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Impact of External Debt on the Economic Growth of a Small Open Economy: Empirical Evidence from the Gambia

Yusupha Jatta

Student, Department of Economics & Finance,
School of Business & Public Administration, University of the Gambia, Gambia

Dr. Matarr Njie

Senior Lecturer, Department of Economics & Finance,
School of Business & Public Administration, University of the Gambia, Gambia

Abstract:

This paper aims to investigate the impact of external debt burden on economic growth in the Gambia. To achieve this objective, the study used time series data on relevant debt burden and growth indicator variables for the period 1988 to 2017. The study set GDP as the main dependent variable and External Debt to GDP (EDGDP), External Debt Service (EDSER), Export of goods and services as percentage of GDP (EXP) and Real Exchange Rates (REX) as the explanatory variables. A Vector Error Correction Model (VECM) estimation approach was employed to examine the long-run and short-run causal effects between economic growth and external debt indicator variables after Johansen Co-integration test concluded the existence of at least one co-integrating equation. The results revealed that all independent variables have significant impact on economic growth in the long-run. The results also suggest that external debt (EDGDP) is negatively and significantly related with economic growth (GDP) in the long-run albeit insignificant in the short-run. The study further shows that the Gambia's external debt service (EDSER) has a positive and significant relationship with the country's economic growth in the long-run but an insignificant connection in the short-run. Finally, the results corroborate the presence of the debt overhang effects of external debt on economic growth, as evident from the negative relationship between accumulated external debt and economic growth in the Gambia, which could hinder the country's growth potential. The study recommended among other things, that government should work on policies that promote efficient and productive use of contracted funds or domestic savings since the ratio of external debt level to GDP and all other variables except external debt service negatively impact economic growth in the Gambia.

Keywords: External debt impacts, economic growth, economic analysis, Vecm estimation approach, Johansen co-integration test, small open economy, The Gambia

1. Introduction

Achieving sustainable economic growth is a major objective of most if not all countries, particularly the small and open economies that are characterized by low capital formation due to low levels of domestic savings and investments (Adepoju, et. al, 2007 as cited in Olumayowa, 2018:5). As a result, it is only natural that countries that face a scarcity of capital, would resort to borrowing from external sources so as to supplement domestic savings (Aluko and Arowolo, 2010; Safdari and Mehrizi, 2011; Sulaiman and Azeez, 2011).

There are several different ways for governments, including the Gambia government to finance its expenditure: taxes, charges, compulsory contributions to social security and other government facilities, proceeds from its private sector activities, shares in companies, profit transferred from the central bank, income from privatization, etc. However, when a government's regular expenditure exceeds what it collects in non-credit revenues such as taxes, charges, foreign exchange from exports, etc., it has a budget deficit. Virtually all governments resort to borrowing to finance this gap. The accumulation of past borrowing is the government debt. When government borrows, the debt is a public debt. Public debts are either internal or external, which is incurred by the government through borrowing in the domestic market, that is, through Treasury bills, bonds and local financial institutions and international capital markets, that is, interest-laden long-term debts from IMF, World Bank, IDA, AfDB etc. to finance domestic investments.

External debt has both benefits and costs with regards to the debtor countries. Among benefits associated with external debt is that it makes resources available to debtor countries to pursue their expansionary policies for the promotion of economic growth and development. On the other hand, however, external debt incurs follow-up costs, just as is the case with private debt, i.e. the successive interest and principal payments due in future fiscal years. The burden of debt-service is determined by the size of the debt and the interest rate. As the volume of the debt grows or the interest rate rises, so do the debt-service burden.

The burden and dynamics of external debt show that they do not contribute significantly to financing economic development in developing countries. In most cases, debt accumulates because of the servicing requirements and the

principal itself. In view of the above, external debt becomes a self-perpetuating mechanism of poverty aggravation, work over-exploitation, and a constraint on development in developing economies (Nakatami and Herera, 2007 as cited in Aminu and Anono, 2012:5).

Soludo (2003 as cited in Osinubi and Olaleru, 2006:10), asserted that countries borrow for two broad reasons; macroeconomic reason that is to finance higher level of consumption and investment or to finance transitory balance of payment deficit and avoid budget constraint so as to boost economic growth and reduce poverty. The constant need for governments to borrow in order to finance budget deficits has led to the creation of external debt.

Despite these benefits of external borrowing, critics have continued to argue that such borrowing do impede economic growth and development. For example, it is widely recognized in the international community that excessive foreign indebtedness in most developing countries is a major impediment to their economic growth and stability (Audu, 2004).

According to Ayadi (1999) and Ayadi et al. (2003), external debt burden had dramatically limited developing countries' participation in the world economy and the attendant debt servicing obligations continue to manifest as impediments to economic growth and development. Debt burden has led to a limited accumulation of capital (depletion of international reserves) and a limited application of flexible financing policies to consolidate small and medium-sized firms. This indirectly affects employment, literacy, and poverty.

The central research questions for this paper therefore are: what is the impact of external debt on economic growth in the case of the Gambia, and is there a long-run relationship between external debt and economic growth as far as the Gambia is concerned? The paper seeks to extend the literature by providing answers to these fundamental questions by identifying the dynamic relationships between external debt accumulation and economic growth on the one hand, and the effects of this external debt on the Gambia's growth prospects on the other. The paper also aims to determine whether the country's mounting external debt volume explains the weak performance of the Gambian economy in recent years.

By collecting data from World Development Indicators, UNCTAD STAT, IMF International Financial Statistics, Central Bank of The Gambia and the Gambia Ministry of Finance and Economic Affairs, the paper hopes to show how the accumulation of external debt impacts the Gambian economy. The study will conclude with recommendations for policy makers, not only in the Gambia, but those in other developing economies as well, who may be interested in understanding how the accumulation of external debt impedes economic growth in small and open economies like the Gambia, and the policy options available to address these challenges.

The rest of the paper proceeds as follows. Section II describes the data and methodology. Section III presents the results of the study. Finally, section IV concludes

2. Methodology and Data

The study aims to assess the impact of external debt on the economic growth of the Gambia. To empirically carry out this assessment, the study used times series data of the Gambia covering thirty (30) years from 1988 to 2017.

2.1. Data Description and Sources

The data to be employed in this study is collected from secondary sources. Sources of data included World Development Indicators, UNCTAD STAT, International Financial Statistics, Central Bank of The Gambia and Ministry of Finance Economic Affairs among others.

Data on the main dependent variable *Real GDP* is sourced from World Bank International Debt Statistics, World Development Indicators (WDI), UNCTAD STAT and International Financial Statistics. Data on the independent variables *external debt to GDP ratio*, *external debt servicing*, *export of goods and services (% GDP)* and *real exchange rate* is also obtained from World Bank International Debt Statistics, World Development Indicators (WDI), UNCTAD STAT and International Financial Statistics whereas Annual Reports and Financial Statements is obtained from Central Bank of The Gambia (CBG).

The study used real GDP as an indicator of economic growth – the dependent variable. The real GDP is used in the regression analysis because it is to some degree free of the effect of inflation. The external debt to GDP ratio, external debt service payment, export and real exchange rate were used as explanatory variables. The variables GDP and debt service payment are logged for simplicity or as a result of their large nature and also to avoid heteroskedasticity (nonconstant variance in the error term) whereas variables external debt to GDP ratio, export of goods and services and real exchange rate were not logged since they are in percentages.

2.2. Model Specification

According to Sala-i-martin (1997) and Dereje (2013), economic theories do not identify the exact factors or variables that determine economic growth. In response to this challenge, they propose a cross-sectional model of the form:

$$\gamma = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + \varepsilon$$

Where γ is a vector of economic growth rate and $x_1, \dots, x_n$ are vectors of potential explanatory variables that vary from study to study.

The model specifications used in this paper seeks to investigate the linear relationship between economic growth (GDP) and external debt burden indicators. The following multivariate regression model used in the paper is a similar estimation equation which was used in Udeh et. al. (2016) and can be formulated as below:

2.3. Economic Model

$$GDP = f(EDGDP, EDSER, EXP, REX) \quad (1)$$

Econometric Equation:

$$GDP_t = \alpha_t + \beta_{t1}EDGDP_t + \beta_{t2}EDSER_t + \beta_{t3}EXP_t + \beta_{t4}REX + \varepsilon_t \quad (2)$$

Econometric equation transformed to natural log form for simplicity

$$LNGDP_t = \alpha_t + \beta_{t1}EDGDP_t + \beta_{t2}LNEDSER_t + \beta_{t3}EXP_t + \beta_{t4}REX + \varepsilon_t \quad (3)$$

Where;

GDP = real Gross Domestic Product (Current US\$)

EDGDP = external debt to GDP ratio

EDSER = external debt Service Payment Total

EXP = export of goods and services (% of GDP)

REX = real effective exchange rate

β = Responsiveness coefficient of the independent variable to the dependent variable

LN = natural logarithm

α = Constant term

ε = the usual stochastic error term

t = time period from 1988 to 2017

The main exogenous variable is external debt to GDP ratio whereas others are used as controlled variables.

2.3.1. The 'A Priori' Assumptions

Model 2 and model 3 above are adopted on the premise that economic growth (GDP), external debt to GDP ratio, external debt service payment and exchange rate are negatively related. This implies that a decrease in external debt to GDP ratio, external debt service payment and exchange rate will, *ceteris paribus*, lead to an increase in GDP. Whereas export of goods and services as percentage of GDP and economic growth (GDP) have direct relationship. This means that an increase in export will, all things being equal, lead to an increase in GDP and vice-versa. The priori expectation can be written in the form:

$$\beta_1 < 0, \beta_2 < 0, \beta_3 > 0 \text{ and } \beta_4 < 0$$

where;

$\beta_1, \beta_2, \beta_3$ and β_4 are coefficients of external debt to GDP ratio (EDGDP), total debt service (EDSER), export of goods and services (EXP), and real effective exchange rate (REX) respectively.

Variable	Measurement	Expected Sign	Conclusion
GDP	GDP total (current US\$)		
External Debt to GDP ratio	External Debt total as % of GDP	Negative	Conformed
Debt Service Payment	Total debt service (current US\$)	Negative	Did not conform
Export	Export of goods & Services (% of GDP)	Positive	Did not conform
Exchange rate	Real effective exchange rate index (2010 = 100)	Negative	Did not conform

Table 1: Tabular Summary of 'a Priori' Expectations

2.4. Model Estimation Procedure

It is a fundamental procedure to conduct some statistical diagnostic tests like unit root test, co-integration test, error correction test, heteroskedasticity tests etc. to check for certain problems such as stationarity, co-integration of the variables in the long and short run dynamics, non-constant variance, etc. before drawing inference from our results obtained from econometric estimations. Selecting an optimal lag length for the models used in this study was done with reference to various information criterion like the AIC lag order selection criteria, Schwarz Information Criteria (SIC), HQIC, and SBIC but the AIC criteria was found to be most ideal for the models used in this paper.

2.4.1. Unit Root Test

The reality is that majority of macroeconomic and financial variables (time series data) are susceptible to increase and decrease over time. Since this study used time series data, it is essential to perform a stationarity test on the variables to avoid running a spurious (based on chance) regression. The outcome of a spurious regression cannot be used for hypothesis testing, prediction or forecasting. Non-stationary data simply means that the data generating process does not evolve or fluctuate around zero (mean). The Augmented Dickey-Fuller (ADF) unit root test is carried out to test for stationarity of the variables.

Because the Dickey-Fuller test poses the problem of autocorrelation, the study used the Augmented Dickey-Fuller (ADF) test to assess whether the variables have unit root or not, in other words to assess whether the data is stationary or not. The ADF test is run on all the yearly data of variables using the various parameters such as intercept, trend and

intercept followed by a first difference with two as the maximum lag length. Selecting an optimal lag length for the ADF test was done with reference to the AIC lag order selection criteria.

2.4.2. Co-integration

Testing for cointegration may be understood as testing for the existence of long-run equilibria among the elements of a time series. According to Engle and Granger (1987, p.264) 'It is frequently of interest to test whether a set of variables are co-integrated. This may be desired because of the economic implications such as whether some system is in equilibrium in the long run, or it may be sensible to test such hypotheses before estimating a multivariate dynamic model'. This study employed Johansen Co-integration method to assess if the variables are integrated.

2.4.3. Johansen Co-integration Test

The Johansen co-integration test in a multivariate framework provides a clear picture than other tests like Engle-Granger (1987) co-integration method in some aspects. (F. Kasidi and A. M. Said, 2013, p.75). This test is based on the maximum likelihood estimation that is proposed by Johansen 1988. The test was proposed to determine the number of existed co-integration vectors for the variables under study. The main purpose of using this technique is to find out whether or not there is a long-run equilibrium relationship between the variables. The three main values of focus for this estimation method are: Trace statistics, Max - Eigen statistics and the 5% or 1% critical values.

2.4.4. Error Correction Estimation (ECM) Model

If the outcome of the Johansen Co-integration test concluded that there is long-run co-integration between the variables, then the VECM must be performed to confirm whether the variables in question actually have long-run co-integration or otherwise.

2.4.5. Method of Data Analysis

The study adopted a Vector Error Correction Technique (VECM) technique to estimate the coefficient of parameter estimates. A data set from 1988-2017 which included key growth-debt nexus indicators was obtained from several credible sources as mentioned above. This 30-year data set was estimated using two linear models. The outcomes of data estimation and analysis were attained with the help of Stata 13 to portray the impact of external debt burden on economic growth in the Gambia.

In the first step of the estimation and analysis process, the researcher conducted a regression on the series to establish significance of the various individual exogenous variables and the overall regression model variables as well as to determine the impact of the coefficient of individual regressors on the independent variable – GDP.

In the second phase, several trial and error diagnostic test including ADF unit root test, Johansen Co-integration test and test for variance in the error term (Heteroskedasticity) and Error Correction Model were performed to achieve precision in the models and the outcome so as to capture the effect of external debt burden on economic growth in the Gambia.

2.5. Definition of Variables as Per World Development Indicators (Wdi)

Gross Domestic Product (Current US %) – GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.

External Debt to GDP ratio – External debt to GDP ratio – often expressed in percentages, it is the metric comparing a country's external debt to its gross domestic product (GDP). it measures what a country owes (debt) and what it produces (GDP).

Debt Service on External Debt, total (TDS, current US\$) – Total debt service is the sum of principal repayments and interest actually paid in currency, goods, or services on long-term debt, interest paid on short-term debt, and repayments (repurchases and charges) to the IMF. Data are in current U.S. dollars.

Export of Goods and Services (% of GDP) – Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.

Real effective exchange rate index (2010 = 100) – Real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs.

3. Results and Discussions

The study used OLS technique to capture the impact of external debt burden on economic growth in the Gambia. Several econometric and statistical tests were performed using STATA 13.0 statistical software to establish the significance of the results obtained from various estimation exercises carried out in the paper.

3.1. Descriptive Statistics

Table 2 shows descriptive statistics for selected indicators for the period 1988-2017. The observation columns represent 30-year period for which the series were observed. The mean of log of GDP, external debt to GDP ratio and log of debt service payment, export and real exchange rate all fall within the range 17 and 142. The corresponding standard deviations .4284232, 29.59776, .2892504, 10.26444, 52.96134 respectively, show the degree of spread from the mean values.

Variables	Obs.	Mean	Std. Dev.	Variance	Skewness	Kurtosis
Log of GDP	30	20.4461	.4284232	.1835465	-.7590643	3.662909
External Debt to GDP ratio (EDGDP)	30	70.6922	29.59776	876.0276	.8160776	2.165419
Log of External Debt Service (EDSER)	30	17.11737	.2892504	.0836658	-.2676148	2.834012
Export (EXP)	30	28.42137	10.26444	105.3586	1.763996	5.740245
Real Exchange Rate (REX)	30	142.5067	52.96134	2804.904	.123676	1.248225

Table 2: Descriptive Statistics
Source: Author's Computation using Stata 13.0

3.2. Unit Root Test Results

The purpose of performing a unit root test is to assess whether the variables of interest are stationary i.e. to determine if the variables fluctuate as time passes, because a non-stationary data cannot be used for hypothesis testing or forecasting. If all the variables are found to be integrated of the same order e.g. at first difference I(1), then a cointegration test will be performed otherwise we run an ARDL test. This study tests the existence of unit roots starting with levels using both intercept and trend parameters followed by first difference using ADF test.

3.2.1. The Decision Rule

Null hypothesis $H_0: \theta = 0, a_i = 1$ (non-stationary or unit root)

Alternative $H_1: \theta < 0, a_i \neq 1$ (data is stationary)

If the ADF test statistic value is larger in absolute value than the five percent (5%) critical value, we reject the null hypothesis and conclude the process in question is stationary. This therefore means that the data is stationary and there is no unit root.

Variable	ADF at Level				P-Value	ADF at 1 st Difference				p-value	Order of Integration
	ADF Stat	Lag	1% CV	5% CV		ADF Stat	Lag	1% CV	5% CV		
LNGDP	-2.091	0	-3.723	-2.989	0.2481	-4.800*	0	-3.730	-2.992	0.0001*	I[1]
LNEDGDP	-2.070	0	-3.723	-2.989	0.2568	-4.623*	0	-3.730	-2.992	0.0001*	I[1]
LNEDSER	-2.361	0	-3.723	-2.989	0.1529	-5.840*	0	-3.730	-2.992	0.0000*	I[1]
EXP	-2.621	0	-3.723	-2.989	0.0888	-6.113*	0	-3.730	-2.992	0.0000*	I[1]
REX	-1.113	0	-3.723	-2.989	0.7099	-3.090**	0	3.730	-2.992	0.0273**	I[1]

Table 3: Results of ADF Test with Only Intercept
Note: (*), (**) and (***) Denote Significant at 1%, 5% and 10% Respectively
Source: Authors' Computation Using Stata 13.0

3.3. Interpretation of ADF Test Result from Table 3

Table 3 above presents the result of the ADF unit-root test of the series when they are tested using only intercept option. The results indicate that all the series are integrated of order one I[1], that is, they are found to be non-stationary at levels, but stationary at first difference.

The test statistics absolute values of the difference form log of GDP (LNGDP), External Debt to GDP ratio (EDGDP), log of External Debt Service (LNEDSER) and Export (EXP) are all statistically significant at the 1% significance level whereas only Real Interest Rate (REX) is significant at 5%. Similarly, the corresponding p-values are all statistically

significant at the 5%. This implies that we are 99% confident that our variables LNGDP, LNEGDGP, LNEGDSER, EXP, and REX are all stationary at first difference and hence we can reject the null hypothesis H_0 'there is a unit root' and we can accept the alternative H_1 'there is no unit root', as shown in *Table 3*.

3.4. Johansen Co-Integration Test

Maximum rank	Eigenvalue	Trace statistic	5% Critical value
0	.	73.7635	68.52
1	0.62720	46.1354*	47.21
2	0.59622	20.7425	29.68
3	0.32308	9.8169	15.41
4	0.23808	2.2032	3.76

Table 4: Johansen Tests for Co-Integration

Source: Authors' Own Computation Using STATA 13.0

Trace Stat. Indicates One Co-Integrating Equations at the 5% Level

**Denotes Rejection of the Null Hypothesis at 5% Significance Level*

Table 4 presents the results of the Johansen Co-integration test. After testing and proving that all variables are integrated at the same order I (1), Johansen and Juselius's (1991) procedure was implemented to test the possibility of at least one co-integrating vector between variables in the model. The co-integration test defines whether a long run relationship exists among the variables. Table 4 shows that the Trace value is greater than the Mackinnon critical value at 5%. This indicates that the Null hypothesis (series are non-cointegrated) can be rejected at 5% significance level. Therefore, it is concluded that the series are co-integrated and a long-run relationship exists among the variables.

3.4.1. The Decision Rule

Null hypothesis $H_0: \theta = 0$ (variables are not co-integrated)

Alternative $H_1: \theta < 0$ (series are con-integrated)

If either the Trace statistic or Maximum Eigen statistic value is greater than the absolute value of the 5% or 1% critical value, we reject the null hypothesis and conclude the process in question has co-integration. This therefore means that there is long-run co-integration between the variables as shown in Table 4.

3.5. Normalized Long-Run Co-Integration Estimates

After the results of the Johansen Co-integration test concluded that there is a long-run relationship between the variables, it is better to run VECM for multivariate regression, to capture the short-run as well as long-run dynamics between the dependent variable and independent variables.

The results from the long-run normalization estimation from Table 6 shows that all the independent variables are statistically significant at 1%. The coefficients indicate that, with the exception of external debt service, in the long run, all independent variables have a negative impact on economic growth (GDP) of the Gambia.

The coefficient implies that a one unit increase in external debt stock to GDP ratio will, holding all things constant, lead to an approximately 0.0069 units decrease in economic growth (GDP) in the Gambia in the long-run. The negative result of this variable corroborates the Classical view on debt, that government borrowing will have a negative impact on the national economy as cited in Daka et al (2017, p64). This result also confirms the existence of the crowding out theory and debt overhang theory of Krugman (1989). The theory according to Iyoha (1999), posits that accumulated external debt of highly indebted countries acts as a tax on future output and thus discourages private investment. This result is also consistent with those in Udeh, Ugwu & Onwuka (2016), Angahar, Ogwuche and Olalere (2015), Osuma et al (2018).

The coefficient of external debt service on the other hand implies a one unit increase in external debt service will lead to an approximately 0.36 unit increase in economic growth (GDP) in the long run *ceteris paribus*. This positive relationship between external debt service and economic growth (GDP) does not conform with the 'a priori' expectation of this paper. This result was strongly confirmed by Ezenwa (2012). According to Fosu (1999), this can be attributed to the fact that actual debt service payments were considered inadequate indicators of the debt burden, since a large number of sub-Saharan African countries were in arrears. A larger debt service may actually reflect the higher ability of a country to meet its debt obligations rather than the existence of a higher debt burden. Thus, debt service would be a poor measure of debt burden, which is also supported by the statistical results. This result is also consistent with the findings of Yusuf and Said (2018).

The coefficient of export shows that a unit increase in export will cause a 0.015 decrease in economic growth (GDP) *ceteris paribus*. Similarly, the result also shows that if we hold all explanatory variables constant, a one unit increase in real exchange rate will cause a 0.0027 decrease in economic growth (GDP) as shown in Table 6.

3.6. Result from Vector Error Correction Estimation (VECM)

In the short-run, there may be deviations from equilibrium and we need to verify whether such disequilibrium converges to the long-run equilibrium or not. Vector Error Correction Model (VECM) can be used to check this short-run dynamics (Mohanty, 2017).

The VECM result from Table 7 below shows that the adjustment term or error correction term is statistically insignificant at all critical levels but can albeit its coefficient shows the presence of a stable long-run relationship among the variables. The coefficient of the error correction term represents the speed of adjustment (that is, following a disturbance in the unrestricted model how quickly the variables returned back to their long-run values). The adjustment term (_Ce1) is negative and insignificant with a coefficient of -.6482879 and a p-value of 0.224 indicating that there is long run causality between the dependent variable and independent variables. This is also suggesting that previous year's errors or shocks for Gambia or (deviations from the long-run equilibrium) are corrected for after one year or within the current year at a convergence speed of 64.8%. Furthermore, there is significant short run causality running from individual explanatory variables to the dependent variable.

Looking at the coefficient of the VECM result, we can infer individual short run causal effects between the dependent variable and independent variables. The coefficient of export is significant at the 5% critical level while the coefficients of external debt ratio, external debt service and real exchange rate are not significant. This implies that in the short run, only export causes/impacts economic growth at the 5% critical level. See Table 7 below.

maximum rank	eigenvalue	trace statistic	5% critical value
0	.	73.7635	68.52
1	0.62720	46.1354*	47.21
2	0.59622	20.7425	29.68
3	0.32308	9.8169	15.41
4	0.23808	2.2032	3.76

Table 5: Johansen Tests for Co-Integration

Source: Authors' Own Computation Using STATA 13.0

Trace Stat. Indicates One Co-Integrating Equations at the 5% Level

*Denotes Rejection of the Null Hypothesis at 5% Significance Level

Variables	Coefficients	Std. Error	z	P-value
EDGDP	.0068965	.0006681	10.32	0.000
LNEDSER	-.3582485	.0637143	-5.62	0.000
EXP	.0148597	.0023553	6.31	0.000
REX	.0026617	.0002532	10.51	0.000
_cons	-15.56969	.	.	.

Table 6: Long-Run Normalized Co-Integration Estimates (LNGDP)

Source: Authors' Computation Using STATA 13

Variables	Coefficients	Std. Error	z	P-value
_ce1	-.6482879	.5325955	-1.22	0.224
EDGDP	.0007961	.0051279	0.16	0.877
LNEDSER	.0712835	.1942289	0.37	0.714
EXP	.0233449	.0099511	2.35	0.019
REX	-.0014782	.0036456	-0.41	0.685
_cons	.0523	.0425621	1.23	0.219

Table 7: VECM Estimates for the Dependent Variable LNGDP

Source: Authors' Computation Using STATA 13

3.7. Diagnostic Tests

The diagnostic tests are used to check the validity of the model. The essence of the diagnostic test is to examine the heteroscedasticity, normality, functional form, and serial correlation associated with the model.

3.7.1. Autocorrelation Lagrange-Multiplier Test

Lag	chi2	df	Prob > chi2
1	25.3432	25	0.44328
2	8.5611	25	0.99908

Table 8: Autocorrelation Lagrange-Multiplier Test

- H0: no autocorrelation at lag order

From the outcome of LM serial correlation test in Table 4.6.1 above, the P-value of test statistics 0.99908 is more than the 5% confidence level. This indicates that there is no serial correlation among the variable and therefore we fail to reject the null hypothesis.

3.7.2. Jarque-Bera Test for Normality

Test	Prob > chi2
Normality	0.00018

Table 9: Jarque-Bera Test for Normality

As indicated above in Table 4.6.2 above, the overall p-value 0.00018 of the Jarque-Bera test shows that the model is not normal distributed and therefore we reject the null hypothesis (H0 = normally distributed). See Table 4.6.2

3.7.3. Eigenvalue Stability Conditiontest

The VECM specification imposes 4 unit moduli

The result of the stability test shows that the model is stable.

4. Conclusion and Policy Implications

It is a widely accepted assumption in the academic community that if a country suffers from debt overhang problem, the debt burden will have a negative impact on the level of economic growth (GDP), level of investment and foreign exchange earned from export of goods and services (Hassan and Akhter, 2012). This paper which empirically investigated the impact of external debt burden on economic growth in the Gambia by using time series data over the period 1988 – 2017, confirmed the existence of a negative relationship between external debt level and economic growth. The study also confirmed the existence of a debt overhang problem which seems to be cutting back on the investment potential and future output of the country as evident in the negative coefficient of external debt burden level to GDP. In the long run, all independent variables exhibit a negative relationship with the dependent variable of economic growth except debt service, which was found to be positively related to economic growth.

The findings of the study are consistent with those found in the literature whose main conclusions are that external debt has negative impact on economic growth.

4.1. Policy Recommendation

This study recommends that the Gambia government should work on policies that promote efficient and productive use of contracted funds or domestic savings since external debt level to GDP and all other variables except external debt service negatively impact economic growth in the Gambia. Government should ensure that it maintains a sustainable level of external debt stock through pursuing strong, transparent debt management strategies. Government should also put mechanism in place that will prevent them from borrowing above the country's investment output. As Cohen (1993) stated, a reduction in debt service should lead to an increase in current investment for any given level of future indebtedness. Finally, government should categorical spell out how and when the external debt will be repaid as this will act as a roadmap for the government that will direct government's current and future policies

4.2. Areas for Further Study

This study is aimed at setting the stage for a series of future potential empirical studies on the economic growth, debt and development. The future research should focus on comparative analysis between the impact of internal debt burden and external debt burden on developing economies such as the Gambia. Future research should also look into internal resources mobilization versus borrowing externally as a source of meeting budgetary needs of governments, particularly those in the developing world.

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