accumulation can affect growth is that of long- term interest rates. High long term interest rate, resulting from more debt-financed government budget deficits, can crowd-out private investments, thus damping potential output growth. In Krugman's specification the external debt overhang affects economic growth through private investments, as both domestic and foreign investors are deterred from supplying further capital.

On the other hand economic growth as said by Akhanolu (2014), is the growing or expanding of real gross domestic product (real GDP), the market value of final goods and services produced in an economy, stated in the prices of a given year as a primary measurement of growth. Economic growth (per capita) allows everyone in society, on average, to have more. Thus, it is not surprising that most governments are generally searching for policies that will allow their economies to grow.

While the neoclassical growth theory which has its origin from the Harrod- Domar model explains the

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VIII Issue III March 2024

relationship between investment, growth rate and employment in an economy, according to this theory, production capacity is proportional to capital stock. Solow (1956) in his contribution to economic growth focused on the process of capital formation and assumed that production was a function of capital, labour and technology. He argued that if there were capital constraints growth, then capital can be substituted for labour. In this case, long run growth is determined by technological change and not by savings or investment. In classical theory Adam smith identified three sources of growth namely: growth in the labour force and stock of capital, improvement in the efficiency with which capital is used in labour through greater division of labour and technological progress, and promotion of foreign trade which expected to widen the market and reinforce labour and capital.

Traditional literature devoted to the development the use of leverage can exert positive or negative effects on growth. By placing the side of the borrower, the debt way accelerates growth (Coccia, 2015). Many theoretical and empirical works has often sought the links in developing countries between growth and heavy reliance on debt in these countries. Among those addressing the link between use of external debt & the level of growth much has been motivated by the desire to highlight the effect of financing on economic growth. Indeed, the possible influence external debt on growth of a country is difficult to measure. However, the two major as sumptions are found in the literature: One, External public debt can make the investment that domestic savings cannot finance (Ogunjimi, 2013); Two, the use of debt to substitute for domestic savings which would tend to decline. The effect on growth is here and no long-term negative influences since savings behaviour have been adversely affected (Mbanga & Sikod, 2015).

**Empirical Review**

Abbas and Christensen (2010) complement the vast literature on external debt and growth findings that in a panel of low-income countries and emerging markets, moderate levels of domestic debt have a positive contribution to GDP growth as a result of the development of financial markets. Reinhart and Rogoff (2013b) analyse and found that government debt is unrelated to economic growth as long as it does not exceed 90 % of GDP.

(Woo, 2010) find that public debt has a linear negative effect on subsequent GDP Growth and Investment while Rogoff (2010b) and Grenner and Koehler-Geib (Canner, 2010), also Kumar and woo (2010) find some evidence of non- linearity in the debt effect on growth which seems to be effective only when public debt exceeds 90% of GDP.

Pattillo (2002) use a large panel dataset of 93 developing countries over 1969-1998 and found empirical support for a nonlinear impact of debt on growth: at low levels, debt has a positive effect on growth but above particular thresholds or turning points, additional debt begins to have a negative impact on growth (the impact of external debt on per capita GDP growth is negative for net present value of debt levels above (35-40) %of GDP). After two years Pattillo et al used a two stage least square method and Generalized Method of Moment (GMM) to estimate a standard growth model over a period 1969-98, they find a nonlinear effect of external debt on growth: that is, a negative and significant impact on growth at high debt levels but insignificant impact at low debt levels.

While Clements et al (2003) investigate the same relationship for a panel of 55 low-income countries over the period 1970-1999 and find that the turning point in the net present value of external debt is at around (20-25) % of GDP other previous empirical studies that find a nonlinear effect of external debt on growth includes (Hsing, 1997); On the other hand, Schclarck (2004) finds a linear negative impact of external debt on per capital growth and no evidence of an invested u shaped relationship). Schclarck (2004) also investigates the relationship between gross government debt and per capita GDP growth in developed countries, no robust evidence of a statistically significant relationship is found for a sample of 24 industrial

countries with data averaged over seven 5 years periods between 1970 and 2002.

Osewe (2013) analysed the effect of external debt and inflation on economic growth in Kenya using the Solow growth model and conclude that there was no long term causality relationship between variables. Ochieng (2013) looked at the relationship between public debt and economic growth using the Harrod Domar growth model and concluded that domestic debt in Kenya was reasonably sustainable.

Checherita (2010) determined the average impact of government debt on per capita GDP growth for twelve-euro area countries over a period of about 40 years from 1970- 2009. The study showed non-linear negative impact of government debt on economic growth.

Makau (2008) did an empirical analysis on the external public debt servicing and economic growth in Kenya. The study used a single growth equation model estimated using ordinary least square (OLS) method with annual time series data covering the period 1970-2003. The findings indicated that Kenya 'external debt is mainly official of which a bigger proportion is from multilateral sources.

Nguji, (2016) also were carried research in Kenya to establishing the effect of public debt on economic growth of Kenya over the period of 1980-2013, He used Times series regression models, the main findings of the study confirmed with statistical significance that increasing the levels of domestic debt crowd out private investment. Since real interest rate, lagged private investment, domestic debt and inflation affected Real GDP negatively and in the long run the increased level of external debt will cause debt overhang problem since the total debt service affected the Real GDP negatively.

Iyoha, (1999) took a simulation approach to investigate the impact of external debt on economic growth in sub–Saharan African countries using a small macroeconomic model estimated for 1970-1994. The study shows that external debt has adverse effect on investment. The study also pointed out that reduction in debt stock would lead to improvement in investment and economic growth. Fosu (2010) also employed an export augmented production function to investigate the impact of external debt on economic growth in sub Saharan Africa for the period of 1980-1990), the study reveals that there a negative relationship between debt and economic growth Also the research carried by (Babu, 2014) with the aim of establishing the effect of external debt on the economic growth of the EAC member's countries and find or conclude that external debt expansion has a negative effect on economic growth of EAC member's countries. If properly utilized external debt can help the developing countries like EAC's to meet their development goals.

Other empirical research was carried to determine the effect of public debt on economic growth in four east African countries include Rwanda and found that external public debt had a negative effect on economic growth on these countries (Ibrahim, 2013).

**Critical Review of Literature**

In this section, different literature were carried on effects of external public debt on economic growth and found different results, among them we can say; (Clark, 1984) and also Joakim who said that debt may be healthier if the government increases each spending without increasing tax, due to debt affect economic growth through debt overhang and crowding out effect. In addition many researchers found that moderate level of external debt has positive contribution on growth, then among these researchers we can state, Abbas and (J.Christensen, 2005), Pattillo et Al (2002) but above particular thresholds or turning point addition debts begin to have negative relationship on economic growth. Kumar and woo (2010), while as said per Reinhart and Rogoff (2010), external public debts are unrelated when they exceed 90% of DGP. Also, national debt is a burden on future generation which reduce private capital as said by many authors like Modiglian (1961). Different theory was shows different things about debt, it explains debt in general,

national debt, external debt, debt services and economic growth. Also show how these variables affect economic growth through debt overhang and crowding out effect. These theories were help the researchers to have better understanding on debt and economic growth which help them to enter in research, our study will empirically show relationship between external debt and economic growth rather than theoretically. Also, by referring to this literature reviewed different research were carried and found negative relationship, others show positive relationship while others found nonlinear and unrelated relationship, all of this research were carried on different countries rather than Rwanda except one carried in EAC countries including Rwanda. This study will be referring on effect of external debt on economic growth of Rwanda, the relationship between these variable and what level of external public debt have on GDP in the year from 1980 to 2015.

# METHODOLOGY

The study based on both independent and dependent variable, therefore the variables of this study include External public debt, Debt services and GDP (-1) as independent variables and economic growth as dependent variables which are indicated by GDP of country. The study used data for the period of thirty-five years from 1980 to 2015. In addition, the data used in this study are time series secondary data (Richard & Margaret, 1990:228). Secondary data used for this research work such as GDP and GDP (-1) were sourced from World bank national account data and OCED national account data files, while External public debt and debt servises are sourced from world bank international debt statistics.

**Estimation Model**

In this study as used by Dr Sazan Toher Saeed and Shvan Jaimal Hama Sald (MSC) in 2013 for showing the impact of external public debt on Economic growth of Iraq and as introduced by Pessan and Shin (1995) and Pessan et Al (2001), the auto regressive distributed lag model (ARDLM) was used for conducting Cointegration and estimate short run and long run relationship between external public debt and Economic growth of Rwanda. The Ordinary Least square (OLS) based autoregressive distributed lag model approach has become popular in recent year and numeral empirical study have applied this method (Bashangi A. and Muchapondwa, 2009) (2009). Also as suggested by the Malik et Al (2010), the specification model used in the study will include both external public debt and Debt services. However, the following specifications were used in order to observe the overall effect of external debt on economic growth of Rwanda, and mathematical models were constructed for analysis.

GDP= F (EPD, DS, GDP (-1)). This means that the GDP growth is a function of External public debt and Debt services.

Econometrics models:

$GDP = \alpha + \beta 1\ EPD + \beta 2 DS + \beta 3\ GDP\ (-1) + \mu$

Where $\alpha$: is constant term

$\beta 1, \beta 2, \beta 3$: are the coefficients of independent variables to the dependent variables

GDP: is Gross Domestic Product

EPD: is External public Debt and

DS: is Debt services

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VIII Issue III March 2024

GDP (-1): is Gross Domestic Product in previous Years

μ: is an error term.

From the above model, β1, β2, β3 which are the coefficient will show the relationship between independent variables and economic growth, negative sign and positive sign show negative and positive relationship between the variables and μ show the value of other factors can affect economic growth which are not specified in the models.

**Tools of Data Analysis and Presentation**

The study used E-view statistical package for data analysis and presentation of study findings. Quantitative data was analysed using descriptive statistics which included measures of tendency (mean), Measures of dispersion (standard deviation of range). The inferential statistics involved measurement and relationship which included correlation, regression and analysis of variables. The output of data analysis through E-views was presented in a tabular form and graphics. The study uses times series regression model and interpretation of the result from e-views in establishing the relationship between variables.

**Expected Signs and Conceptual Frame Work**

- **Expected signs**

The variables of the study are expecting the following signs presented in the following table and conceptual frame work:

Table 1: Expected signs

| Types | Variables | Measurement unit | Expected relationship |
|---|---|---|---|
| Dependent variables | GDP (gross Domestic Product) | US Dollar | – |
| Independent variables | EPD (External Public Debt)<br>DS (Debt Services)<br>GDP (-1) Gross Domestic Debt of previous year) | US Dollar | Negative<br>Negative<br>Positive |

Table 2: Conceptual frame work

| Dependent variable | Intermediate variable | Independent variable |
|---|---|---|
| Economic Growth | GDP | External public debt |

## DATA ANALYSIS AND INTERPRETATION

**Data Characteristics**

The study used annual times series data for the period 1980 to 2015. Data on macro economic variables used in this study,GDP are sourced from World bank national account data and OCED national account data files,External public debt and debt servises are sourced from world bank international debt statistics. Data was collected for the following variables :External public debt, Debt servises,GDP(Gross Domestic

Product), GDP(-1). GDP used in this study are real at constant price of 2005 and. The table below describe the basics features of the real data variables and descriptive statistics gives summaries about the samples and they form a fundamental basis for every quantitative data analysis.

Table 3: Descriptive statistics for the variables used in the study

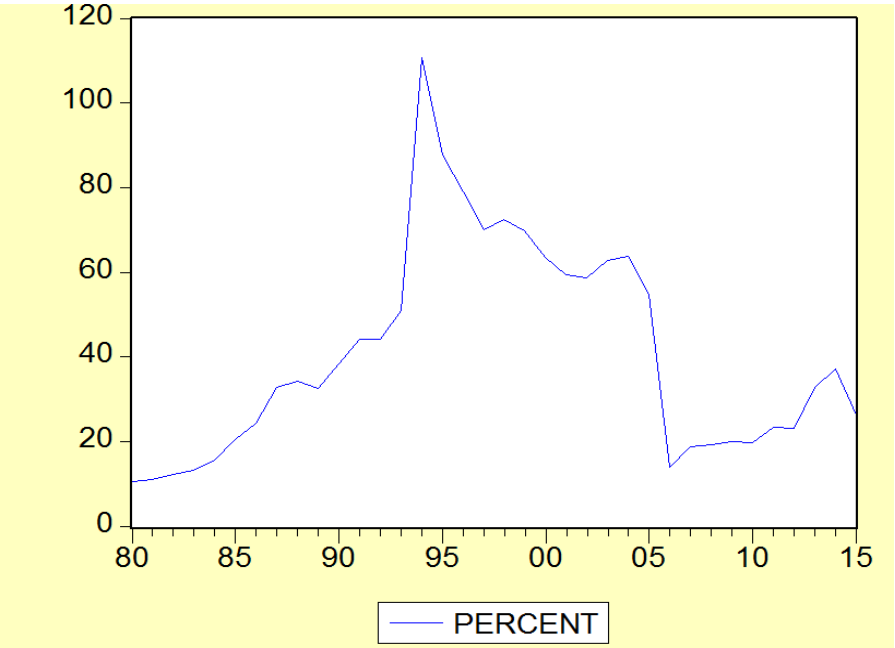
| | GDP | EPD | DS | GDP (-1) | PERCENT |
|---|---|---|---|---|---|
| Mean | 2.43E+09 | 8.69E+08 | 19805889 | 2.26E+09 | 40.86281 |
| Median | 1.78E+09 | 8.14E+08 | 16735000 | 1.78E+09 | 33.52048 |
| Maximum | 8.10E+09 | 2.12E+09 | 1.05E+08 | 5.05E+09 | 110.7734 |
| Minimum | 8.19E+08 | 1.50E+08 | 3218000. | 8.19E+08 | 10.58116 |
| Std. Dev. | 1.45E+09 | 4.84E+08 | 17191247 | 1.10E+09 | 25.14130 |
| Skewness | 2.030892 | 0.529568 | 3.639082 | 1.193093 | 0.778924 |
| Kurtosis | 7.677662 | 2.908641 | 18.19388 | 3.311812 | 2.905371 |
| Jarque-Bera | 57.56792 | 1.695176 | 425.7386 | 8.445374 | 3.653767 |
| Probability | 0.000000 | 0.428447 | 0.000000 | 0.014659 | 0.160914 |
| Observations | 36 | 36 | 36 | 35 | 36 |

Where GDP: is Gross Domestic Product, GDP(-1): is the Gross Domestic Product of previous year, EPD: External Public Debt, DS: Debt servises, Percent: percentageges of external public debt. Unit of currency used in this study is measured in US Dollar.

Basing on the above result the average of GDP used in the study was 2.43 $*10^9$ with maximun of $8.10*10^9$ in 2015 and minimum of $8.19*10^8$ In 1994 and standard deviation of $1.45*10^9$, the external public debt also has average of $8.69*10^8$ with maximum of $2.12*10^9$ in 2015 and minimum $1.50*10^8$of in year 1980 and standand deviation of $4.84*10^8$but external public debt take small and maximum pecentages on GDP in years 1980 at10.58 % and 1994 at 110.77% respectively.

The following graphics show the feature of variable and it variability in different years of study:

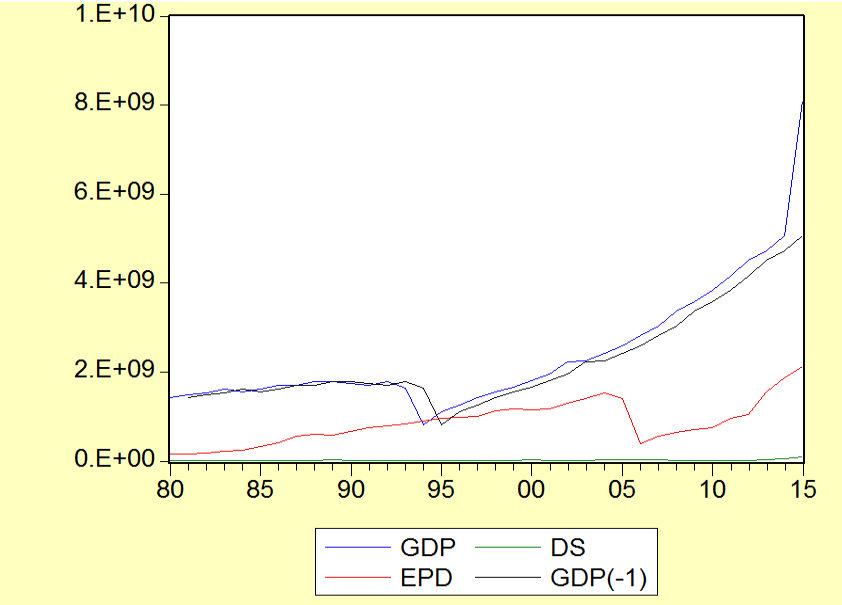
Figure 1: Percentages external public debt takes on GDP



ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VIII Issue III March 2024

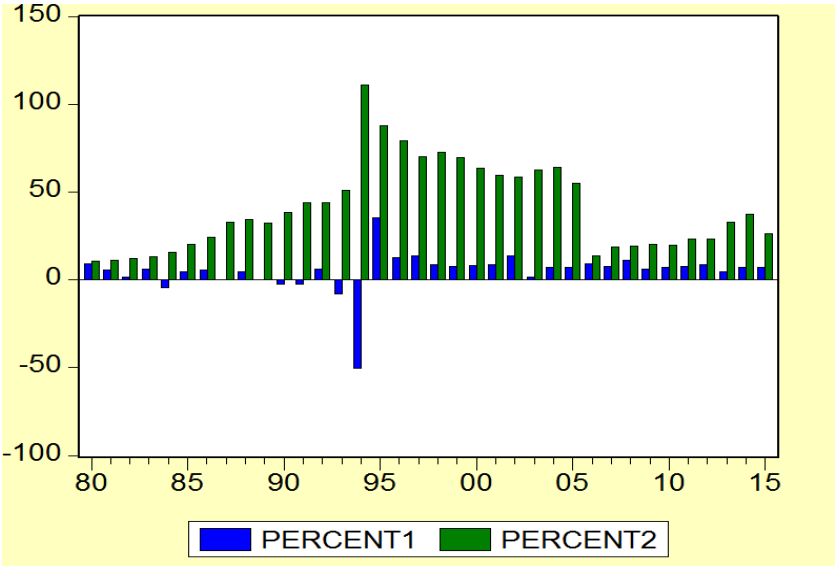
As seen on the following graphs the percentages of external public debt increase from the year 1980 up to 1994 and start to decrease and occupies high percentages in year of 1994 where it covers about 110% of GDP, then start to be down word up to the year 2006 where it starts to take small percentages as compared to the first years.

Figure 2: GDP, EPD, DS, and GDP (-1)




The present graph (or figure) compares Gross Domestic Product, external public debt, Debt services and Gross Domestic Product of previous years, the external public debt increase from 1980 up to 2004 and decrease in years 2006 also as compare it take higher amount than GDP in year 1994. Debt services takes small amount all of the years.

Figure 3: Bar graphs of GDP growth and percentages of EPD on GDP




From the present figure where: percent1 is percentages of GDP growth and percent2 is percentages of EPD on GDP, percentages GDP growth is smaller than percentages EPD on GDP, and in the year 1994 the high increase percentages of External public debt take on GDP cause high decrease in GDP.

**Empirical Analysis of Effects of External Public Debt on Economic Growth of Rwanda**

According to Chris brooks (2014) in books of introductory econometrics for finance "if one wishes to use hypothesis tests, either singly or jointly to examine the statistical significance of the coefficient, then it is essential that all of the component in the variable are stationary to avoid the problem of spurious regression

**Unit Root Test for Stationarity**

**Test of Stationarity by Using Augmented Dickey Fuller Test**

Table 4: Result of stationarity test by using Augmented Dickey Fuller Test by level

| Variables | Form of test | T- statistics | Conclusion |
|---|---|---|---|
| LGDP | Intercept | 1.114417 | Non stationary |
| | Trend and intercept | -0.607382 | Non stationary |
| | Without intercept and trend | 1.792281 | Non stationary |
| LEPD | Intercept | -1.914199 | Non stationary |
| | Trend and intercept | -2.179729 | Non stationary |
| | Without intercept and trend | 1.532266 | Non stationary |
| LDS | Intercept | -1.309973 | Non stationary |
| | Trend and intercept | -2.094252 | Non stationary |
| | Without intercept and trend | 1.4563.4 | Non stationary |
| LGDP (-1) | Intercept | 0.174709 | Non stationary |
| | Trend and intercept | -1.281468 | Non stationary |
| | Without intercept and trend | 1.485714 | Non stationary |

ADF asymptotic critical values at intercept only

| | | T statistic |
|---|---|---|
| Test critical values | 1% | -3.6353 |
| | 5% | -2.9499 |
| | 10% | -2.6133 |

ADF asymptotic critical values at intercept and Trend

| | | T statistic |
|---|---|---|
| Test critical values | 1% | -4.2505 |
| | 5% | -3.5468 |
| | 10% | -3.2056 |

ADF asymptotic critical values without intercept and Trend

| | | T statistic |
|---|---|---|
| Test critical values | 1% | -2.6321 |
| | 5% | -1.9510 |
| | 10% | -1.6209 |

The above result from Augmented Dickey Fuller Test is shown in three different forms which are intercept, with trend and intercept, and without trend and intercept. The result shows that series integrated with order zero (I (0) are non-stationary, where, as said by Jugde, 1985, if the computed statistics are greater asymptotic critical values in absolute terms, the null hypothesis that the series contained unit root was rejected and the series concluded to be stationary.

- **Test of stationarity by using Augmented Dickey Fuller Test at first difference**

Table 5: Result of stationarity test by using Augmented Dickey Fuller Test at first difference

| Variables | Form of test | T- statistics | Conclusion |
|---|---|---|---|
| LGDP | Intercept | -3.730765 | Stationary |
| | Trend and intercept | -4.358793 | Stationary |
| | Without intercept and trend | -3.227399 | Stationary |
| LEPD | Intercept | -3.950570 | Stationary |
| | Trend and intercept | -3.933078 | Stationary |
| | Without intercept and trend | -3.601947 | Stationary |
| LDS | Intercept | -4.047757 | Stationary |
| | Trend and intercept | -3.973172 | Stationary |
| | Without intercept and trend | -3.778310 | Stationary |
| LGDP (-1) | Intercept | -4.231155 | Stationary |
| | Trend and intercept | -4.527392 | Stationary |
| | Without intercept and trend | -3.884932 | Stationary |

ADF asymptotic critical values at intercept only

| | | T statistic |
|---|---|---|
| Test critical values | 1% | -3.6422 |
| | 5% | -2.9527 |
| | 10% | -2.6148 |

ADF asymptotic critical values at intercept and Trend

| | | T statistic |
|---|---|---|
| Test critical values | 1% | -4.2605 |

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VIII Issue III March 2024

| | | |
|---|---|---|
| | 5% | -3.5514 |
| | 10% | -3.2081 |

ADF asymptotic critical values without intercept and Trend

| | | T statistic |
|---|---|---|
| Test critical values | 1% | -2.6344 |
| | 5% | -1.9514 |
| | 10% | -1.6211 |

The above result is showed by e-views, the Augmented Dickey Fuller Test shown in three different forms which are intercept, with trend and intercept, and without trend and intercept. The result shows that all the series are stationary at first difference (integrated with order two (I (2)) at 5% and 10% level of critical value where, as said by Jugde, 1985, If the computed statistics greater than asymptotic critical values in absolute terms, the null hypothesis that the series contained unit root was rejected and the series concluded to be stationary.

**Cointegration Test**

Since the variables are stationary at first difference, Cointegration test in time series necessary, it shows if the variables in times series have long run relationship, and series are cointegrated when change in error term is stationary. Where we calculate the value of error term and its value in previous years and find change in error, then test stationarity of that change in error term as variable. The results are the following:

| | | | | |
|---|---|---|---|---|
| ADF Test Statistic | -6.826240 | 1% Critical Value* | | -2.6453 |
| | | 5% Critical Value | | -1.9530 |
| | | 10% Critical Value | | -1.6218 |
| *MacKinnon critical values for rejection of hypothesis of a unit root. | | | | |
| Augmented Dickey-Fuller Test Equation | | | | |
| Dependent Variable: D(DR) | | | | |
| Method: Least Squares | | | | |
| Sample(adjusted): 1987 2015 | | | | |
| Included observations: 29 after adjusting endpoints | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| DR (-1) | -2.085585 | 0.305525 | -6.826240 | 0.0000 |
| D(DR(-1)) | 0.393453 | 0.176187 | 2.233150 | 0.0340 |
| R-squared | 0.787928 | Mean dependent var | | -0.002213 |
| Adjusted R-squared | 0.780074 | S.D. dependent var | | 0.394115 |
| S.E. of regression | 0.184825 | Akaike info criterion | | -0.472339 |
| Sum squared resid | 0.922331 | Schwarz criterion | | -0.378043 |
| Log likelihood | 8.848921 | Durbin-Watson stat | | 2.233513 |

As we have seen in the above result, our change in error term is stationary because absolute value of computed statistics is greater asymptotic critical values in absolute terms at both 1%, 5%, and 10%, the

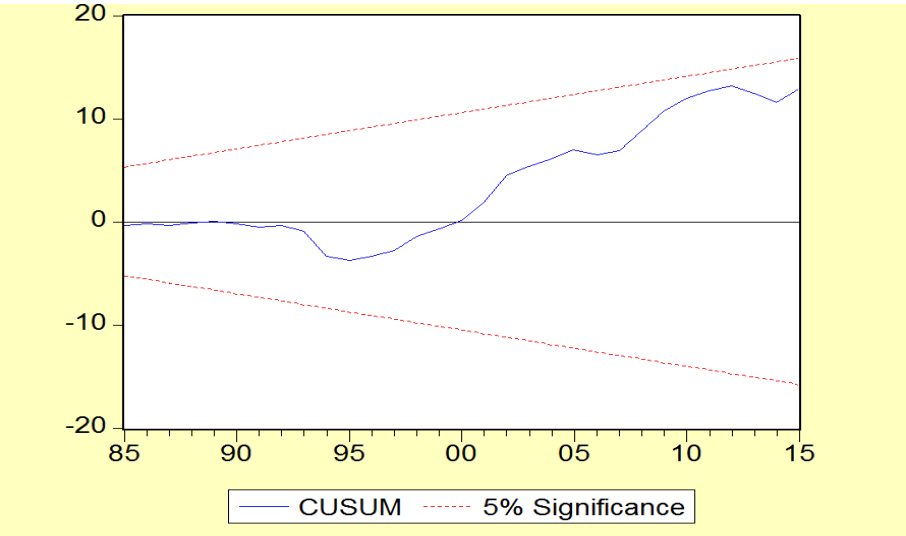
ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VIII Issue III March 2024

series are cointegrated.

**Cusum Test Of Stability**

Hence, we see that external public debt in Rwanda affect economic growth negatively, it is very important to see the stability of these variables. The result is showed by the following Cusum graph:

Figure 4: Result of Cusum test




Cusum test show state that when the blue line is between two red lines, the variable is stable so variable used in the study is stable and we can estimate the long run relationship between variables.

**Test of Autocorrelation by Breusch –Gofrey Serial Correlation Lm**

Errors terms correlated over time are said to be auto correlated or serially correlated and cause some effect in estimation such as: Estimation regression coefficients are still unbiased but they no longer have minimum variance property, standard error of the regression coefficient may seriously under estimate the true standard deviation of the estimated regression. The following are result for autocorrelation test.

| Breush-godfrey serial correlation LM Test | | | |
|---|---|---|---|
| F-statistic | 1.488453 | Probability | 0.242461 |
| Obes*R-squared | 3.258342 | Probability | 0.196092 |

Hence the above probability is greater 5%, God frey test confirm non auto correcting in the model, so the interpretation the equation

$LGDP_t$= -0.494-0.101LEPD+0.254LDS+0.925LGDP (-1) estimate above are right.

**Estimation of the Model**

The main objectives of the study being to determine the relationship between external public debt and Rwanda economic growth which are shown by GDP of country, and to which extent but external public debt isn't only it which determine the economic growth. To achieve that, the model estimated is necessary to include other variables such as Debt services and Gross Domestic Product of Previous years of country to see how the payment of external public debt and previous GDP affects economic growth of Rwanda country's in next years.

The estimated equation is:

$LGDP_t = \alpha+\beta_1 LEPD_t+\beta_2 LDS_t+\beta_3 LGDP\ (-1)\ _t+\mu_t$

The following table illustrates the result:

Table 6: Results of model estimation

| Variables | Coefficients | Standard Error | T- statistic | Probabilities |
|---|---|---|---|---|
| C | -0.494734 | 1.041408 | -0.475062 | 0.6381 |
| LEPD | -0.101988 | 0.041839 | -2.437640 | 0.0207 |
| LDS | 0.254155 | 0.046058 | 5.518112 | 0.0000 |
| LGDP (-1) | 0.925621 | 0.054082 | 17.11526 | 0.0000 |

R- SQUARED= 0.947850=94.78% and DW=1.364126

The equation estimated is

$LGDP\ _t$= -0.494-0.101LEPD+0.254LDS+0.925LGDP (-1)

Where LGDP=Logarithm of Gross Domestic Products

LEPD= Logarithm of External Public Debt

LDS= Logarithm of debt services

LGDP9 (-1) = Logarithm of Gross Domestic Products of previous years.

As are seen in result above all the variable are statistically significance, means all variable have impact on Rwanda economic growth. The external public debt in Rwanda is negatively correlated with economic growth where when the external public debt increase by one unit GDP decrease by 0.101on averages as we have seen in the tables above, Debt services and Gross domestic product of previous year are positively correlated with GDP where the one unit changes in Debt services and GDP (-1) increase GDP by 0.254 and 0.92 on average respectively. The coefficient of determination R-square shows that 94.7% of changing in GDP are determined by change in both external public debt and debt services and GDP (-1).

**Error Correction Model**

Table 7: Error Correction Model

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.016855 | 0.022027 | 0.765215 | 0.4510 |
| DLEPD | -0.038951 | 0.070937 | -0.549087 | 0.5876 |
| DLDS | 0.310280 | 0.044631 | 6.952066 | 0.0000 |
| DLGDP (-1) | 0.463824 | 0.150053 | 3.091067 | 0.0047 |
| R (-1) | -0.042143 | 0.129912 | -0.324398 | 0.7482 |

As shown by the table above:

DLGDP=0.016-0.038 DLEPD+0.31 DLDS+0.463 DLGDP (-1)-0.042143 R (-1).

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VIII Issue III March 2024

We just that DLGDP there is long run relationship between the two-off course in short run there may be equilibrium and we can use the error term to tie the short run behaviour to its long run value. Then the slope of R (-1) which is-0.042143=-4.2% show that -4.2% of shock will decrease every year and will be corrected in 23 years and 8 months.

**Cointegration Test of External Public Debt and Gdp**

The above result with refers to coefficient of determination, can ask if the equation has long run relationship and cause to test Cointegration, since the variables are stationary at first difference, and series are cointegrated when change in error term is stationary. Where we calculate the value of error term and its value in previous years and find change in error, then test stationarity of that change in error term as variable. The results are the following:

| | | | | | |
|---|---|---|---|---|---|
| ADF Test Statistic | -3.815851 | | 1% Critical Value* | | -2.6344 |
| | | | 5% Critical Value | | -1.9514 |
| | | | 10% Critical Value | | -1.6211 |
| | *MacKinnon critical values for rejection of hypothesis of a unit root. | | | | |
| | Augmented Dickey-Fuller Test Equation | | | | |
| | Dependent Variable: D(DR) | | | | |
| | Method: Least Squares | | | | |
| | Date: 01/03/80 Time: 11:01 | | | | |
| | Sample(adjusted): 1983 2015 | | | | |
| | Included observations: 33 after adjusting endpoints | | | | |
| Variable | Coefficient | | Std. Error | t-Statistic | Prob. |
| DR(-1) | -1.076580 | | 0.282134 | -3.815851 | 0.0006 |
| D(DR(-1)) | 0.048662 | | 0.196389 | 0.247786 | 0.8059 |
| R-squared | 0.467497 | | Mean dependent var | | 0.013743 |
| Adjusted R-squared | 0.450319 | | S.D. dependent var | | 0.258346 |
| S.E. of regression | 0.191539 | | Akaike info criterion | | -0.408761 |
| Sum squared resid | 1.137301 | | Schwarz criterion | | -0.318063 |
| Log likelihood | 8.744555 | | Durbin-Watson stat | | 1.830653 |

As we have seen in the above result, our change in error term is stationary because absolute value of computed statistics is greater asymptotic critical values in absolute terms at both 1%, 5%, and 10%, the series are cointegrated and equation has long run relationship between two variables.

**Estimation Of the Model of Lgdp and Lepd Only**

After estimating our model of GDP and EPD with others variable like debt services (DS) and GDP (-1), it is important to see how if external public debt is it only determine economic growth it will affect GDP and how are significantly as the main objectives of the study of determining relationship between external public debt and Rwanda economic growth which are shown by GDP of country and to which extent. The new equation estimated is:

$LGDP_t = \alpha + \beta LEPD_t + \mu_t$ and the following table illustrates the results.

Table 8: Results of Estimation of the model of LGDP AND LEPD only

| Variables | Coefficients | Standard Error | T- statistic | Probabilities |
|---|---|---|---|---|
| C | 15.36714 | 2.229007 | 6.894163 | 0.0000 |
| LEPD | 0.299824 | 0.109257 | 2.744211 | 0.0096 |

R-SQUARE= 0.18 DW=0.16

The equation estimated is

$LGDP_t = 15.367 + 0.299\ LEPD$

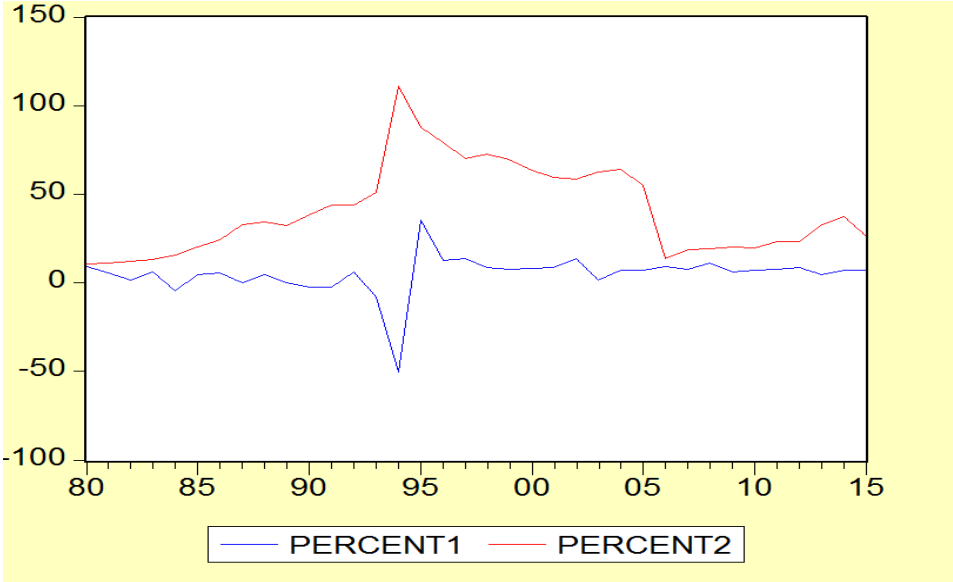
Where LGDP=Logarithm of Gross Domestic products

LEPD= Logarithm of External Public Debt.

As are see in table above of result, the variable are statistically significance, means that if external public debt is it only determine economic growth will affect GDP positively. where when the external public debt increase by one unit, GDP increase by 0.29 on averages as we have seen in the tables above. The coefficient of determination R-square equal to 0.18 or 18 % shows that 18% change in GDP are determined by change in external public debt.

**Estimated Equation of Percentage of Epd on Gdp and Gdp Growth**

Figure 5: Line Graph shows GDP growth and percentages of external public debt




Where percent 1 is percentages of GDP growth and percent2 is percentages of EPD on GDP, from the graphs above we can expect negative relationship between percentage of external public debt on GDP and percentage of GDP growth because the increase in External public debt has decrease in GDP growth and are seen in table graphs above.

**Partial Conclusion**

The main objective of this study was to get exact relationship between external public debt and economic

growth of Rwanda using annual time series from 1980 to 2015, the data used was extracted from the World bank national account data and OCED national account data files, and world bank international debt statistics. A significant of the variables estimate in the models shows that external public debt affects economics growth negatively where when the external public debt increase by one unit, GDP decrease by 0.101 and Debt services or payment for external public debt have positive relationship on GDP of country but as we have seen in the graph above Debt services occupies low amount with compare to external debt; While external public debt only positively correlates with GDP of Rwanda. The section has considered the long and short run models. The distinction is based on the notion of equilibrium, that is the long run is a state of equilibrium where economic forces are in balance and there is no tendency to change, while the short run depicts the disequilibrium state where adjustment to the equilibrium is occurring (Harris, 1995).

Those Long run relationship between external public debt and economic growth in Rwanda are confirmed by Augmented dickey fuller unit root test shows that all variables are integrated with order one (the result are presented in both tables above and in appendix) and Cusum test which shows the variables used in the study are stable. The number of normalized Cointegration coefficients is the statistic of accounting for the estimated coefficient of all variables in a meaning full level. Considering the prepared results within the investigated period, External public debt has a negative relationship on growth rate, while debt services and GDP (-1) have positive impact on economic growth of country. As said by Delege,2013 that Debt overhang are measured by effect of external debt, this significant of variables which show negative relationship between External public debt and GDP, can shows that the increase in external public debt may discourages investment by increasing uncertainty conceiving government policies. As result, private sector investors are likely to postpone their investments which is turn on economic growth reduction. As Krugman (2014) and: state that a large public debt might create debt overhang which is a situation in which investment are reduced or postponed since the private sector anticipate that the returns from their investment will serve to payback creditors Debt overhang may be appeared.

Finally, uncontrollable external public debts cause a lot of problems and can favour the country to remain in dependence situation as we said in literature review. Even in our study, after empirical experience we have seen that the coefficient of lagged GDP variables and other variables are negatively significant with the negative signs, meaning that the above debts is not positive determinants of GDP.

## CONCLUSION AND POLICY RECOMMENDATIONS

### Conclusion

This research analyses the effect of external public debt on economic growth of Rwanda country and how empirically correlated, these effects are analysed using Auto regressive distributed lag model and Cointegration test method for long run relationship, the research using annual times series and focus on the period from 1980 to 2015, this period relatively long has the advantages of lending its self to econometric test to reassure us and the robustness of the result to be obtained. To accomplish the task a time series regression model for real GDP were specified and estimating considering External public debt, Debt services and GDP (-1) as independent variables. Using times series regression model, the effect was analysed and diagnostic test were carried but to ensure the data was stationary, and not serially related to avoid spurious results. This study distinguished from other research was carried by variables used which is external public debt, the year considered until 2015, areas research are carried (Rwanda). The result showed that External public debt, Debt services and GDP (-1) are significant on GDP which effect on GDP. External debt are negatively to GDP where the increase in one unit of external public debt GDP decrease by 0.101 on average, while Debt services and GDP (-1) affect GDP positively, the increase in 1 unit of DS and GDP (-1) increase GDP by 0.254 and 0.92 on average. External public debt constitutes a hindrance to the development country. Due the significant of variables which show negative relationship between External

public debt and GDP, increase in external public debt will discourages investment by increasing uncertainty conceiving government policies. As result, private sector investors are likely to postpone their investments, as said by Delege, 2013 this increase in External public debt lead on economic growth reduction through debt over hang. After estimating model with the above variable, study show also how external public debt only affect economic growth through GDP, the test are statistically significance and show positive relationship between external public debt and GDP. The increase in one unit of external public debt increase GDP by 0.299 on average. As proved by the result also, there is no problem of Debt over hang.

**Policy Implication**

Below are the policy implication arising from this study, the findings that there exists a negative relationship between public debt and GDP in Rwanda should be a major concern for the government. Deficit financing takes places either from internal sources or external sources. Any government borrows either for revenue or development expenditure. High indebtedness can affect growth rate through different channels. The high current stocks of external debt may act as future increasing obligation to serve debt this represent all things that debt financed fiscal policy affect economic growth for the lack of investment resources. Future plans should ensure to take on external debt which productive used and the rate of return of debt is high than the service payment rate. It will be advisable for the government to create other optional strategies to improve their income using the natural resource so that they can increase their economy rather than depending on external debt and reduce unnecessary cost of government to spend the budget in the right way in order to avoid the budget deficit.

By then, the following recommendations are directed to the policy makers:

- Promoting debt management and expenditure for reducing negative effects.
- Establishing proper and productive programs of whole country to ensure that debt will repay its self and avoiding overhang problem might be appeared in long run as the negative correlation persist.
- Establishing a transparency of loan cycle that covers the activities for project identification, appraisal and approval, loan disbursement, project implementation monitoring and evaluation as well as loan repayment.
- Establishing a policy frame work that is credible creating an environment that will encourage investors' confidence for both local and foreign to invest in the country.
- Government always should ensure its debt services (debt repayment)
- Heavy reliance on external debt must be discouraged because public external debt almost always results in deteriorating economic growth process, partly because it also adversely affects investment.
- Promoting democracy and good governance and ensure better the use of debt. This will create more confidence on the part of donors and greater ease in mobilizing external debt

The further Suggestions are for the future researchers or board of knowledge: it is necessary to investigate others effects of external public debt on economic growth other than those covered in the study such as private investment, external private debt, and domestic debt how affect and significantly to economic growth of Rwanda.

## REFERENCES

1. Abdulkarim, Y., & Saidatulakmal, M. (2011). The impact of government debt on economic growth in Nigeria. Cogent Economics & Finance, 9(1).
2. Adepoju, A.A, Salau, A.S and Obayelu, A.E (2014). The Effects of External Debt Management on Sustainable Economic Growth and Development: Lessons from Nigeria. Munich Personal Re PEC Achieve (MPRA). Paper No. 2147.
3. Abera., D. (2013). The effect of external debt on econmic growth; Varterminen 2013: Depertment of

Economics Magisteruppsats 30hp.
4. Agenor and Mantiel, P. (1996). Development Macroeconomics, (Edit 1, ed.). Princeton University press.
5. Akhanolu, I. A., Babajide, A. A., Akinjare, V. A., Tolulope, O., & Godswill, O. (2014). The effect of public debt on economic growth in Nigeria: An empirical investigation. International Business Management, 12(6), 436–441.
6. Ajayi, S. I. (1991). Macroeconomic Appoach to external debt of Nigeria. Nairobi- Kenya: African economics research consortium.
7. Avramovic. (1964). Economic growth and external debt, American Economic Review 78(4): 647-661.
8. Babu, J. O. (2014). External debt and Economic growth in the East Africa community, Kenya.
9. Barro, R. J. (2014). Are government bonds net wealth? Journal of political economy 82 pp. 1095-117.
10. Bashangi A. and Muchapondwa, E. (2009). What action could boost international tourism for Tanzania, 33(32): 59-75.
11. Benedict et al. (2013). Servicing the Public Debt: The Role of Expectations. American Economic Review, 78(4): 647-661.
12. BNR. (2015). The Annual Economic Report. Fiscal Year 2014/2015, Kigali.
13. Buchanan. (1958). public principles of the public debt Homewood: illinais.
14. Canner. (2010). Policy research working paper. World Bank: 5391.
15. Checherita, C. a. R., P. (2010). The impact of high and growing government debt on economic growth. An empirically investigation for the euro area.
16. Clark, W. a. (1984). The science of cost benefit and choice, South-Western Publishing co. cincinnati, Ohio.
17. Cline. (2012). The Impact of Debt And Debt-Service Payments on Investment in Cameroon'. Final report presented at the AERC Biannual Research Workshop, May 26 –31. Nairobi: AERC.
18. Coccia, M. (2015). Asymmetric paths of public debt and of general government deficits across countries within and outside the European monetary unification and economic policy of debt dissolution. The Journal of Economic Asymmetries, 17(2017), 17–31.
19. Cohen, D. (1993). Low inestment and large LDC debtin the 1980. American Economic Review 83(3) 437-49.
20. Cunninghan. (1993). The effects of debt burden on economic growth in highly indebted nations.
21. David C. Colander. (1994). Macroeconomics (Fifth edition ed.).
22. Elom-Obed, F. O., Odo, S. I., Elom-Obed, O., & Anoke, C. I. (2015). Public debt and economic growth in Nigeria. Asian Research Journal of Arts & Social Sciences, 4(3), 1–16.
23. Fosu, K. (2010). The Impact of External Debt on Economic Growth in Sub-Saharan Africa.' Journal of Economic Development, 12 (1).
24. Gohar et al. (2013). The Macroeconomic Challenge of More Aid. Finance and Development 42(3).
25. Gordon, L. B., & Cosimo, M. (2014). Government debt in EMU countries. The Journal of Economic Asymmetries, 18(C), 1–14.
26. Gujati. (2004). Basic economics (Fourth edition ed.). New York: MC Grow hill.
27. Harris. (1995). Using co-integration Analysis in Economic modeling. University of Portsmouth, presence hall. Rondon.
28. Hasan & Pervin. (2012). The Choice between External and Domestic Debt Financing Budget Deficits: The Case of Central and West African Countries. IMF Working Paper 02/79.
29. Hsing, S. a. (1997). Federal Government debts impact on Economic growth.
30. Ibrahim, H. (2013). The effect of external debt on economic growth. University of Nairobi.
31. IMF. (2015). Press Release: IMF Managing Director Christine Lagarde to Visit Rwanda and Senegal, https://www.imf.org/en/News/Articles/2015/09/14/01/49/pr1507.
32. Ishan, S. (2014). The Impact of External Debt on Economic Growth in Sub-Saharan Africa.' Journal of Economic Development, 12 (1).
33. Iyoha. (1999). External debt and Economic growtrh in sub-saharan African countries. Nirobi: African economic research consortium, (1-59).

34. J.Christensen. (2005). Domestic debt markets in sub-saharan Africa. IMF staff papers, 52(3): 518-538.
35. Joakim, P. (2013). Effect of external debt on economic growth for indebted African Poor Countries. Sodertorns Uneversity.
36. Johnny, N., & Johnnywalker, W. (2013). The relationship between external reserves and economic growth in Nigeria (1980-2016). International journal of Economics, Commerce and management, 6(50), 213-241.
37. Joy, J. & Panda, P.K. (2010). Pattern of public debt and debt overhang among BRICS nations: An empirical analysis. Journal of financial Economic policy, 12(3), 345-363.
38. Karagol. (2002). A critical review of external and economic growth relationship, Emerging Markets Review, 7: 228-243.
39. Kasidi, A, M. (2013). Impact of external public debt on economic growth, IMF Staff Paper, Vol. 37 ( December ), pp. 806 – 24. Tanzania.
40. Krugman. (2014). Financing VS. Forgiving a debt overhang. Journal of development economics, 29(23), 253-268.
41. Madow, N., Nimonka, B., Brigitte, K.K., & Camarero, M. (2015). On the robust drivers of public debt in Africa: Fresh evidence from Bayesian model averaging approach. Cogent Economics & Finance 9(1).
42. Makau. (2008). External public debt servicing and Economic growth in Kenya; An empical analysis. University of Nairobi.
43. Mbanga, G. N., and F. Sikod (2015). 'The Impact of Debt and Debt-Service Payments on Investment in Cameroon'. Final report presented at the AERC Biannual Research Workshop, May 26 –31. Nairobi: AERC.
44. Mhlaba, N., Phiri, A., & Nsiah, C. (2013). Is public debt harmful towards economic growth? New evidence from South Africa. Cogent Economics & Finance, 7(1).
45. Mjema & Nursanda, (2014). The External Debt Burden and Economic Growth in the 1980s: Evidence from Sub-Saharan Africa, Canadian Journal of Development Studies, XX (2).
46. Mankew, N. G. (2009). Macroeconomics, (7th Ed.). Havard University, United State of America.
47. Marcel, B. (2013). Analysis of Effects of external debt on economic growth of Rwanda, Kigali Campus.: Masters of Sciences in Economics.
48. Nguji, W. N. (2016). The effect of Public debt on Economic growth in Kenya, Kenyata University (2016).
49. Ochieng. (2013). Relationship between public debt and Economic growth in Kenya. Published MBA project University of Kenya.
50. Ogbonna, K. S., Ibenta, S. N., Chris-Ejiogu, U. G., & Atsanan, A. N. (2019). Public debt services and Nigerian economic growth: 1970-2017. European Academic Research, 6(10), 22–34.
51. Ogunjimi, J. A. (2013). The impact of public debt on investment: Evidence from Nigeria. Development Bank of Nigeria Journal of Economic and Sustainable Growth, 3(2), 1–28.
52. Osewe. (2013). The effect of external and Inflation on Economic growth in Kenya, Nairobi, Kenya.
53. Pattillo, C., Poirson, H., & Ricci, R. (2014). What are the channels through which external debt affects growth? Review of Economics and Institutions, 2(1), 1–30.
54. Pattillo, L. R. a. P. (2002). The external debt and growth, IMF Working paper nº 02(69).
55. Rogoff, R. a. (2010b). Growth in a time of debt": American Economic Review 100(2):573- 78.
56. Paul, N., (2014). Analysis of the impact of external debt on economic growth in an emerging economy: Evidence from Nigeria. African Research Review, 11(4), 156-173.
57. Sachs, J. D. (2012). The Case for GDP-Indexed Bonds. Economic Policy 19(38): 165–216.
58. Salundo (2013). Public debt management. Perspectives of Innovations Economics and Business 13(2).
59. Chenery, A. (2012). External debt, capital flight and political risk. Journal of international economics, 27(3-4): 199-220.
60. Ring, T. S., Abdullah, M. A., Osman, W. S. M., Hamdan, R., Hwang, J. Y. T., Mohamad, A. A., Hassan, M. K.H., & Khalid, F. D. (2015). Impact of External Debt on Economic Growth: The Role of Institutional Quality. International Journal of Academic Research in Economics and

Management and Sciences, 10(3), 223–236.
61. Saungweme, T., Odhiambo, N.M., & Camarero, M. (2012). Government debt, government service and economic growth nexus in Zambia: A multivariate analysis. Cogent Economics & Finance, 7(1).
62. Spilioti, S., & Vamvoukas, G. (2015). The impact of government debt on economic growth: An empirical investigation of the Greek market. The Journal of Economic Asymmetries, 12(2015), 34–40.
63. The World Bank. (2015). Rwanda: From Post-Conflict Reconstruction to Development, IDA 51957.
64. Wilson & Clark, (2013). Asymmetric paths of public debt and of general government deficits across countries within and outside the European monetary unification and economic policy of debt dissolution. The Journal of Economic Asymmetries, 17(2017), 17–31.
65. Woo, K. a. (2010). Impact of high public debt on long run Economic growth for a panel of advanced Economies (1970-2oo7) Published thesis, Pakistan.
66. Udeh, S. N., Ugwu, J. I., & Onwuka, I. O. (2014). External debt and economic growth: The Nigeria experience. European Journal of Accounting Auditing and Finance Research, 4(2), 33–48.