

PUBLIC DEBT AND ECONOMIC GROWTH IN ZAMBIA: A TIME SERIES ANALYSIS 1985-2021

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Abstract: The effect of public and domestic debt on the growth rate varies from country to country, depending on initial debt accumulations and how the debt is used. The aim of the study was to investigate the relationship between external debt and economic growth in Zambia for the period 1985-2021. Economic growth, external debt, FDI and trade were study variables. According to the PP test, economic growth and FDI were I(0) whereas external debt and trade were I(1). The ARDL model was used for estimation. The study found that both in the short and long run, external debt negatively affects economic growth. Specifically, a 10 percent change in external debt leads to a -0.21 percent change in growth in the long run and a -0.71 percent change in the short run. The study also finds that FDI has a positive effect in the short run. The study recommends low levels of external debt so as to minimize the negative effect on economic growth.

Keywords: External debt, economic growth, FDI, ARDL model, Zambia.

1. INTRODUCTION

Using public debt to finance productive projects has a positive effect on output. The idea is that proceeds from such projects are to be used to pay off outstanding debts amounts and accumulated interest rates. Many developing countries in the SSA resort to debt financing mainly because of insufficient revenues and savings in these economies (Coulibaly et al., 2019). However, using debt for financing consumption and unproductive projects leads to defaults in interest rates and debt payments. This could lead to a debt crisis. Consequences of debt crisis affects an economy by making it vulnerable to external shocks. This could come through low levels of investor confidence and low levels of credit ratings. Such developments lead to sharp declines in exchange rates (depreciation). This becomes a problem for an import-dependent economy as imports become expensive due to depreciated currencies.

Debt is important to developing countries because of their limited number of creditors, inefficient resources and inadequate investments and budget deficits (Babu et al., 2015). Besides, excessive debt exclusion, low investment, slow growth and declining productivity in these economies are among reasons governments in developing countries seek credit to stimulate economic activity (Kasidi and Said, 2013; Matiti, 2013; Umaru et al., 2013).

The effect of public and domestic debt on the growth rate varies from country to country, depending on initial debt accumulations and how the debt is used. Domestic debt mainly comes from the issuance (sale of) of treasury bills and bonds. These debts are used to finance various projects (such as improving transport infrastructure, building schools, stadiums etc.)

However, increased levels of public debt can lead to a situation of having debt which is not sustainable. Debt can be unsustainable due to a number of factors among them: sustained increase in the value of public debt acquired, rising interest rates, adverse borrowing conditions with strict demands.

It is argued that sustainable debt does not harm an economy. The sustainability of debt depends on the growth rate of debt. If GDP is growing at a higher rate than the growth rate of public debt, such debt is considered sustainable. On the other hand, if the GDP is growing at a lower rate than the growth rate of public debt, debt is considered unsustainable and is expected to have negative effects on economic growth (Gotfries, 2013). Besides, when the interest rate paid on debt exceeds the growth rate, its ratio to GDP is increasing over time and debt is unsustainable. On the other hand, when the GDP growth rate is higher than the interest rate, then the debt-to-GDP ratio falls over time and debt becomes sustainable (Gotfries, 2013).

The indicators used to measure debt sustainability are (ZIPAR, 2018b):

- Public debt as a percentage of GDP
- Interest payments as a percentage of domestic revenues
- The debt margin, which is the difference between the GDP growth rate and the growth in the public debt stock; and
- The rate difference, which is the difference between the growth in the GDP growth rate and the average cost of borrowing¹

Zambia's public debt stock issue has raised a lot of concerns lately. As of the end of 2017, the public debt 59 percent of GDP. This prompted the Government to take a series of measures to reduce and secure the rise in interest payments in order to achieve financial and debt sustainability. However, public expenditures continue to outpace domestic revenues. Zambia's recurring spending in the first quarter of 2018 was K13.0 billion. This was 14 percent higher than the K12.0 billion domestic revenue collected. Since current expenditures cannot be fully met from domestic revenues, they will be financed from borrowed resources.

Zambia has made some progress towards fiscal sustainability by reducing recurring expenses as a percentage of domestic revenues from 115 percent in the first half of 2017 to 102 percent in the first half of 2018. This was achieved by reducing recurring expenditures in personal gains and use of goods and services. However, these gains were wiped out with increased spending on debt service payments, thus excluding other important expenditures such as social benefits (including pensions and social cash transfer expenditures), authorization schemes, insufficient funding of service delivery. This in turn has a negative effect on human development (ZIPAR 2018b).

A number of studies have examined the effect of debt on growth for both developing and developed countries, see for instance (Caner et al., 2010; Reinhart and Rogoff, 2010; Mensah et al., 2019; Topuz and Sekmen, 2019). These studies conclude, however, that the effects of debt on growth varies from one country to another depending on a country's characteristics and the method of analysis used. Therefore, it is important to undertake a study on the Zambian economy of the effect of public debt on economic growth.

The current study provides an analysis of the effect of public debt on growth for the Zambian economy for the period 1985-2021.

1.1 PROBLEM STATEMENT

Governments can borrow from both domestic and foreign markets. In these markets, the government can borrow on concessional terms and non-concessional (that is, on commercial rates). Governments borrow in order to stimulate economic activity by increasing its expenditures thereby contributing to economic growth. The Zambian government just like any other government, has been acquiring public debt for various reasons. Public debt acts a source of funds for governments to achieve its objectives aimed improving the welfare of its people. In this way, acquiring of debt can foster economic growth and human development.

However, much as Zambia has been able to acquire debt, the trend for economic growth has been of ups and downs. For instance, in the early 2000s, Zambia was one of the countries to benefit from the Highly Indebted Poor Countries (HIPC) initiative to relieve countries from debt burden. Afterwards, Zambia recording relatively high levels of growth reaching 10 percent in 2010. The narrative is different after 2013 when government started to accumulate more public debt. The

economy was on a downward trend from 2015 until 2019. This mixture of outcomes on the effect of public debt necessitates the undertaking of a study on the effect of public debt on economic growth.

1.2 OBJECTIVES

1.2.1 General Objective

The general objective of this study is to investigate the effect of public debt on economic growth in Zambia for the period 1985-2021.

1.2.2 Specific Objectives

- To assess the nature of the relationship between public debt and economic growth
- To investigate the long run effect of external debt on economic growth
- To investigate the short run effect of external debt on economic growth

2. LITERATURE REVIEW

The central problem of debt in economies is not only its existence, but also sustainability of this debt. Debt levels varies from country to country. For instance, Japan's debt-to-GDP ratio has since risen to 200 percent which started to rise in 1990 (Debrun et al., 2019). Besides such levels of debt, Japan's debt is considered sustainable. On the other hand, some developing countries with a debt-to-GDP ratio below 100 percent cannot maintain their debt. This is related to the impact of resources on debt and debt servicing. This section discusses literature review on the link between public debt and economic growth.

2.1 THEORETICAL FRAMEWORK

Classical Theory on debt

In the classical school of thought, the main economists with views on debt includes Adam Smith, David Ricardo, and John Stuart Mill.

Debts are seen as a way to dispose of funds transferring them from the productive class of society to the less productive class, and this reduces economic growth. It is argued that if the government is always given easy access to debt if money is needed, it will soon stop saving because of existing lenders (Smith, 1776). On the other hand, John Stuart Mill argues that debt should only be taken when there is need invest in productive activities or taken from existing savings. As a result, public debt are considered bad if they have very high interest rates and lead to the exclusion of the private sector from active participation in economic affairs. Economies should therefore start borrowing if they have a capacity to pay back the debt. This helps in preventing excessive taxation and its negative effects on disposable income and welfare (Mill, 1885).

Keynesian Theory on Debt

John Maynard Keynes has a different view from the classical economists as he sees debt as a financial stabilizer that stimulates the economy, especially increasing aggregate demand during a recession. According to the Keynesian school the idea is that the economy usually grows with a multiplier effect; one's expenditure is seen as another person's source of income and when consumption and expenditures increase, the economy revives thereby recovering from a recession/depression. Keynes argued tax is not as effective as debt in stimulating the economy, because taxation reduces disposable income, thus reducing consumption. Keynes therefore recommends debt isn't all that bad as suggested in the classical school of thought for it can promote economic growth.

2.2 EMPIRICAL REVIEW

Rais and Anwar (2012), Kasidi and Said (2013), and Munzara (2015) examines the impact of external debt on the growth process in Pakistan, Tanzani and Zimbabwe, respectively. A negative relationship is found to exist are among the variables, and therefore the authors use it to recommend that reliance on foreign debt should be reduced. Ehikioya (2012), Ada et al. (2016), Favor et al. (2017) and Onafowora and Owoye (2017) examines the impact of external debt on growth in Nigeria from different perspectives based on OLS, ARDL, VECM and SVAR methods, respectively. It was found that external debt has a negative effect on growth. Similar results found applicable for foreign debt in Kenya by Ngure (2003) and Muinga (2014) all performed OLS analysis. Shayanewako (2013) and Mhlaba and Phiri (2019) found that external debt negatively

affects growth in South Africa. Studies are based on VECM and ARDL models, respectively. Malik et al., (2010) and Safdari and Mehrizi (2011) come to the same conclusion for Oman, Pakistan and Iran respectively.

Umaru et al., (2013) and Didia and Ayokunle (2020) state that external debt has a negative effect on economic growth rate whereas domestic debt positively affects economic growth in Nigeria. Therefore, domestic debt in Nigeria is a more reliable source of funds compared to external debt. However, this is not the same as the finding of Rawat (2019) who found that both external and domestic debt have a detrimental effect on the growth rate in Pakistan.

Babu et al. (2015), found a positive role of domestic debt on GDP growth in the East Africa uses data for the period 1990-2010. Owosu-Nantwi and Erickson (2016) also claims that there is a positive relationship between the public debt and economic growth in Ghana for the period 1970-1970. Sheikh et al. (2010) and Putunoi and Mutuku (2013, state in Kenya, domestic debt has a significant positive impact on growth and Pakistan respectively. Umaru et al. (2013) indicates that the effect of external debt on growth is positive in the long run in transition economies for the period 1991-2010. Therefore, it can be said that the positively sloped side of the debt-Laffer curve is valid for transition countries.

A panel study of Pacific Island countries by Jayaraman and Lau (2009) shows that only external debt has a positive effect on growth. In a study on South Asian countries by Siddiqui and Malik (2002) shows that external debt has a positive effect on growth in both the long and short run. Zaghdoudi and Hakimi (2017) examine the viability of excess debt hypothesized in 25 developing countries for the period 2000-2015. The study revealed the existence of a negative and significant relationship. The causal relationship between debt and growth has been analyzed in some studies. Studies including Saungweme and Odhiambo (2018) and Adedoyin et al. (2020) found no evidence of an existing causal relationship between debt and growth. On the other hand, Manik and Khan (2018) detect the existence of a bidirectional relationship.

Other studies have advocated for the existence of a non-linear relationship between debt and growth. That is, there exists an inverted U relationship between debt and growth in some countries. According to this view, the relationship is positive before debt values reach the threshold and negative if the debt-to-GDP ratio exceeds the threshold level. This threshold value varies from one country to another. Doğan and Bilgili (2014) undertook a nonlinear analysis of the effect of external debt on growth for the period 1974-2016 in Turkey. The results show that debt and growth do not follow a linear relationship. In a comparative study of the effect of external debt on growth in Nigeria and South Africa, Ayadi and Ayadi (2008) found that there is non-linear link between debt and growth relationship for Nigeria and linear for South Africa. Mensah et al. (2019) found that most countries in Africa have a threshold. It was found that the threshold is a ratio of debt to GDP between 20-50 percent. Caner et al. (2010) found threshold level at which the debt to GDP ratio is 64 percent for developing countries. Veiga et al. (2016), finds that in Sub-Saharan countries the highest growth rate occurs when the public debt to GDP ratio is around 30-60%. These studies helps in understanding that the threshold effect of debt exists for both developed countries and developing countries.

Other researchers such as Chudik et al. (2015) and Topuz and Sekmen (2019) emphasize the fact that public debt can have a negative impact on growth above the threshold. In a study on South Africa, Baaziz et al. (2015) analyze the impact ratio of public debt to GDP using the Soft Transition method (STR). Results show the existence of a debt threshold at 31.37 percent of the debt-to-GDP ratio. After this point, debt has a negative impact on GDP. Osinubi and Olaleru (2006), found that in Nigeria the threshold is 60 percent beyond which debt is no longer a desirable source of finance. Eberhardt and Presbitero (2015) find heterogeneous public debt and growth relations between countries with some countries exhibiting their existence inverse U-shaped relationship between public debt and growth, with others having a U shaped the relationship between public debt and growth.

3. METHODOLOGY

3.1 RESEARCH METHOD

In order to conduct the study, the quantitative research approach will be used. This approach relies on the measurability of the study variables. In other words, this approach involves the compilation of data in a quantitative form. The compiled data is then subjected to quantitative analysis followed by statistical inferences (Kothari, 2004). Since the study variables in the study are measurable quantitatively, the use of a quantitative research approach is desirable and justified.

3.2 DATA AND SOURCES

This study is an analytical type of research study. In other words, the collected data will be used for analysis in order to make a critical evaluation and produce inferences with regard to the subject matter (Kothari, 2004). The study will use of secondary data for analysis. The study will consider annual data spanning from 1985 to 2021 for the Zambian Economy. In

other words, the study is a time series analysis for the stated period. The data will be retrieved from the websites of World Bank and Ministry of Finance.

3.3 DATA ANALYSIS

The analysis of the data in this study will be done using a statistical software, E-views. E-views is appropriate for conducting time series econometric analyses. The software has the ability to carry out statistical command techniques which provide outputs necessary for analysis and making statistical inferences. Upon importing data into E-views from Microsoft excel, descriptive statistics covering measures of central tendency, measures of dispersion, measures of asymmetry (skewness) will be obtained. Besides, the correlation matrix for the study variables and regression outputs will be obtained. This will involve the conducting of a causal and inferential analysis. In other words, parameters in the models will be estimated and inferences will be drawn based on the results.

3.4 PRESENTATION OF FINDINGS

3.4.1 Unit root test results

TABLE 1: Stationarity test results using ADF test

Variable	At level		At first difference		Order of integration
	Constant	Constant& Trend	Constant	Constant& Trend	
GDPG	-4.1862***	-0.5440	-7.5237***	-5.9221***	I(1)
ED	-1.6355	-2.1464	-8.1523***	-8.9628***	I(1)
FDI	-3.4148**	2.5083	-9.1846***	-8.3158***	I(1)
TR	-2.4189	-2.9834	-7.2102***	-7.8395***	I(1)

Note: *, **, *** significant at 10%, 5 % and 1% level of significance respectively.

Table 1 above shows Augmented Dickey-Fuller (ADF) test results for stationarity in the variables. As it can be seen from the table, all the variables are stationary at first difference. Thus, these variables are integrated of order 1.

TABLE 2: Stationarity test results using PP test

Variable	At level		At first difference		Order of integration
	Constant	Constant& Trend	Constant	Constant& Trend	
GDPG	-4.4396***	-4.6537***	-14.1340***	-19.6354***	I(0)
ED	-1.4911	-2.2196	-8.1523***	-8.6578***	I(1)
FDI	-3.6310***	-3.4397*	-9.1846***	-12.3731***	I(0)
TR	-2.4040	-2.8122	-8.4057***	-8.1590***	I(1)

Note: *, **, *** significant at 10%, 5 % and 1% level of significance respectively.

Table 2 above shows Phillips-Peron (PP) test results for stationarity in the variables. As it can be seen from the table, GDPG and FDI are stationary at level. Thus, these variables are integrated of order 0. On the other hand, ED and TR are stationary at first difference. Thus, these variables are integrated of order 1. The mixture in the orders of integration of the variables justifies the use of the ARDL method of estimation in regressing GDPG on ED, FDI and TR.

3.4.2 Cointegration Test: THE BOUNDS TEST

TABLE 3: Bounds test results

F-statistic	5.853675		
		I(0)	I(1)
	10%	2.37	3.2
Test critical values	5%	2.79	3.67
	2.5%	3.15	4.08
	1%	3.65	4.66

Table 3 above shows the test results of cointegration (the existence of a long run relationship) among the variables using the bounds test. I(0) and I(1) are the lower and upper bounds respectively. As it can be seen from the table, The F-statistic

(5.853675) exceeds all the upper bounds at 10 percent, 5 percent, 2.5 percent and 1 percent levels of significance. Thus, the null hypothesis of no long run relationship (no cointegration) is rejected. This means that there exists a long run relationship among the variables.

3.4.3 Long run form

TABLE 4: Long run multipliers

Variable	Coefficient	Std. Error	t-statistic	Prob
ED	-0.021472	0.008918	-2.407694	0.0258
FDI	0.716253	0.408413	1.753748	0.0948
TR	-0.091422	0.056175	-1.627447	0.1193
C	8.568490	5.197571	1.648556	0.1149

The table 4 above shows the long run regression results of regressing GDPG on ED, FDI and TR. As it can be seen from the table, using the probability values and considering a 5 percent level of significance, ED has a negative significant relationship on economic growth whereas FDI and TR have no significant effect on economic growth in the long run (When the Prob value is less than a particular level of significance, the coefficients under consideration is statistically significant. On the other hand, when probability values are greater than a particular level of significance, the coefficients under consideration is statistically insignificant).

3.4.4 Short run form

TABLE 5: Short run multipliers

Variable	Coefficient	Std. Error	t-statistic	Prob
D(ED)	-0.070820	0.016335	-4.335445	0.0000
D(ED(-1))	0.006091	0.016494	0.369305	0.7158
D(ED(-2))	0.008883	0.009829	0.903732	0.3769
D(FDI)	0.507046	0.158592	3.197165	0.0045
D(FDI(-1))	-0.752342	0.178244	-4.220853	0.0004
D(FDI(-2))	-0.445757	0.175054	-2.546398	0.0192
D(TR)	0.061386	0.052181	1.176411	0.2532
D(TR(-1))	0.177946	0.059663	2.982540	0.0074
D(TR(-2))	0.015027	0.057655	0.260645	0.7970
ECT (-1)	-1.062398	0.179266	-5.926386	0.0000

Table 5 above shows the short run regression results of regressing GDPG on ED, FDI and TR. As it can be seen from the table, using the probability values and considering a 5 percent level of significance, ED has a negative significant effect on economic growth whereas FDI has a positive significant effect on economic growth in the short run. TR has no significant effect on economic growth in the short run. The Error Correction Term (ECT) is negative and statistically significant. Its value of -1.062 means that short run distortions (disequilibrium) are corrected after a year (since annual data was applied) and the path of convergence is oscillatory as opposed to a monotonic path to the long run equilibrium. That is, there is oscillation around the long equilibrium value in a diminishing manner before quickly converging to this value (Narayan and Smyth, 2006). This confirms the existence of a long run relationship between the dependent variable and the regressors in the model.

TABLE 6: Model summary statistics

R-squared	0.867311
Adjusted R-squared	0.817553
F-statistic	6.871814
Prob (F-statistic)	0.000077

Table 6 above shows the summary statistics of the overall model of regressing GDPG on ED, FDI and TR. As it can be seen from the table, the value of R-squared is 0.867. This means that under this model, 86.7 percent of the fluctuations in the dependent variable (GDPG) are explained by the model. This also means that, only 13.3 percent of the fluctuations in GDPG are explained by other factors (variables) not included in the model. On the other hand, the value of the adjusted R-squared is 0.818. This means that 81.8 percent of the fluctuation in GDPG are explained by the model and that only 18.2

percent of the fluctuations in GDP are explained by factors not included in the model. Besides, the Prob (F-statistic) value is less than the 5 percent level of significance (that is, less than 0.05). This means that the overall model is statistically significant. In short, these results show that the model of regressing GDPG on ED, FDI and TR is a statistically acceptable model.

4. DISCUSSION OF FINDINGS

As it can be seen from the results presented in section 3.5 above, in both the long run and short run, there is a significant negative relationship between external debt and economic growth for the Zambian Economy. This inverse relationship between the two variables means that, an increase in the level of external debt leads to a decrease in economic growth and a decrease in the level of external debt leads to an increase in economic growth. Precisely, a 1 percent increase in the level of external debt leads to 2.1 basis points (0.021 percent) decrease in economic growth. This also means that a 1 percent decrease in the level of external debt leads to 2.1 basis points increase in economic growth for the Zambian Economy. In other words, a 10 percent change in the level of trade openness, leads to a -0.21 percent change in economic growth in the long run. In the short run, a 1 percent increase in the level of external debt leads to 7.1 basis points (0.071 percent) decrease in economic growth. This also means that a 1 percent decrease in the level of external debt leads to 7.1 basis points increase in economic growth for the Zambian Economy. In other words, a 10 percent change in the level of trade openness, leads to a -0.71 percent change in economic growth in the short run. Thus, the accumulation of external debt by the Zambian government has a negative effect on economic growth in the long run. This can be attributed to the debt burden which leads to available resources being channelled to debt management. This occurs as the government allocates available revenues to debt servicing and principal payments. This takes away opportunities to direct resources to other economic activities which have direct positive effect on economic growth. With low levels of revenues available to stimulate economic activity, the economy experiences declining economic growth rates.

The study finds a significant positive relationship between FDI and economic growth both the short run and long run (though at 10 percent level of significance in the long run). This means that, an increase in FDI leads to an increase in economic growth and that a decrease in FDI leads to a decrease in economic growth for the Zambian Economy. Precisely, a 1 percent increase in FDI inflows into the Zambian Economy leads to 50.7 basis points (0.507 percent) increase in economic growth in the short run. This also means that a 1 percent decrease in FDI inflows into the Zambian Economy leads to 50.7 basis points decrease in the economic growth. In other words, a 10 percent change in the FDI inflows, leads to a 5.07 percent change in economic growth in the short run. Thus, for the period, 1985 to 2021, FDI inflows have led to increase in economic growth. The inflow of FDI in the economy leads to increased investments in different sectors. Hence, leading to an increase in economic activity. For instance, the inflow of FDI in Zambia's mining sector has led to increased copper production, increased employment, increased foreign exchange earnings, increased tax revenue for the government as well as increased Corporate Social Responsibilities (CSRs). These in turn leads to increased economic activity.

The relationship between trade and economic growth is positive but insignificant in both the short run and long run. However, there is significant positive relationship (5 percent level of significance) between the one-period lag of trade and economic growth in the short run. Thus, the study finds that there is a lag effect of trade on economic growth in the short run. This means that current changes in trade will positively affect next period economic growth. In this case, it means a 1 percent change in current year's trade leads to a 0.178 percent change in next year's economic growth in Zambia.

5. CONCLUSION

The main objective of the study was to investigate the link between public debt and economic growth for the Zambian Economy for the period 1985-2021. This objective was achieved with the help of three specific objectives which were to assess the nature of the relationship between external debt and economic growth; investigate the long run effect of external debt on economic growth; and to investigate the short run effect of external debt on economic growth. The study finds that there is an inverse (negative) relationship between external debt and economic growth in both the short run and long run. This means that changes in external debt lead to negative changes in economic growth.

The study also finds that FDI positively affect economic growth in the short run. This means that higher levels of FD are desirable and are supposed to be encouraged for the Zambian Economy. It was also found that, trade has a positive lag effect on economic growth in the short run.

The findings of this study are in line with the classical theory on debt which considers public debt as bad for economic growth. This is because public debt leads to exclusion of the private sector from active participation in economic affairs.

The theory says that governments should only borrow if they have the capacity to pay back the debt. Besides, the findings of the study are similar to findings of a number of empirical studies on external debt and economic growth. This includes studies by Rais and Anwar (2012), Kasidi and Said (2013), Munzara (2015) and Owoye (2017) who found a negative effect of external debt on economic growth in Pakistan, Tanzania, Zimbabwe and Nigeria, respectively. Besides, using ARDL model, Mhlaba and Phiri (2019) find a negative effect of external debt on economic growth for the South African economy.

6. RECOMMENDATIONS

In the light of these findings, external debt is not desirable and should not be supported for the Zambian economy. In line with this, a number of recommendations are given;

- There is need to ensure that external debt levels are low so as to minimize its negative effect on economic growth.
- Zambia needs to continue attracting FDI and monitor the quality of FDI inflows so as to rip more from FDI inflows. This involves attracting FDI inflows in sectors away from the mining sector which currently receives the highest FDI inflows. This approach would increase the manufacturing and value addition capacity in the Zambian economy.
- A deliberate policy by the Zambian Government to industrialize and promote industrialisation is of great importance. This is in consideration of the fact that the Zambian economy is an open economy and industrialization would boost trade with other nations.

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