

### Analysis of how Economic Growth in Developing Countries is Influenced by Public Borrowing: A Case Study of Rwanda

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#### **Abstract**

**Aim:** This study sought to analyze how economic growth in developing countries is influenced by public borrowing referencing on Rwanda as a case study.

**Methods:** The study used time series data from 1980 to 2018. The study used domestic debt and external debt to analyze how it influences Rwanda's Gross Domestic Product (GDP). To achieve this objective, secondary data was collected from the National Bank of Rwanda and the debt office in Rwanda. The study employed multiple regression model to identify the relationship between the dependent variable (GDP) and the independent variables (domestic debt and external debt). The t-test was used to confirm the formulated hypotheses at the 5% significance level.

**Results:** The study found out that a positive relationship exists between IMF Loan and Rwanda's gross domestic product, while a negative relationship exists between domestic debts and Rwanda's gross domestic product, which violates the Keynesian theory of public debt.

**Conclusion:** The study concludes that both domestic and external debt significantly affect economic growth in Rwanda.

**Recommendation:** The study recommend that developing countries should develop a good structure of Debt Management Office including a plan for capacity building in order to make its proper debt strategy analysis without external support. The study also recommend developing countries to reduce reliance on internal borrowing to reduce competition between citizens and the government which can reduced economic growth. Furthermore, the study recommend developing countries to account for public debts and ensure that such debts are solely acquired for economic purposes rather that political purposes.

**Keywords:** External debts, IMF loan, internal debts, public debt.

### 1.0 INTRODUCTION

Government borrowing plays an important role in government's finances to meet its spending requirements. Government borrows through issue of government securities called G-secs and Treasury Bills. Borrowing is a loan taken by the government and falls under capital receipts in the budget document. It is essentially the total amount of money that the central government borrows to fund its spending on public services and benefits. As the tax and non-tax revenue fall short in financing government's spending programme, the government announces an annual borrowing programme in the Budget. As stated by Ayturk (2017), bulk of government's fiscal deficit comes from its interest obligation on past debt. If the government resorts to larger borrowings, more than what it has projected, then its interest costs also go up risking higher fiscal deficit. That hurts government's finances. Larger borrowing programme means that the public debt will go up and especially at a time when the GDP growth is subdues, it will lead to a higher debt (Ayturk, 2017).

In reference to Rwanda, the international Monetary Fund (IMF) has noted Rwanda's prudent management of its debt while it continues to register notable progress in sustaining high and inclusive growth (IMF, 2021). Speaking at the conclusion of a two week IMF staff mission to Rwanda, the IMF mission chief pointed out that Rwanda's debt levels have been carefully managed despite capital intensive projects the country has undertook (IMF, 2021). Careful management of Rwanda's debt is mainly attributed to the fact that the government has made to choice to keep a low risk of debt distress status as an anchor to its fiscal policy (Strategy, 2016). This has been achieved through a process of careful prioritization and selection of projects. Preliminary results of the debt sustainability analysis show that the risk of Rwanda's debt remains low with a present value of debt to GDP reaching 32.9% against a threshold of 50% (Collier, 2012). The share of concessional loans in the total debt stock stood at 63% as of end 2018 compared to a level of 57.4% as of end 2017. Thanks to the country's debt strategy to maximize concessional borrowing in favor of commercial borrowing. Most of the country debt is concessional and was taken out to finance huge investment projects that are expected to bring returns so we are not worried about the debt levels. Furthermore, according to Collier (2012) the ongoing implementation of the National Strategy for Transformation has resulted in strong investment inflows and increased exports diversification.

In terms of GDP, Rwanda's economy grew by 8.6% in 2018 driven by robust activities in all sectors of the economy. At the same time inflation remained well below Central Bank's targeted inflation range of 2-8% reflecting ample food supplies and low inflationary pressures (Kopanyi, 2014). In the year 2018, growth was projected at 7.8% in 2019, and over the medium term at around 8%. Large investments such as Bugesera airport, Hakan peat plant and electricity infrastructure were expected to bolster growth. Over the long term, extensive private and government investments in manufacturing, tourism, agriculture ICT, health and education among others, were expected to transform Rwanda's Economy to high-value added activities, and boost per capita incomes and living standards (Abbott, Sapsford, & Binagwaho, 2017).

According to Abbott et al. (2017), reasonable degrees of borrowing by the developing countries are likely to enhance their economic growth and expansion. When economic growth is improved by at least more than 5% growth rate, the country's poverty situation may be reduced. To foster growth, developing countries at first stages of development borrow to augment what they have because of dominance of small stocks of capital, hence, they are likely to have investment opportunities with rate of return greater than that of their counterparts in developed countries. This is possible if borrowed funds and some internally ploughed back money are

properly utilized for productive investment and if that country does not suffer from macroeconomic instability which can distort economic incentives in those countries.

In relation to other developing countries, the case of Rwanda's public debt performance paint an exceptional case since majority of developing countries are choked with massive public debts. Nearly all developing countries are have a challenge on government's policies on borrowings and expenditure which have over time failed to address necessary economic growth within their respective country (Vaubel, 2019). In an attempt to keep their countries going on the right track, successive governments have adopted regular acquisition of huge sums of both internal and external debts to finance infrastructural facilities in order to boost economic growth in the country. Given, the current global pandemic where all countries are independently striving for financial survival, then the issue of lending by surplus countries to non-surplus countries becomes a matter of close allies and symbiotic relationship.

As stated by Panizza and Presbitero (2014), a slow economic growth is not solely caused by huge public debt but by country's inability to meet its debt service payments fueled by inadequate knowledge on the nature, structure and magnitude of such debt. This relates with situations in majority of developing countries such as Kenya, Haiti, Paraguay, Pakistan, Nigeria etc. where economic instability and the government corruption have fueled debt burden on the country's economy. High cost of running governments in developing countries among others factors have also weakened the ability of developing countries to service their public debts. It is against this backdrop that this study aimed to analyze how economic growth in developing countries is influenced by public borrowing referencing on Rwanda as a case study.

### 2.0 LITERATURE REVIEW

Bivens and Irons (2010) opine that if a country is experiencing a trend of an increasing public borrowings, the concerned investors may be worried about the capabilities of that country to pay its debts to the creditors. This may eventually result to financial crisis in the economy. As a result of this, the creditors will ask for higher interest rate as a safety and profitable measure for them to keep financing the deficits. This phenomenon can distort the level of economic growth, especially if the ratio of public debt to gross domestic product (GDP) is higher than the 30% threshold. This opinion has been corroborated by findings based on research conducted on some advanced and emerging economics. For example Reinhart and Rogoff (2010) argues that a country with more than 60% external debt out of GDP, experiences low GDP growth rate per annum by 2%.

Contradicting findings by Panizza and Presbitero (2012) reveal that high public debt does not affect economic growth negatively, especially for advanced countries. According to them, most of the debts in advanced countries are financed through internal sources. From macroeconomic perspective, high expenditures spent by the government stimulate economic growth. However, if the expenditure exceeds the level of revenues generated by the government, it results to budget deficit. The government can then borrow money to finance the deficit from domestic or external source. Globally, many scholars have conducted empirical studies on the relationship between public borrowing and economic growth. Ahmed and Shakur (2011) analyzed the longrun and short-run relationships between external debt and the real sector in Pakistan. They examined the dynamic debt service and capital stock and labor force fitting the production function using annual data for the entire period of 1970-2003. The basic model was derived from the neoclassical production function by incorporating the external debt service variable as suggested by Cunningham (1993). The results show that debt servicing has a negative effect on the productivity of labor and capital. The estimated error correction term shows the

existence of a significant long-run causal relationship among the specified variables, while in the short run, unidirectional causality is reported from debt service to GDP. These suggested that debt as an important factor in overall debt scenario in Pakistan.

Onel and Utkulu (2006) has model up the long run sustainability of Turkish external debt with structural changes. To investigate the sustainability of Turkey's external debt, the model derived from the basic solvency condition for international borrowing equation. Identically, in the long run, a country is in the solvent conditions if the future external debt equal to zero. This followed by Hakkio and Rush (1991) using co-integration approach with structural break analysis. In order to identify the effect of structural break to the empirical evidence, they used Divot and Andrew's unit root; and Gregory and Hansen's co-integration tests. The empirical results show that the external debt of Turkey is weakly sustainable in the long-run and thus the country is solvent without any structural breaks. This implies the Turkey's external debt is weakly sustainable.

Francis and Armstrong (2016) investigated the effect of internal debts on profit in selected manufacturing firms in Poland. They argued that there are compelling reasons why manufacturing firms uses debts as an essential part of management. However, the manufacturing firms were used as proxy for gross domestic product. They concluded that the relationship of debts and profit has significant commercial outcomes. Not only do those outcomes help to identify potential problems but they also help preserving corporate reputation, and to mitigate litigation against company which lead to increased legitimacy. This result is supported by Bhimani (2009) who opines that internal debts in mining firms leads to higher corporate legitimacy and good performance. Using a sample of Chinese manufacturing firms, Mua and Douglas (2009) examined the effect of external debts management strategy over performance of new product development. They find that external debt management strategies that focus on technological, organizational, and marketing factors, individually and interactively improve the performance of new product development.

Similarly, Gordon, Loeb, and Tseng (2009) examined the relation of external debts and profit management and general performance of selected manufacturing firms in Brazil. They argue that the relation of external debts and performance is contingent upon five firm-specific factors namely; environmental uncertainty, industry competition, firm complexity, firm size, and board of directors' monitoring. In addition, they agree that by implementing external debts policy, firms should pay attention to the contextual variables that are surrounding them. In Pakistan, Sheikh, Faridi, and Tariq (2010) investigated the impact of domestic debt on economic growth for the period covering 1972 to 2009. Using OLS technique, their findings revealed that the stock of domestic debt affects economic growth positively and that there is an inverse relationship between domestic debt servicing and economic growth. The study however observed that the negative impact of domestic debt servicing on economic growth is stronger than positive impact of domestic debt on economic growth. The study therefore suggested economic policies to settle outstanding domestic debt.

In Africa, Maana, Owino, and Mutai (2008) analyzed the economic impact of domestic debt on Kenya's economy. The study examined the effect of domestic debt on real output by using a modified Barro growth regression model. The results indicated that increase in domestic debt has a positive but insignificant effect on economic growth. The author suggested that the government should employ wider reforms that promote investment in treasury bonds and encourage institutional investors. Similar empirical studies have also been conducted in Nigeria. Adofu and Abula (2010) investigated the empirical relationship between domestic debt and economic growth in Nigeria. Using OLS regression technique with time series data

spanning 1986–2005, the study revealed that high budget deficit, inflation rate and government expenditures affect domestic debts, thereby negatively impacting economic growth. The study suggested that government should encourage alternative source of increasing its Ajao and Ogiemudia (2013) also studied the effect of foreign debt management on sustainable economic development with specific emphasis on Nigeria over the period of 1979 to 2009. Using the OLS method of data analysis and error correction model to ascertain the long run relationship of the established model, they found out that, access to external finance strongly influence the economic development process of Nigeria and other countries. The study further revealed that the economic effect is more significant in Nigeria.

In addition, Onyeiwu (2012) examined the effect of domestic debt on economic growth in Nigeria by using OLS, Error Correction and parsimonious models to analyze quarterly data between 1994 and 2008. Results from the study indicated that domestic debt holding of government is far above a healthy threshold of 35percent of bank deposit, suggesting a crowding out effect on private investments. This shows that domestic debt has a negative effect on economic growth in Nigeria. In the work of Aminu, Ahmad, and Salihu (2013) it was asserted that domestic debts can lead to high growth levels in Nigeria, if properly managed. A major implication of the result is that concerted effort should be made by policy makers to manage debts effectively by channeling them to productive activities (real sector), so as to increase the level of output in the country.

Still in Nigeria, Ozurumba and Kanu (2015) investigated the impact of the different components of domestic debt on economic growth of Nigeria using multiple regression technique. The authors discovered that FGN Bond proved to have a positive significant relationship with economic growth in the short-run, with development stock maintaining a significant negative relationship. However, Treasury Bills and the lagged value of GDP variables were positively and significantly related in the lon-run. Furthermore, Onyele and Nwokoacha (2016) studies the various sources of public funds and their resultant effects on economic growth in Nigeria. The results of the study revealed that national savings and external debt exerted a negative effect on economic growth. It could be inferred from the study that as total revenue dwindles, the government resorts to borrowing in order to stimulate the economy but the resultant effect is that economic growth starts depleting as a result of changes in total government revenue. This is an indication that aggregate government revenue alone is not sufficient enough to foster economic growth in Nigeria without a complementary fiscal role of debt. Similar empirical study was also conducted in Nigeria by Igbodika, Jessie, and Andabai (2016), using data covering the periods 1987 to 2014. The result of the study indicates that gross domestic product is negatively affected by the level of domestic and external debts.

After reviewing various literature on the impact of domestic and external borrowings on economic growth, it was observed that some studies proxy economic growth with the production outputs while others proxy economic growth with gross domestic product. However, a major gap was noticed in the literature, indicating that most of the scholars do not emphasize on the fact that economic growth is dependent on many macroeconomics, of which government debts are major part of. Various government fiscal and monetary policies could be use efficiently to manage the level of debts in developing countries. Therefore, it is not enough to consider the debt factor alone but all other factors that are tied around both domestic and external debt which impacts on the economic performance. These include prevailing interest rate on both domestic and external debt, the exchange rate which is tied mostly to external debt and so on. However, the use of bonds and IMF lending, as additional debts instruments have been overlooked by previous studies as it concerns economic growth in developing countries.



#### 3.0 METHODOLOGY

Secondary data covering the periods 1980 to 2020 was sourced from the National Banks of Rwanda statistical bulletins and also from the country's Debt Management Office (DMO). This serves as the time series data for the hypothesized variables in this study. The variables include economic growth (dependent variable) and public borrowing (independent variable). The country's Gross Domestic Product (GDP) was used as a measure of economic growth, while the data for public borrowing consists of the government bond (internal debt) and IMF loan (external Debt).

In order to account for the impacts of public borrowings on economic growth in Rwanda, a multiple regression model for the study is hereby specified as follows:

GDP= f(FGB, IMFL)

Where;

GDP = Gross Domestic Product (a proxy for Economic growth) FGB - National Government Bonds (a proxy for Domestic Debt)

IMFL - International Monetary Fund Loan (a proxy for External Debt)

 $\beta \theta$  = Intercept Parameter

 $\beta 1$ ,  $\beta 2$  = Regression co-efficient

μ= Stochastic Error Term

fi(FGB) > 0

It is expected that Federal Government Bond will lead to economic growth and infrastructural development.

fi(IMFL) > 0

It is expected that loan from IMF should increase infrastructural development and the general economic growth of the country.

The estimation technique consists of an approach designed to capture the relationship between the dependent and independent variables, while avoiding spurious influences. This is the multiple regression analysis which has received prominent attention in literature also popularly called the Ordinary Least Square technique.

### 4.0 RESEARCH FINDINGS AND DISCUSSION

This study specifies a model using federal government bonds and IMF loan as proxy for domestic and external debts in Nigeria. The choice for this model is motivated by the model and decision criteria used by other studies such as the work of Fasoye (2018).



Table 1: Regression output with GDP as dependent variable.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	1.652319	2999849	3.884302	0.0000
Bonds	-350444.0	376183.7	-0.931577	0.0000
IMF loans	2.256917	1.687864	1.337144	0.0000
R-squared	0.971171	Mean dependent var		15024495
Adjusted R-squared	0.967656	S.D. dependent var		29468293
S.E. of regression	5299745.	Akaike info criterion		33.92296
Sum squared residual	1.150015	Schwarz criterion		34.15915
Log likelihood	-791.1895	Hannan-Quinn criterion.		34.01184
Prob.(F-statistic)		0.000000		

Table 1 shows the relationship between Gross Domestic Product (GDP) and all variables mentioned in the model. The GDP represent the dependent variable and the independent variables are IMFL, and FGB. The regression result shows the relationship between International Monetary Fund Loan (IMFL) and GDP. The relationship between IMFL and GDP is positive of 2.256917. From the above regression result, we can deduced that the positive regression result means that one percent increase in IMFL will lead to an equivalent increase in GDP. The federal government bonds (FGB) shows a negative relationship with GDP of -35044. This implies that one percent increase in FGB will lead to a corresponding fall in GDP. The relationship between FGB and GDP is negative. The federal government bond plays a significant impact on gross domestic product because most business operating in Nigeria are driven by adequate infrastructure which are usually finance with bonds.

In the result, the coefficient of determination is very high. It shows that about 97.1 percent of the total variations in GDP are explained by all the independent variables in the model. The adjusted R2 also indicates that about 96.7 percent of the total variations in GDP are explained by the regression model. The F-statistic is significant at 5 percent critical level. It indicates that the joint variations of the model are significant. This however, may had contributed to the high coefficient of determination. In this result, the F statistic of the model is 276.2 while the probability of F-statistics is 0.0000. This implies that there is a significant relationship exist in the model and all the variables in the model are statistical significant.

Furthermore, table 1 shows the T-test of government bonds and gross domestic product (GDP) of -0.931577. This value of -0.931577 is used to compare a standard 5% significant level. The acceptance or rejection of the hypothesis is based on the comparison of -0.931577 and 5% significant level base on the decision rule of testing hypothesis. The T-tabulated value is compared with that of T-calculated having noted that the T- tabulated is 5%. Since the Since T-calculated is -0.931577 which is compared to 0.05 i.e. -0.931577<0.05 we reject the alternative hypothesis and accept the null hypothesis that federal government bond does not significantly affect gross domestic product. Therefore, one of the conclusions of this study is that government bonds does not affect GDP. This however, may negate apriori expectation that government bond is expected to affect economic growth positively.



The regression result shows the T-test of international monetary fund loans and gross domestic product (GDP) of 1.337144. This value of 1.337144 is used to compare a standard 5% significant level. The acceptance or rejection of the hypothesis is based on the comparison of 1.337144 and 5% significant level. However, the probability value of 0.0000 shows that IMF loan is statistically significant when compared with other variables whose probability value is 0.0000. In addition, a variable is said to be statistically significant if its probability value is 0.0000. The T-tabulated value is compared with that of T-calculated. Since T-calculated is 1.337144 which is compared to 0.05 i.e. 1.337144>0.05 we reject the null hypothesis and accept the alternative hypothesis that there is a significant relationship between international monetary fund loan and gross domestic product. Therefore, one of the findings of this study is that IMF loans affect GDP.

### 5.0 CONCLUSION

The study conclude that government bond shows a positive relationship with GDP and the test of hypothesis shows that government bonds affect GDP. Additionally, the international monetary fund loan (IMFL) coefficient of 2.2569 shows that IMFL is helping the Rwandese economy. The hypothesis shows that IMFL affects GDP.

### 6.0 RECOMMENDATIONS

The study recommend that developing countries should develop a good structure of Debt Management Office including a plan for capacity building in order to make its proper debt strategy analysis without external support. When debts rate is efficiently managed, economic activities will increased which will positively affect gross domestic product. The study also recommend developing countries to reduce reliance on internal borrowing to reduce competition between citizens and the government which can reduced economic growth. Furthermore, the study recommend developing countries to account for public debts and ensure that such debts are solely acquired for economic purposes rather that political purposes.

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### **Conflict of Interest**

Authors declares no conflict of interest.

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