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Effect of external debt on expected years of schooling: The case of Nigeria and Ghana

Veronica Brendan Edeminam
Premiere Urgence Internationale, Nigeria
veroedeminam@gmail.com

Osman Nuri Aras
Tishk International University, Iraq
osman.aras@tiu.edu.iq

Abstract

This study investigates the effect of public debt on expected years of schooling in Nigeria and Ghana using annual time series data from 1990 to 2019 sourced from World Bank, and United Nations Development Programme. Trend analysis was done for external debt stock and expected years of schooling variables. Other variables in the study are external debt servicing stock and real effective exchange rate. Pre-econometric test for unit root was undertaken using Phillips-Perron and Augmented Dickey-Fuller unit root test methods. Econometric test for long run cointegration was undertaken using long run form and bounds test method within the ARDL framework. The long run cointegration test showed absence of long run cointegration among the variables for Nigeria, but there was long run cointegration among the variables for Ghana. The test for causality using Granger causality showed unidirectional causality from expected years of schooling to external debt stock for Ghana. In both countries, borrowing for infrastructural projects is prioritized over borrowing for investment in social sectors. Even where there is an investment in the social sector using external debt, it is not enough to create a significant effect. As recommendation from the findings, external debt should be used to improve expected years of schooling as much as it is used for infrastructural investment. This is because of the importance of developing the manpower that will manage the infrastructure that is financed by external debt.

Keywords*:* External debt stock, expected years of schooling, debt servicing stock, education, Nigeria, Ghana.

JEL Classification Codes: H60, H63, I22.

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1. Introduction

Borrowing has become an indispensable source of deficit financing for Sub-Saharan African countries that have an infrastructure deficit of around $93 billion annually (Were, 2018). Borrowing can be domestic when the debt is sourced from residents within the country (Ndubuisi, 2017), or external when the debt is owed to nonresidents (World Bank, 2022). External debt is defined by the World Bank (2022) as debt owed to nonresidents repayable in goods, services, or currency.

Countries borrow for several reasons. According to Fatas, Ghosh, Panizza, and Presbitero (2018), countries borrow to provide a safe asset for financial markets, and finance exceptionally large projects. Borrowing also helps countries undertake countercyclical fiscal policy, improve the standards of living of people, and deal with negative shocks (Fatas, Ghosh, Panizza, and Presbitero, 2018). Various empirical studies have revealed a positive relationship between public debt and economic growth (Thao, 2018; Fincke and Greiner, 2015).

Empirical evidence has also shown that excessive public debt can impair economic growth by crowding out private investment. Excessive public debt can limit the ability of government to stabilize the debt cycle in the future which might lead to a debt crisis (Fatas, Ghosh, Panizza, and Presbitero, 2018). Studies undertaken by Naeem and Sherbaz (2016), and Sansa (2020) revealed a negative relationship between public debt and economic development.

The impact of public debt on macroeconomic outcomes depends on the source of the debt, the degree of development of the financial markets, the economic situation, and the institutional environment (Phillipe, Montfort, and Boileau, 2002). Both domestic debt and external debt have service cost obligations, but the service cost obligation of external debt is further exacerbated by exchange rate risk due to depreciation of the domestic currency (Phillipe, Montfort, and Boileau, 2002). This study focuses on external debt because external debt does not directly affect the supply of loanable funds and domestic interest rates unlike domestic debt (Phillipe, Montfort, and Boileau, 2002).

External resources provide fiscal space for developing countries with minimal levels of domestic savings to fast-track the accumulation of capital aimed at improving the welfare of people (Emilio and Enrico, 2009). One of such ways to improve the welfare of people is improving knowledge through education. Ekaette, Owan, and Agbo (2019) pointed out that other sectors get their workforce through the education sector, thus it could be regarded as the supporter of all sectors. Several researchers have provided empirical evidence of the positive relationship between education and the improvement of socio-economic outcomes such as economic growth (Gitana and Agnė, 2018; Yuriy, Halyna, Iryna, and Iveta, 2020), and lower crime rates (Stephen, Olivier, and Sunčica, 2011; OECD, 2012).

Nigeria and Ghana are the two largest economies in West Africa. Both economies have different levels of government which are national and sub-national to decentralize management of the affairs of the countries. Nigeria and Ghana are part of the Sub-Saharan African countries that agreed towards the attainment of the Education for all goals determined during the World conference on education (Ombati and Masese, 2015). In 2015, Nigeria and Ghana were part of the countries that signed the 2015 Incheon Declaration which was to ensure the provision of publicly funded, 12 years of equitable, free, and quality primary and secondary education (UNESCO, 2016). The education outcomes indicators show that in 2004, the expected years of schooling in Ghana was 8.1 years while the expected years of schooling for Nigeria was 9 years.

However, in 2019, the expected years of schooling for Ghana was 11.5 years while the expected years of schooling for Nigeria was 10 years. Other indicators of education such as enrollment rates and literacy rates show similar patterns to the expected years of schooling for Nigeria and Ghana between 2004 and 2019 (**Table 1**). Between 2004 and 2019, external debt stock in Ghana increased by 76% while the external debt stock for Nigeria increased by 36% (**Table 1**).

Table 1: External debt and Education index for Nigeria and Ghana.

	Nigeria		**Ghana**	
Year	**External Debt Stock (USD)**	**Education Index**	**External Debt Stock (USD)**	**Education Index**
2004	44,559,883,685.70	0.424	7,239,727,088.50	0.437
2009	19,285,647,639.80	0.438	6,610,060,990.40	0.516
2010	18,821,584,008.70	0.407	8,365,239,757.30	0.526
2011	21,003,387,146.00	0.424	10,411,713,579.50	0.533
2012	21,466,867,764.20	0.437	11,992,686,632.00	0.53
2015	32,413,453,871.70	0.474	20,073,270,363.80	0.538
2016	35,717,779,488.90	0.474	21,058,602,291.60	0.556
2017	45,780,013,169.80	0.484	22,212,841,567.60	0.555
2018	54,202,577,784.60	0.488	23,173,792,492.10	0.558
2019	60,047,046,402.00	0.499	26,738,836,501.50	0.563

Source: World Bank database and Human Development Reports for several years.

While there have been various empirical studies examining the impact of public debt on social spending (Fosu, 2010; Ekaette, Owan, and Agbo, 2019; Igudia, 2021), the empirical literature is bereft of studies on the impact of external debt on expected years of schooling and this study intends to fill this gap. The number of years a child of school-entry age is projected to spend in school is measured in expected years of schooling (Jeroen and Iñaki, 2019; Human Progress, 2022), and it is an important requirement for educating people to become knowledgeable.

The broad research objective is to evaluate the relationship between external debt and expected years of schooling from 1990 to 2019 for Nigeria and Ghana. This research will also examine the long run effect of external debt on expected years of schooling in Nigeria and Ghana. The direction of causality between external debt and expected years of schooling will also be investigated. This study is significant because borrowing for infrastructural projects is good but concerted efforts to develop manpower that will manage the infrastructural projects will

produce better results. Various empirical studies have shown that an educated workforce manages the resources of the country better and enhances economic growth (Gitana and Agnė, 2018; Yuriy, Halyna, Iryna, and Iveta, 2020). The subsequent sections of this study will highlight the theoretical framework of the research, the review of literature in the area, the methodology, discussion of findings, conclusion, and recommendations.

2. Literature Review

2.1. Theoretical framework

The Classical theorists proposed that government spending is unproductive, thus government should operate balanced budgets to prevent debt accumulation from deficit budgets (Tsoulfidis, 2007). Public debt accumulation will result in to increase in taxes in the future which will cause the flight of domestic capital and a net negative effect on the economy (Tsoulfidis, 2007). J S Mill emphasised that the impact of debt on the interest rate and the future cost of debt servicing might increase interest rate expectations (Aspromourgos, 2018). Also, debt servicing costs might be too high and affect the general welfare of citizens (Aspromourgos, 2018).

The Keynesian theorists on the other hand proposed that deficit spending and accumulation of public debt can stimulate the economy without affecting the welfare of current and future generations (Salsman, 2017). According to Blanchard (2019), when the interest rate on the debt is lower than the rate of real output growth, the welfare of the people improves. The Keynesian theory of public debt to stimulate the economy on the path of economic growth and development relates more to external debt which is an external injection of funds into the economy.

The Ricardian equivalence theory argues that government deficits have no macroeconomic effects on the economy in the long run (Phillipe, Montfort, and Boileau, 2002). This is because an increase in current public sector debt implies an increase in the future tax burden. Rational economic agents will anticipate an increase in future taxes and raise their current rate of savings (Phillipe, Montfort, and Boileau, 2002). In principle, the theory explains that an increase in government expenditure (through injection of external debt) or a reduction in taxes will result in a similar increase in private savings which will result to no effect on the real economy (Phillipe, Montfort, and Boileau, 2002).

The theoretical framework for this research is the Keynesian theory of public debt which is that public debt should have a positive relationship and impact on expected years of schooling. The number of years a child of school-entry age is projected to spend in school according to Jeroen and Iñaki (2019) is expected to increase as external debt is injected into the economy and education expenditure increases.

2.2. Literature review

External debt provides fiscal space for countries to accelerate capital accumulation to improve living standards of people through education. External debt can affect expected years of schooling through two channels. One of which is through education spending. External debt increases revenue, which increases government spending (Fosu, 2007). External debt provides the needed resources to invest in education especially for Sub-Saharan African countries that

have high fiscal deficits. When countries increase capital and recurrent education spending, education outcomes are expected to improve (Charles, Sylvester, Stephen, and Emilia, 2016).

Various empirical studies reveal the relationship between public debt and education spending. Seminal studies on the correlation between external debt and education expenditure was undertaken by Tilak (1990). According to the study, total external debt in Sub-Saharan Africa increased by ten-folds during the period 1970 to the mid-1980s. During the same period, government expenditure on education increased only three-fold. The research of Tilak (1990) was a preliminary analysis using coefficients of correlation, and it was concluded that external debt levels significantly influence public expenditure on education (Tilak, 1990).

The effect of public expenditure management on primary education outcomes was examined by (Boateng, 2014) in public schools in two South African provinces. Cross-sectional data from 13 local education offices and 175 public schools were used for the research (Boateng, 2014). The study revealed that misuse of education funds is weakly related with poor education indicators (Boateng, 2014). However, fund disbursement delays to schools are strongly correlated to dropout rates (Boateng, 2014). Also, dropout rates are strongly determined by district and school ineffectiveness (Boateng, 2014).

Khemais (2018) examined the relationship between external debt and human development during the period 2002 to 2015 for a panel data set of 95 developing countries. The estimation results gotten using the Panel Smooth Threshold Regression (PSTR) model showed a non-linear relationship between external debt and human development for the period studied. According to Khemais (2018), below the optimal threshold of external debt of 41.7775%, external debt has a positive impact on human development, above this threshold, external debt harms human development. The variables used for the study are external debt, gross fixed capital formation, foreign direct investment, trade openness, and population growth rate.

Ekaette, Owan, and Agbo (2019) assessed external debt and the financing of education in Nigeria using time series data from 1988 to 2018. The data collected were analysed using Augmented Dickey-Fuller unit root test method, Johansen co-integration for long run relationship analysis, Vector Error Correction method of analysis, Granger causality, and Ordinary Least Squares method. The findings indicated a long run significant relationship between external debt and education financing in Nigeria. The study further showed that external debt stock and external debt service has no significant effect on education financing in Nigeria, however, exchange rate has a significant effect on education financing in Nigeria. The authors recommended that external debt should be used for development initiatives such as investment in education to eradicate illiteracy in Nigeria (Ekaette, Owan, and Agbo, 2019).

Another channel through which public debt affect expected years of schooling is through the cost of borrowing. High service costs can turn away government spending on social sectors (Tilak, 1990; Fosu, 2007; Fosu, 2010). Fosu (2007) investigated if external debt servicing has been a major constraint for fiscal allocation to education using five-year panel data over 1975 to 1994 for 35 Sub-Saharan Africa countries. The findings revealed that actual debt service has no impact on education spending, however, predicted debt service showed a significant adverse impact on education spending (Fosu, 2007). The analysis further showed that the Structural adjustment programs undertaken during the period by Sub-Saharan Africa countries had a positive effect on increasing education expenditure (Fosu, 2007). Fosu (2007) suggests that

most countries were able to circumvent the actual adverse effect of debt servicing through debt rescheduling.

The effect of external debt servicing on human capital development in Nigeria was examined by (Igudia, 2021) from 1960 to 2015 using public spending on health and education as proxies for human capital development. The data was analysed using Ordinary Least Squares technique. The study by Igudia (2021) showed that external debt stock contributed extensively to government education and health expenditure. Also, external debt service affected government education and health expenditure adversely.

As suggested by Tilak (1990) that high debt service costs can reduce government spending on social sectors, Tasleem (2021) examined the effect of external debt service on education for a panel of SAARC countries and had same findings as (Igudia, 2021). The data for the SAARC countries was gotten from 1990 to 2016 and estimations are carried out using fixed effect model (Tasleem, 2021). The findings showed that government undertakes repayment of debt and debt servicing costs by reducing expenditure on education, because it is easier to cut education spending than it is to cut in other sectors (Tasleem, 2021).

Empirical studies on the impact of public debt on education has focused on education spending. However, there is empirical evidence that increasing spending on education does not necessarily improve quality of learning (OECD, 2012; Emiliana and Chelsea, 2015). This study intends to contribute to empirical literature by investigating the effect of external debt on expected years of schooling.

3. Methodology

Annual time series data of external debt stock, external debt servicing stock, expected years of schooling, and exchange rate from 1990 to 2019 will be used for the two countries, Nigeria, and Ghana. The data are sourced from the World Bank database, United Nations Development Programme database. The variables are expected years of schooling, external debt stock, debt servicing stock, and real effective exchange rate. The dependent variable is expected years of schooling.

The number of years a child of school-entry age is projected to spend in school measures the expected years of schooling (Jeroen and Iñaki, 2019). The World Bank (2022) defines external debt stock (2022) as debt owing to nonresidents repayable in goods, services, or money. The sum of principal repayments and interest paid in services, products, or currency on long-term debt, interest paid on short-term debt, and repayments to the IMF is known as debt servicing stock (Databank, 2022). Real effective exchange rate according to World Bank (2022) is the measure of a currency against a weighted average of other several foreign currencies divided by a price deflator.

Real effective exchange rate is included as one of the independent variables following the studies of (Ekaette, Owan, and Agbo 2019), and because of the effect it has on external debt stock and external debt servicing (Blessy, 2019). External debt makes loan repayment more costly for a depreciating currency by increasing the amount of money to pay back in domestic terms (Blessy, 2019).

Pre-econometric unit root test will be used to ascertain the stationarity of the time series data because time series data often have stationarity problems (Shrestha and Bhatta, 2018). The unit root tests to be used are Phillips-Perron unit root test and Augmented Dickey-Fuller unit root test. Augmented Dickey-Fuller unit root test is a parametric test, while the Phillips-Perron unit root test is a non-parametric test (Shrestha and Bhatta, 2018). Additionally, the Phillips-Perron unit root test considers autocorrelation and heteroscedasticity issues by correcting the statistics (Shrestha and Bhatta, 2018).

The long run relationship between external debt and expected years of schooling will be analysed using long run form and bounds test within the ARDL framework. The coefficients of the long run form and bounds test will be used to estimate the effect of external debt on expected years of schooling for both countries. This is following the technique used by (Ekaette, Owan, and Agbo, 2019). The direction of causality will be determined using Granger causality method, following the technique used by (Ekaette, Owan, and Agbo, 2019). The analysis is a comparative analysis between Nigeria and Ghana.

3.1. Model specification

In simple form, the model is specified as:

EYS = EXTD + EDS + REER + U

The econometric equation is stated below in log form because of differences in standard units of the variables.

$Log(EYS) = B_o + B_1log(EXTD) + B_2log(EDS) + B_3log(REER) + U$

The parameters explained below are:

LogEYS – log of expected years of schooling.

LogEXTD – log of external debt stock.

LogEDS – log of external debt servicing stock.

LogEXR – log of real effective exchange rate

B_o is the intercept, B_1 to B_3 represent coefficients of the regressors and U is the error term. External debt stock is expected to have a positive sign in line with the Keynesian theory of debt, external debt servicing is expected to have a negative sign in line with the Classical theory of debt. Exchange rate is expected to have a negative sign, following findings from (Ekaette, Owan, and Agbo, 2019).

A priori expectation in the study is that external debt will have a positive relationship with expected years of schooling. This is because external debt is incurred to improve the living standards of people by making them knowledgeable enough to manage the infrastructural resources that the government is providing.

4. Findings and Discussion of Results

4.1. Trend analysis of external debt stock for Nigeria and Ghana

External debt for Sub-Saharan African countries is one of the indispensable sources of deficit financing (Mutiu, Abdulfatai, and Rasheed, 2020). The trend of external debt for both countries

before 2004 was increasing until it reduced significantly (**Figure 1**). This reduction in external debt for both countries from the year 2004 was because both countries were beneficiaries of the Heavily Indebted Poor Countries debt relief and Multilateral debt relief initiatives of the International Monetary Fund (International Monetary Fund, 2016). However, from 2006, the gains of the debt relief were short-lived as the external debt is seen to be accumulating for both Nigeria and Ghana (**Figure 1**). There have been recent concerns about the sustainability of external debt for both countries (Stephen, 2021; David, 2021). Country-specific information shows that Nigeria has taken measures to reduce dependence on external debt by setting a ratio of 70:30 for domestic debt and external debt respectively in the debt management strategy from 2020 to 2023 (Debt Management Office, 2019). About 50% of Ghana's public debt is still sourced externally and the medium-term debt management strategy from 2021 to 2024 is to reduce issuance of short-term domestic debt and issue more medium to long term domestic debt (Ministry of Finance, 2021). Like other Sub-Saharan African countries, Nigeria and Ghana are moving away from multilateral and bilateral creditors to private creditors for debt (ADB, 2021).

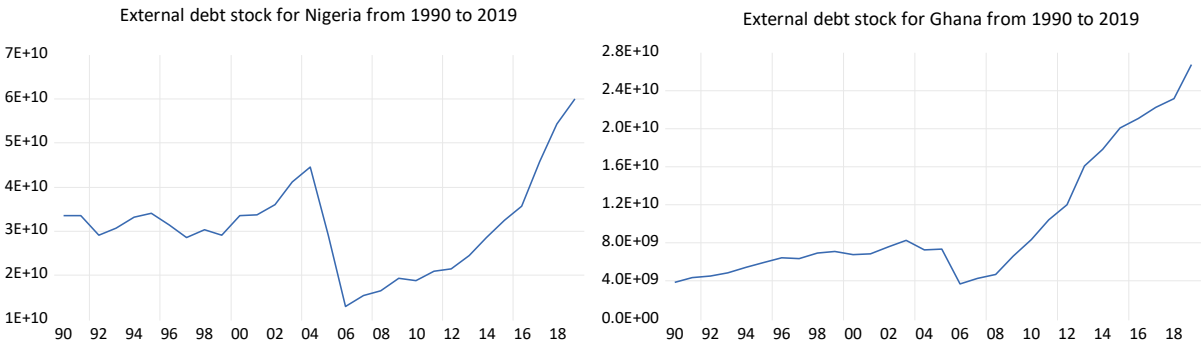

Figure 1: Graphs of external debt stock for Nigeria and Ghana from 1990 to 2019. **Source**: Eviews 12 output.

Expected years of schooling is lowest for Sub-Saharan Africa compared to other regions of the world (UNDP, 2019). The expected years of schooling trend for both countries have been increasing, with some inconsistencies for Nigeria (**Figure 2**).

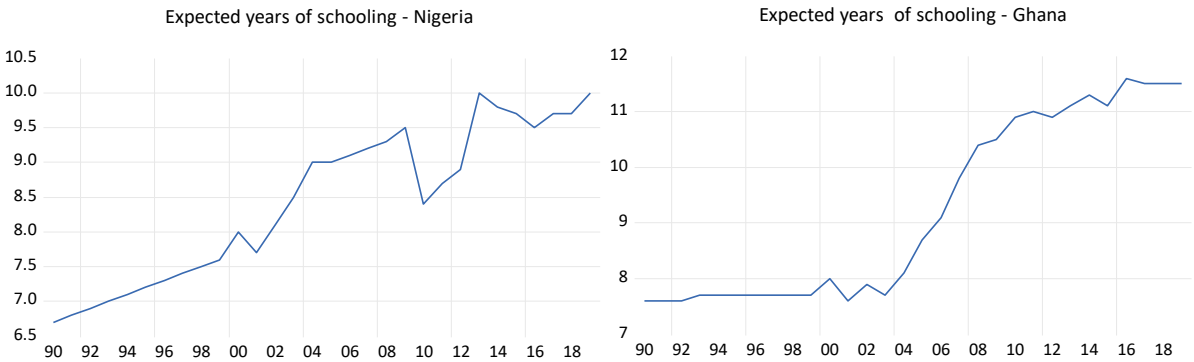

Figure 2: Graphs of expected years of schooling for Nigeria and Ghana from 1990 to 2019. **Source**: Eviews 12 output.

From **Figure 2**, the expected years of schooling in the year 2018 for Ghana is higher than in Nigeria. Ghana experienced a high rate of increase in expected years of schooling from the year 2004 until 2012. One of the major reasons for this high increase in Ghana was the educational reform in 2002 which added 2 years of pre-school to the initial basic education years of 9 years, making basic education 11 years (Samuel, Wilhemina, and Anim, 2016). For Nigeria however, between the years 2009 and 2011, the security situation among other factors resulted in a sharp decrease in the expected years of schooling (World Education Services, 2017). Another decline in the expected years of schooling in Nigeria from year 2015 to 2017 can be attributed to the economic recession due to the fall in oil prices (World Education Services, 2017). This recession reduced government revenue and the allocation to social sectors such as education was reduced thus affecting education outcomes (World Education Services, 2017). Several reforms undertaken in the educational sector in Nigeria could be attributed to the steady improvement in expected years of schooling over the years. Some reforms according to Duro and Ayodele (2009) are the establishment of the Teacher's Registration Council of Nigeria (TRCN) in 1993 to regulate the teaching profession, and the introduction of Universal Basic Education (UBE) in 1999. Another major reform is the establishment of the National Home – Grown school feeding program in 2016 which recorded huge success and studies of Damilola, Olabisi, and Bolanle (2021) showed that the program improved expected years of schooling.

The administration of education for both countries is different. Education in Nigeria is managed by the Federal, State, and Local governments. The role of the federal government is mainly policy formulation and quality control, but they are involved with tertiary education (World Education Services, 2017). Secondary education is mainly the responsibility of the state government, and primary education is the responsibility of the local governments (World Education Services, 2017). Unlike Ghana, basic education in Nigeria is for 9 years, and the national educational policy stipulates that basic education should be free and compulsory (World Education Services, 2017). Ghana on the other hand operates a free and compulsory basic education policy of 11 years (Mehwish, Yigu, and Stefan, 2019). Education in Ghana is managed by the central government only while other levels of government play monitoring functions (Mehwish, Yigu, and Stefan, 2019). External debt for both countries is collected by the national government only. In Nigeria, all external loans for the subnational government must be supported by federal government guarantee (Debt Management Office, 2020). Just like Nigeria, some empirical studies confirmed that the Ghana school feeding program implemented in 2006 improved the expected years of schooling (Victor, Beattie, Michael, and Francisco, 2011). Other reforms are the launch of four-year Bachelor of Education (B.Ed.) programme to improve teacher training, increase in staffing levels, rehabilitation and building of primary and secondary schools to improve access to education, and introduction of the medium of instruction in pre-primary and lower primary school to be in Ghanaian language (Samuel, Wilhemina, and Anim, 2016).

4.2. Result of unit root test

Augmented Dickey-Fuller unit root test and Phillips-Perron unit root test is carried out to determine the stationary of the variables. When the p-value is greater than 0.05, the variable is non-stationary. Additionally, when the absolute value of the t-statistic is greater than 2, the variable is stationary.

Table 2: Unit root test for Nigeria

Variable	Augmented Dickey-Fuller Unit root test				Phillips-Perron Unit root test			
	Level		First Difference		Level		First Difference	
	Intercept		Intercept		Intercept		Intercept	
	t-stat	P-value	t-stat	P-value	t-stat	P-value	t-stat	P-value
EXTD	-1.4634	0.537	-3.1235	0.0362	-0.5978	0.8563	-2.989	0.0482
EDS	-3.21033	0.0296	-5.1983	0.0000	-3.00054	0.0467	-10.0168	0.0000
REER	-2.4643	0.1342	-5.0379	0.0003	-2.6136	0.1018	-5.0454	0.0003
EYS	-1.01882	0.7329	5.20888	0.0003	-0.7516	0.8177	-10.3067	0.0000

Source: Eviews 12 output.

Table 3: Unit root test for Ghana

Variable	Augmented Dickey-Fuller Unit root test				Phillips-Perron Unit root test			
	Level		First Difference		Level		First Difference	
	Intercept		Intercept		Intercept		Intercept	
	t-stat	P-value	t-stat	P-value	t-stat	P-value	t-stat	P-value
EXTD	2.4993	1.0000	-1.4069	0.5639	1.801388	0.9995	-2.78157	0.0738
EDS	2.06245	0.9998	-3.43881	0.0179	1.97676	0.9997	-3.47721	0.0164
REER	-1.7178	0.4121	-4.64152	0.001	-1.59649	0.4715	-5.1974	0.0002
EYS	0.1335	0.9629	-2.1436	0.2303	-0.16647	0.9323	-4.7889	0.0007

Source: Eviews 12 output.

The unit root test for Nigeria for all the variables shows mixed order of integration I(0) and I(1) for both Augmented Dickey-Fuller method and the Phillips-Perron method. The unit root test for Ghana shows a single order of integration I(1) for all the variables, using the p-value and t statistic.

4.3. Result of long run co-integration test

According to Shrestha and Bhatta (2018) an Autoregressive Distributed Lag (ARDL) model as an Ordinary Least Squares model can be applied to both non-stationary time series and time series with mixed order of integration, I(0) and I(1). The most appropriate method to check for long run cointegration is the long run form and bounds test within the ARDL framework. The optimal lag length used for the analysis is two, following the Akaike Information Criterion

(AIC). The decision criteria is that there is long run cointegration if the F-statistic is above the I(1) bound at the 5% level of significance (Pesaran, Shin, and Smith, 2001).

Table 4: Long run form and bounds test result for Nigeria

Test Statistic	Nigeria	Ghana	Significance	I(0)	I(1)
F-Statistic	1.115	4.2423	10%	2.37	3.2
			5%	2.79	3.67
			2.50%	3.15	4.08
			1%	3.65	4.66

Source: Eviews 12 output.

According to the long run cointegration test result in **Table 4**, it can be inferred that there is no long run cointegration between the variables for Nigeria, but there is presence of long run cointegration relationship among the variables for Ghana. The finding for Nigeria is in contrast with the findings of Ekaette, Owan, and Agbo (2019) while the finding for Ghana supports the findings of (Tilak, 1990; Ekaette, Owan, and Agbo, 2019; Igudia, 2021). Despite the long run relationship among the variables for Ghana, result in **Table 5** indicates that the impact of external debt stock, external debt servicing stock, and real effective exchange rate on expected years of schooling is not statistically significant. This is in line with the result of Fosu (2007).

Table 5: Impact of public debt on expected years of schooling for Ghana

Variable	Coefficient	P-value
EXTD	1.89E-10	0.5017
EDS	9.04E-10	0.6087
REER	0.03989	0.3851
C	0.136698	0.9847

Source: Eviews 12 output.

Central administration of education and external debt in Ghana makes it easy for external debt to have a long run relationship with expected years of schooling, because the government of Ghana can borrow funds to invest directly in education. This is so because external debt in Ghana is managed by the central government. However, the effect of external debt on expected years is not statistically significant, which could be indicative of the priority of the government of Ghana to access external loans for infrastructural projects rather than investment in social sectors (Terry, 2021). The insignificant effect could also be indicative of the actual performance of students which may inhibit them from graduating into higher education levels (Mehwish, Yigu, and Stefan, 2019). About one-third of the students that finish junior secondary school cannot pass the basic education certificate exams into senior secondary school (Mehwish, Yigu, and Stefan, 2019). This could be attributed to curriculum mismatch, not aligning the right level

of level with the skills level of the child, inadequate qualified teachers, and poor educational infrastructure (Mehwish, Yigu, and Stefan, 2019).

For Nigeria, basic education is administered by the local and state governments (World Educational Services, 2017) that cannot access external debt except through federal government guarantees (Debt Management Office, 2020). This implies that basic education which is administered at the state and local government levels will not be impacted by external debt which is mostly collected by the federal government. According to John (2016), other factors that could negatively affect expected years of schooling in Nigeria are teachers' absenteeism from classroom which causes pupils to fail entrance examinations, access to schools, lack of accountability, etc. Also, external borrowing at the federal level is mostly tied to infrastructural projects because of the ability to generate returns for servicing the debts (Allwell, 2021).

4.4. Result of causality test

Shrestha and Bhatta (2018) explain that when two variables are cointegrated, there may exist bidirectional or unidirectional causal relationship between the variables. The null hypothesis of no causality cannot be rejected when the p-value is greater than 0.05. Granger causality analysis shows unidirectional causality from expected years of schooling to external debt stock for Ghana (**Table 6**). This implies that expected years of schooling granger causes external debt stock in Ghana. There is unidirectional causality from external debt stock to external debt servicing (**Table 6**). This is supported by the assertion that debt servicing costs arise because of the external debt (Abdulkarim, 2021).

Table 6: Granger causality test result

	NIGERIA	**GHANA**
Null Hypothesis	**P-value**	**P-value**
EXTD does not Granger cause EYS	0.7691	0.1207
EYS does not Granger cause EXTD	0.6366	0.0027
EDS does not Granger cause EYS	0.9742	0.4687
EYS does not Granger cause EDS	0.0273	0.0619
REER does not Granger cause EYS	0.866	0.1646
EYS does not Granger cause REER	0.8699	0.062
EDS does not Granger cause EXTD	0.652	0.8032
EXTD does not Granger cause EDS	0.0105	0.002
REER does not Granger cause EXTD	0.514	0.4889
EXTD does not Granger cause REER	0.9504	0.0978
REER does not Granger cause EDS	0.7103	0.1532
EDS does not Granger cause REER	0.9682	0.4821

Source: Eviews 12 output.

5. Conclusion and Recommendations

The research examined the historical trend of external debt and expected years of schooling for Nigeria and Ghana from 1990 to 2019. The long run relationship between external debt and expected years of schooling was investigated for both countries. The effect of external debt on expected years of schooling as well as the direction of causality between external debt and expected years of schooling was also examined.

The trend analysis of external debt for Nigeria and Ghana showed identical patterns of external debt reduction around the years 2004 to 2006 attributable to the Heavily Indebted Poor Countries and Multilateral Debt Relief Initiatives of the International Monetary Fund. Since 2007, external debt for both countries is on the increase (International Monetary Fund, 2016). Similarly, trend analysis for expected years of schooling in Nigeria and Ghana show almost similar increasing patterns over the years. However, between 2007 and 2012, the expected years of schooling for Ghana increased at a fast rate, and this could be indicative of the effect of the educational reform in year 2002 where the basic education years was increased from 9 to 11 (Mehwish, Yigu, and Stefan, 2019). Sharp reductions in expected years of schooling for Nigeria can be attributed to security challenges and the economic recession of 2015 and 2016 (World Educational Services, 2017). Educational reforms such as school feeding programme for both countries, establishment of Universal Basic Education for Nigeria, use of local languages as the language of instruction for pre-primary and primary school pupils among others, are responsible for the increase in expected years of schooling over the years (Duro and Ayodele, 2009; Samuel, Wilhemina, and Anim, 2016; Damilola, Olabisi, and Bolanle, 2021).

The long run relationship analysis revealed the presence of long run cointegration among the variables for Ghana only. The absence of long run cointegrating relationship for Nigeria could be a result of the administration of education and external debt in Nigeria. Primary education is managed by local governments, secondary education is managed by the state government, and these levels of government cannot access external loans except with federal government guarantee (World Educational Services, 2017). Even tertiary education managed by the national government is not prioritized for external loans investment. External debt and education for Ghana are administered by the central government, unlike Nigeria. Analysis of the effect of external debt on expected years of schooling showed a positive and insignificant effect. The insignificant effect could be indicative of the priority of the government of Ghana to invest external loans to infrastructural projects other than social sectors (Terry, 2021). The causality analysis showed unidirectional causality from expected years of schooling to external debt stock. This implies that expected years of schooling granger causes external debt stock in Ghana.

For Ghana, it is recommended that educational reforms to improve expected years of schooling should include curriculum changes to align the right level of learning with the skills level of the child, investment in teacher training, improving educational infrastructure to make the learning experience better. Both countries in the study should dedicate a significant portion of external debt to investment in social sectors especially education, to develop the manpower that will be needed to manage the infrastructure funded by the external debt. For Nigeria, State and local governments should be given educational targets in terms of student performance, and incentives should be given by the federal government to states and local governments that meet

those educational performance targets. This will boost the efforts of the state and local governments to improve education outcomes in their jurisdiction during the early years.

Since public debt, mostly external debt is sourced to close fiscal deficits, it would be recommended that the impact of external debt on budgetary allocation to the education sector is investigated.

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